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TWENTY FOUR PAGES OF ILLUSTRATIONS IN FULL COLOR

By Sail Across Europe

With 39 Illustrations

MERLIN MINSHALL

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C. B. WILLIAMS

Nomads Among the Butterflies

3 Paintings and 5 Natural Color Photographs

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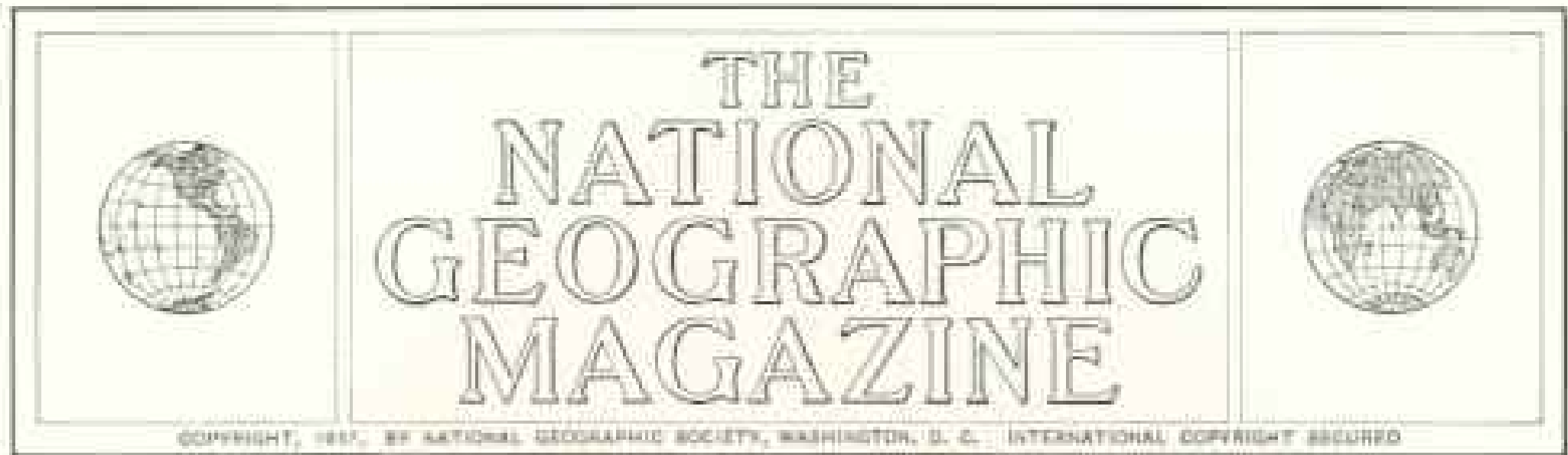
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B. ANTHONY STEWART

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BY SAIL ACROSS EUROPE

BY MERLIN MINSHALL

MORE than eleven hundred years ago, in the reign of the Emperor Charlemagne, the plan was first evolved of making a canal that would link the two great rivers of Europe, the Rhine and the Danube. Technical troubles were encountered, and it was almost the middle of the nineteenth century before the canal was finished. That was in the reign of Ludwig I, King of Bavaria, so in honor of him it was called the Ludwigs Canal.

However, the canal never became the economic and strategic factor that was intended. It was far too shallow; the locks were too small. Its eastern and western outlets were not easily navigable at any season. And it came into being at the wrong time—a time when the railways had just about monopolized all the profitable trade (page 550).

What might have become a key waterway of Europe almost immediately fell into disuse. Thus a canal that makes possible a fresh-water journey across the Continent, from the Atlantic to the Black Sea, today is almost unknown (map, pages 536-7).

A HONEYMOON BY SAIL

In January, 1932, I was planning a sailing honeymoon. I already had the boat, a 10-ton Dutch cutter called *Hawke*, famous many years before as the fastest *boeier* (pleasure boat) of its class in Holland. For inland sailing it would have been almost impossible to find a more suitable craft. A Dutch *boeier* is in many ways remarkable. It sails extremely fast, in spite of its bluff bows and broad beam, and as close to the wind as anything else of its size. Its draft

is around three feet, its accommodation is enormous (page 534).

Hawke was only 27 feet on the water line, yet four could sleep aboard comfortably, and when we finally set off we carried a full-size bath, a cooking range, fireplaces, refrigerator, storage for about a month's supplies, clothes for a year, an extensive library, and a large white bull terrier. And we weren't crowded!

As auxiliary to her thousand square feet of sail she had a small motor that gave us about three and a half knots in still water.

At first "Crew" and I were not quite decided where to go. Through the Netherlands and up to Copenhagen, or down through France to the Riviera? Then, one day Crew came across a queer little book published in 1853, full of early Victorian engravings, describing a voyage from the Rhine to the Danube "by way of the Ludwigs Canal."

OFF FOR THE "LOST WATERWAY"

We both became very excited about this, and decided to make the "Lost Waterway of Europe" our first objective. In August, intending to reach the Rhine by way of France, we set sail from Southampton for Le Havre.

The history of this port, second largest in France, goes back to the sixteenth century, when King Francis I, of France, chose Le Havre as the port of Paris. Within a few years, however, it became English, when the Huguenots delivered it over to Queen Elizabeth. But it was shortly recaptured by Charles IX and his mother, Catherine de Medici.



© Meritt Minshall

OUTWARD BOUND ON A HONEYMOON CRUISE ACROSS EUROPE

Astern is England, whence the author and his bride sailed on their transcontinental voyage. *Hawke*, their 10-ton Dutch cutter, was a fast sailer despite the bluff bows and broad beam that made her comfortable and roomy. On canals, where sails were useless, an auxiliary motor gave her a speed of three and a half knots. The boat's shallow draft made navigation of the canals comparatively easy. When sailing to windward in deep water, her big wooden "fins" or leeboards, one on each side, could be lowered to keep her from "sliding off" sideways.

A hundred years later the great military engineer Vauban finally fortified it so that subsequent English bombardments were of little avail, and Le Havre grew rapidly into its present importance. Economically it is the front door to Paris. Because it is virtually on the open sea, Le Havre, unlike Liverpool up the Mersey, or Philadelphia up the Delaware, has not had a constant battle to fight as the draft of steam-

ships increased.

Into this mighty port *Hawke* sailed after a crossing of 18 hours. Having furled sail and scrubbed down in the outer harbor, cautiously we nosed our way under power into the inner port.

It did not take long to discover that our best friends were going to be our nearest neighbors—the bargemen, who right from the start treated us as one of themselves, and who, by their readily offered help, were to save us from many an awkward fix.

Soon we began picking up their argot, and by the time we had reached Paris we could differentiate exactly between "ber-richon" and "margota" and knew what was a "peniche" and what was a "chaland"—all of which, to the uninitiated, are just barges. But we found that our lack of

nautical jargon made no difference in our relations with these cheery water folk.

ROUEN, OFFICIALLY, ON THE SEA

As the sea goes officially right up to Rouen, we had no formalities in Le Havre. So when we had explored the amazing labyrinth of quays, visited everything from transatlantic liners to fishing smacks, and seen the unforgettable view from Cap



Photograph by Burton Holmes from Galloway

FLAGS DRESS THE HUGE "NORMANDIE" AT HER NEW DOCK IN LE HAVRE

This is the 83,422-ton transatlantic liner's home port. It took the author 18 hours to sail *Hareke* across the English Channel from Southampton to Le Havre, where he tied up among friendly bargemen in the bustling inner harbor. Entering the Seine here, the little ship was not to see open water again until she reached the Black Sea, on the other side of Europe.



Drawn by Newman Dunstead

THROUGH EIGHT COUNTRIES WINDS "HAWKE'S" ADVENTUROUS COURSE

Few yachtsmen have ever navigated the whole of this chain of waterways, stretching approximately as far as from New York to Salt Lake City. Starting at Southampton, *Hawke* sailed across the English Channel and up the Seine to Paris. The Marne-Rhine Canal took her over the Vosges Mountains to the Rhine. Following the Main River and old Ludwigs Canal, she reached the Danube at Kelheim, then cruised with the historic stream southeastward to Sulina on the Black Sea.

de la Hève, where stands the most powerful lighthouse on the coasts of France, we left our mooring in the Bassin de la Barre and picked our way through a seething crowd of shipping. There were Swedish timber boats, American oil tankers, freight ships of every flag, all jostled together and all very busy loading or unloading.

Soon we left behind the noise and bustle of Le Havre. Harfleur, that "miniature Rotterdam, miniature Venice" glided past, while high above us stood the tower of St. Martin's, built by the English King Henry V when Harfleur was the chief port of Normandy and England ruled half of France. Then we sailed out into open fields, and by way of the Tancarville Canal reached the Seine just below Quillebeuf.

Once out on the Seine there was no stopping, as we were caught on a strong flood tide. That evening we succeeded in anchoring beside the lights of a small village and the next morning we woke up in Caudebec-en-Caux. It was three days before Crew and I could tear ourselves from the little half-timbered streets. Then, on the fourth day, we felt we must visit the near-by ruins of the Abbey of Jumièges, that unique seventh-century gem founded by Saint Philibert.

Upon returning, we found *Hawke* right out in midstream. In our absence the "mascaret," dread tidal wave of the Seine, had come, and our three-inch hawsers had snapped like cobwebs. A kedge anchor thrown overboard quite by chance had prevented a disaster.

THE CITY OF LA SALLE AND JOAN OF ARC

Next day we arrived in Rouen, the ancient capital of Normandy. But the harbor, one of the busiest in France, turned out to be no place for a small boat (page 539). For two days we were almost continuously on the move, being bumped and pushed by pleasure boats and barges, and so had little time to enjoy the sights of a town so prolific in antiquities that it has been described as the "Ville Musée."

Not a corner in this "Museum City" but breathes some piece of history. Here is the birthplace of Corneille; of La Salle, the explorer of the Mississippi; of Flaubert; and here, perhaps most celebrated of all, took place the glorious tragedy that ended the exploits of Saint Joan of Arc.*

* See "Normandy, Choice of the Vikings," by Helen Churchill Candee, NATIONAL GEOGRAPHIC MAGAZINE, May, 1936.

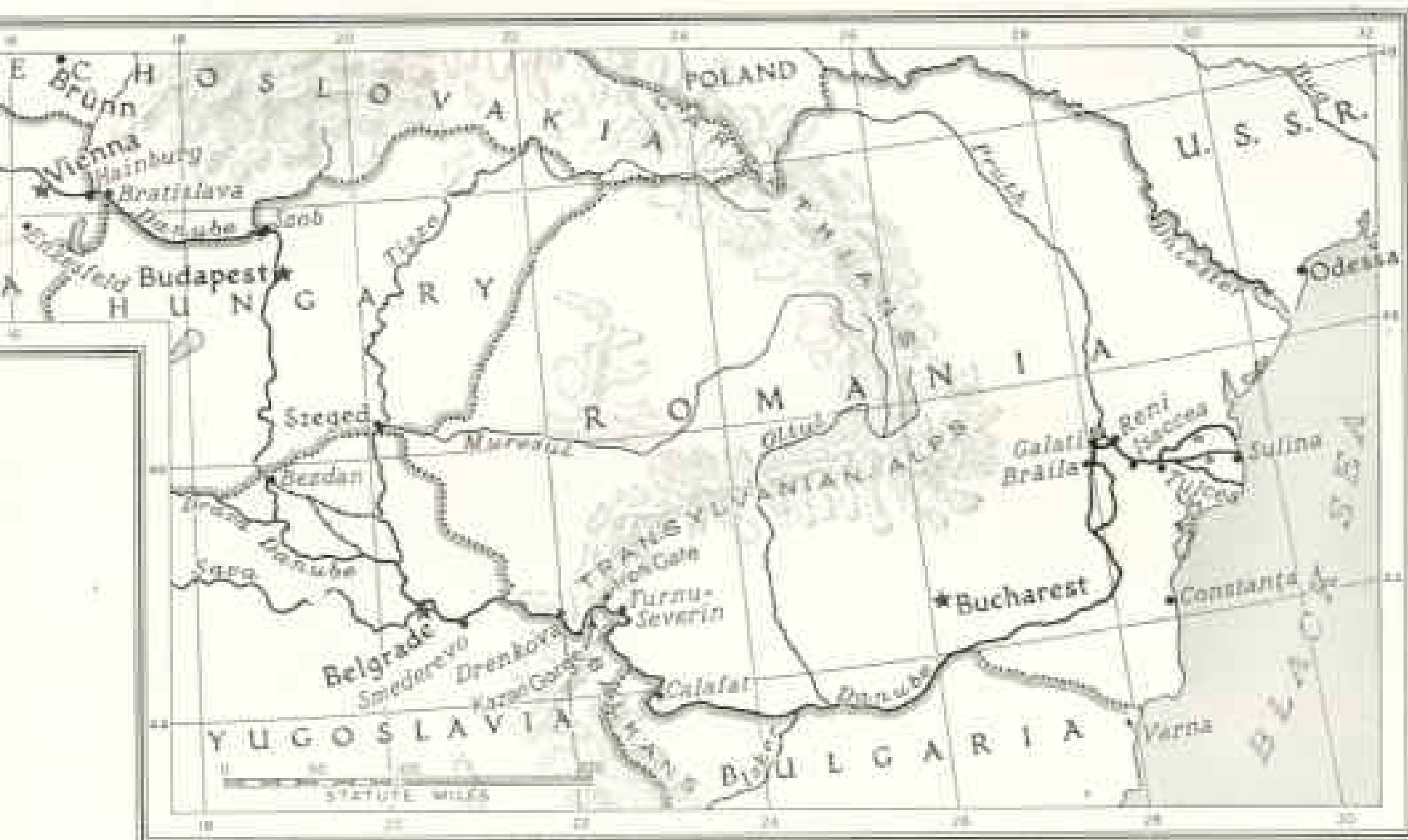
All this had to be for us little more than a background to customs formalities, and we were hardly sorry to escape into the country and begin our journey toward Paris.

The Seine with its ceaseless traffic might well be called the main artery of Normandy, now that its navigation has been simplified by enormous locks.

Often, however, we left the main stream and wandered up little side channels, past large country mansions, past Elbeuf, past

was the way to see Europe. But then, when we were ready to go on, floods came, and it was another week before we could even hope to make headway against that tearing current.

At last we set off, but it was only to get stuck in the difficult Branche de la Monnaie where the river, between high banks, streams right under the gargoyles of Notre Dame. We had to be rescued by a rather indignant police boat.



Les Andelys; where, towering above the winding river, stands the imposing mass of Château Gaillard, built in the twelfth century by the English King Richard the Lion Heart (page 538).

Soon after passing Vernon, chosen by Anatole France as the typical "Little Town of France," we came to St. Germain and explored that exquisite relic of Napoleon, the palace of Malmaison. Although the Eiffel Tower was already in plain view we had still a long way to Paris.

ANCHORED OFF THE LOUVRE

Mile followed mile of dreary tenements and factories. Then came a lovely contrast when we passed by the Bois de Boulogne, and then all at once we were in the heart of Paris itself.

Under the very shadow of the Louvre we anchored and spent a happy three weeks with no touch of hotel life. This, we said,

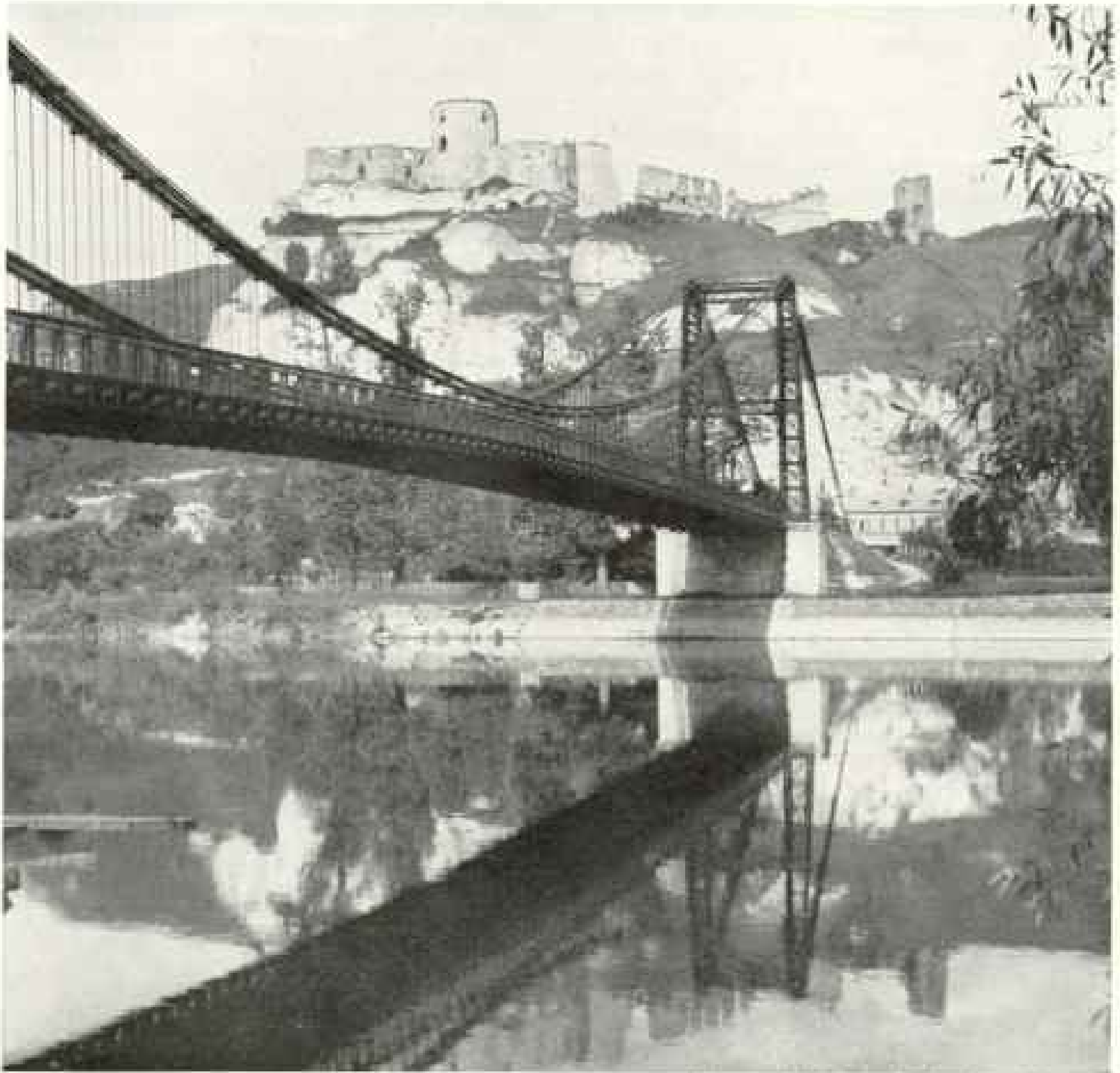
A few miles above Paris we left the Seine and turned aside up the Marne River, where our struggles continued all the way to the bishopric of Meaux and on to Château-Thierry, where the splendid American War Memorial dominates the landscape (page 543).*

As soon as the river reached the champagne country we entered the Marne-Rhine Canal, which was to take us 240 miles across France, over the Vosges Mountains, and down to the Rhine.

We spent a day in Épernay exploring the champagne factory with its labyrinth of cellars and underground galleries.

At Châlons we found the canal in the throes of a traffic jam, as this is the big junction for all the traffic going north to Belgium and the Netherlands.

* See "Our National War Memorials in Europe," by General John J. Pershing, NATIONAL GEOGRAPHIC MAGAZINE, January, 1934.



Photograph by Burton Holmes from Gallows

RICHARD COEUR DE LION'S "SAUCY CASTLE" FROWNS ON A MODERN SEINE BRIDGE.

England's crusader king built the rock-based fortress at Les Andelys in 1196, to defend his Norman possessions against Philip Augustus of France. Walls of the keep are 17 feet thick. "As strong as Château Galliard" became a popular byword, but after Richard's death his enemy captured the castle by starving out the garrison in a six-month siege. Beneath this bridge a constant stream of boat traffic passes up and down the Seine.

The countryside now became more interesting, and we sailed peacefully on past Bar-le-Duc and into the Joan of Arc country, for the canal here passes close beside Vaucouleurs and Domremy, where the house of the Maid of Orleans has become an important shrine of pilgrimage.

BARGE MET HEAD-ON IN A TUNNEL.

On Christmas Day we arrived in Toul, one of three famous bishoprics that once held the key to northeastern France.

Then we came to Liverdun. Here the canal passes right under the town. Having been assured that all was in order, into

the tunnel's mouth we plunged. In inky blackness we were groping our way, when suddenly out of the gloom appeared a rapidly moving motor barge. Now it is one thing to argue with a French barge in broad daylight; it is quite otherwise in a pitch-black tunnel where the smaller boat is very much at a disadvantage.

Our only hope lay in getting *Hawke* backwards out of the tunnel in split seconds. Her 40-foot mast, strapped down horizontally, caught in the roof; the engine began spluttering; the reverse gear jammed, and the tiller got completely tied up with the dinghy.



© K. Raffen

ROUEN, WHERE JOAN OF ARC DIED, IS ONE OF FRANCE'S BUSIEST PORTS, THOUGH 80 MILES BY RIVER FROM THE ENGLISH CHANNEL

Casks of imported oil form an irregular pattern on the wide quay along the Seine, where a trim freighter from Stockholm loads cotton textiles and other products of Normandy's ancient capital. During the World War, British troops and goods for the front were transhipped here in such numbers that docks were congested for miles on both shores. "No place for a small boat" is Rouen's crowded harbor, writes the author.



"HAWKE" DIPS HER 40-FOOT MAST TO PASS BENEATH A BRIDGE

Near Vernon, on the Seine, the author's bride—the "Crew" of the vessel—shows how the mast is lashed down, its top projecting far beyond the stern. Later, on the Danube, the spar struck and pulled down telegraph wires which Dr. Minshall failed to see in time (page 561).



Photographs © Meritt Minshall

FLYING THE BRITISH ENSIGN, "HAWKE" WAS THE AUTHOR'S SEINE-SIDE HOTEL

Strollers along the embankments in Paris often see yachts from England and other countries moored to the quays. *Hawke* lay nearly a month in the shadow of the Louvre. Probably few Parisians had ever seen a Dutch *boeier* before. Thousands of barges and small steamers ply to and from the capital, which handles more tons of cargo than any other French port.



Photograph by Maynard Owen Williams

NOTRE DAME, ON ÎLE DE LA CITÉ, WATCHES OVER THE OLDEST SECTION OF PARIS

The French capital began life as a port and its grand boulevard then was the Seine. When the Romans conquered the city, a settlement of the Gallic tribe of the Parisii dwelt on the island which divides the river. Then it became a strategic crossroads of Roman trade routes.

Somehow we arrived at the far end of the tunnel with a whole ship, but with wholly shattered nerves.

By the time we reached Nancy, ice already was forming on the canal, and it was a race to get over the summit of the pass before the water froze solid. So we didn't dare to dawdle more than one day to revel in the varied splendors of that delightful town, with its wealth of lovely ironwork, its ducal residences, its 15th-century church. But we did take note, and also a good supply of the chief specialty, the celebrated macaroons.

Each day now the cold grew worse, and we had to break the ice to get a passage. Then one night came a drop in temperature,

and we were stuck completely. It was thoroughly bad management, to get caught in such a desolate spot, but there was one consolation—we did get six weeks of excellent skating.

Our biggest problem was food, as the nearest town was more than twelve miles away, and we were soon reduced to baking our own bread and haggling with a farmer for such odd scraps of produce as he could spare.

ICE-BREAKER RELEASES MAROONED COUPLE

But one day the ice-breaker appeared, crashing its way with the help of eight horses, and soon we had left behind this desolate region and reached the summit.



© Melvin Mitchell

"HAWKI" WAITS HER TURN IN ONE-WAY TRAFFIC

A broad-beamed barge emerges from the tunnel where the Marne-Rhine Canal flows beside the railroad. Locks carry the waterway over the Vosges Mountains here and drop it down to the Rhine. In one of the dark tunnels, *Hawke* met a barge coming head-on and had to retreat astern. While the ship was frozen in for six weeks on this canal, Skipper and Crew enjoyed excellent skating (page 341).

The eastern face of the Vosges is almost sheer, and the canal here has to perform queer maneuvers to get down to the level of the Rhine.

In places there was only room for two barges abreast between the locks, and delays were frequent. At last we came down into the foothills, and, passing through the old fortress town of Saverne, reached Strasbourg.

Here Crew and I decided very definitely to make up for the rigors of the last two months. So in Strasbourg we stayed three

weeks, reveling in the Gothic splendors of one of the finest cathedrals in Europe and visiting a dozen little medieval houses, now turned into museums of Alsatian art. Here we vied with each other in ferreting out new restaurants, of which Strasbourg has so many.

Before setting out on the Rhine, we received grave warnings of the dangers of sandbanks and pontoon bridges, and the advice of more than one aged skipper was that we take a pilot. We decided against this, however, and discovered almost at once that the greatest danger to us was the traffic. The farther north we went the thicker it became. French, German, Belgian, Dutch, and Swiss tugs, huge, unwieldy-looking paddle-wheel affairs, with a string of

barges in tow up to half a mile long, often gave us anxious moments, when, under full sail, we encountered them in a narrow part of the river.

PASSING UNDER WATCHFUL PORTS

The first stretch of river after Strasbourg perhaps is the most jealously guarded piece of water in Europe. Our every movement was carefully watched from the little forts that line either side of the way, but we arrived uneventfully at Maxau, across the German frontier, where trouble was saved



Photograph by W. Robert Moots

CHATEAU-THIERRY'S STATELY MEMORIAL HONORS AMERICANS WHO FOUGHT HERE

Two heroic figures, symbolizing France and the United States, stand shoulder to shoulder on the front of the impressive monument erected by the United States Government in 1930. Above them are inscribed the names of battles that raged in this vicinity in 1918 (page 537).



© Merlin Mitchell

"CREW" SURVEYS THE BRIDAL SUITE

The cozy cabin had several bunks, cupboards for books, clothes, and supplies, and a stove with a square teakettle. Also carried aboard the little craft were a full-size bath, cooking range, refrigerator, and a bull terrier!



Photograph by Donald McLeish

HOME OF THE "HOT DOG" IS SAUSAGE-LOVING FRANKFURT

The city's famed namesakes—linked frankfurters of beef and pork, highly seasoned and well smoked—are sold at this shop in the Old Market, along with other sausages of varied sizes, shapes, and colors. American-style hot dogs, in rolls, are liked in Germany. Wienerwurst, named for Wien (Vienna), has shorter and more slender links than frankfurters.

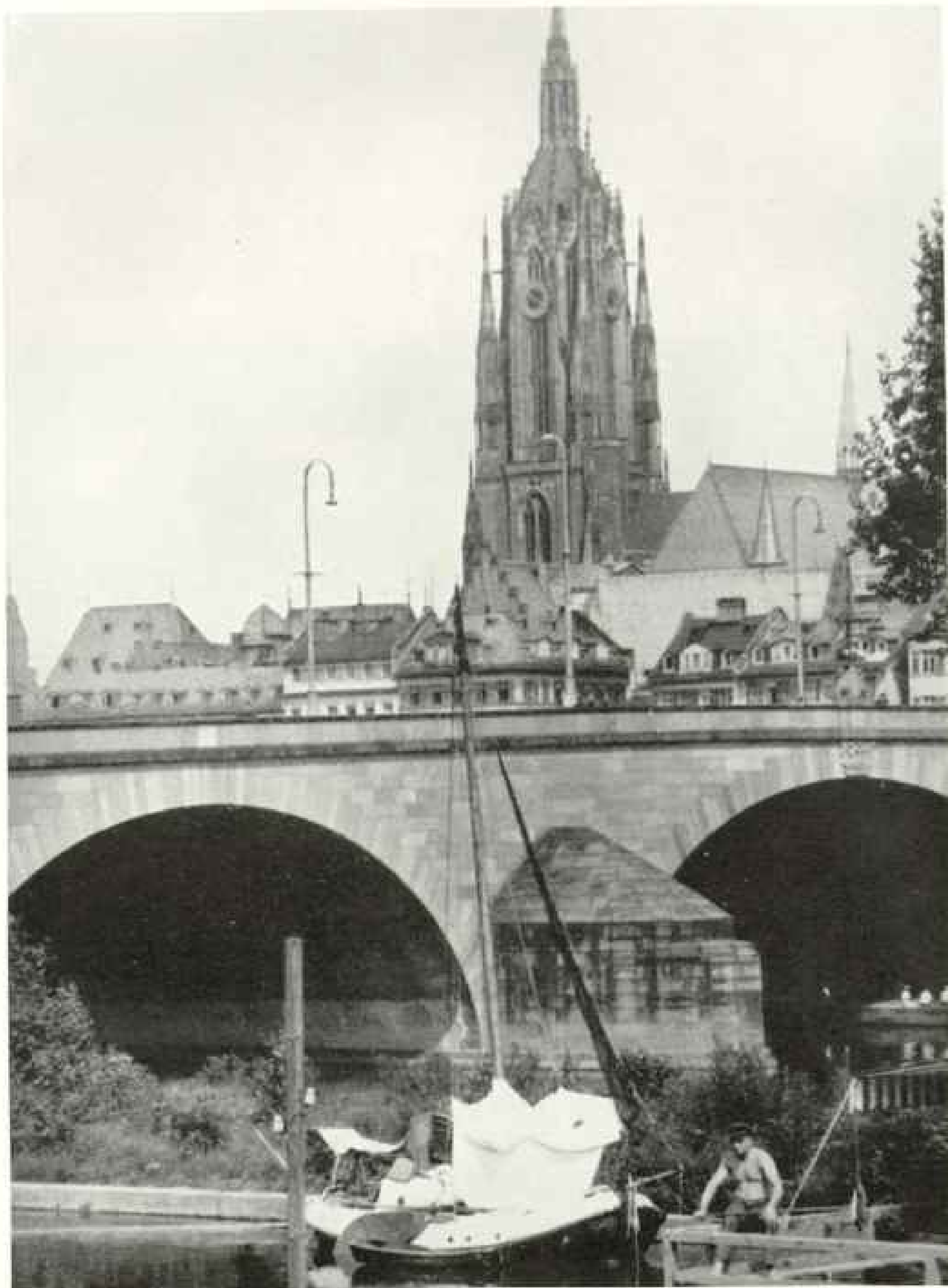
by a smart customs boat, flying an enormous swastika, which came alongside while we were still under way. All the formalities were gone through without our even having to slow down.

And so we came to Speyer, where, in 1529, the name of "Protestant" originated, and where a fine Romanesque cathedral so towers above its surroundings that mere man seems dwarfed by comparison. The town gave us the feeling of a lost and lovely oasis of repose.

Here we made a slight side tack, by leaving the Rhine and its traffic and sailing up the Neckar to Heidelberg. We came away with mixed impressions of castles, duels, rain, and Grecian nectar which we drank while *Hawke* became the honored guest of the rowing and sailing clubs.

WORMS, AND A WINE

Once more hurrying down the Rhine, we made our first stop at Worms, where some 400 years ago Martin Luther dramatically



© Merle Mitchell

TO KEEP COOL IN OLD FRANKFURT, THE AUTHOR RIGGED A TENT ON "HAWKE'S" DECK

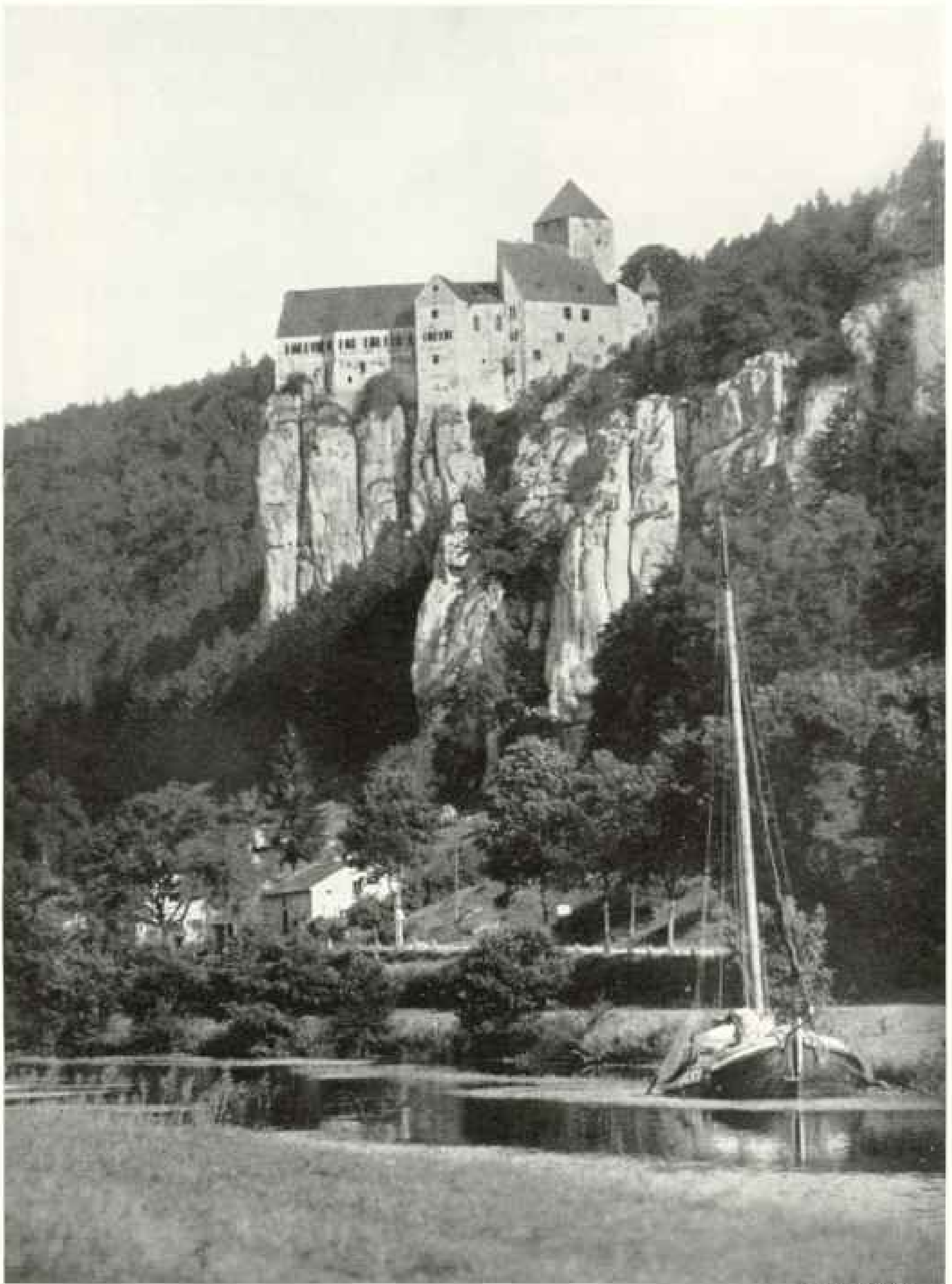
"Ford of the Franks" (Franconoford) was the city's original name. Here Charlemagne and his soldiers crossed the Main River, where nowadays citizens of the busy metropolis swim and sun themselves on bathing pavilions. Across the stream towers the red sandstone Cathedral, begun in 1235 and not completed until 1881.



Photograph by Paul Wolff

TUGS AND BARGES MADE SAILING TRICKY WHERE "HAWKE" TURNED UP THE MAIN

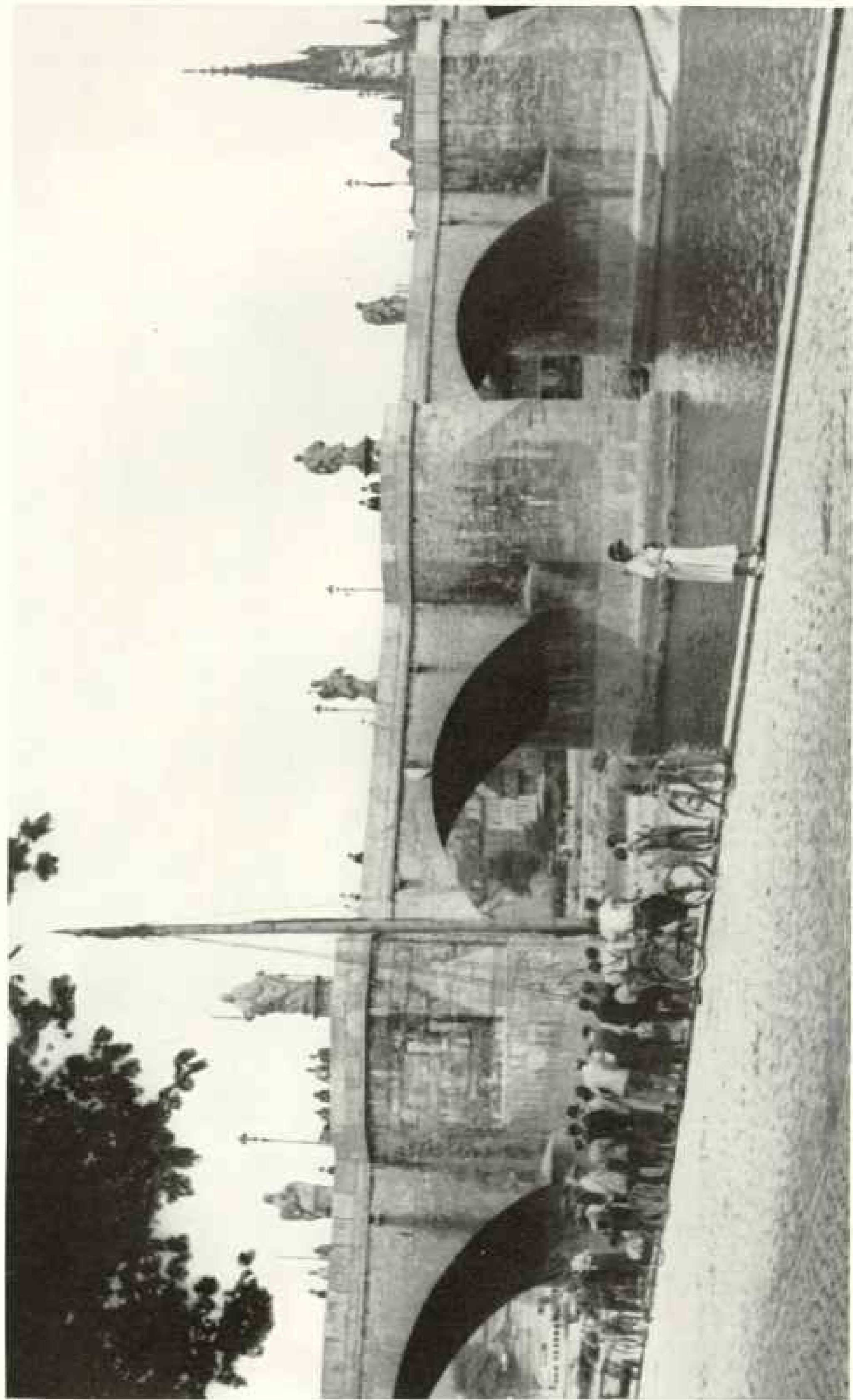
Steeple and domes piercing the sky mark Mainz, once called the "Golden City" because of the wealth it accumulated in the Middle Ages. Roman Emperor Domitian spanned the Rhine with a bridge just above its confluence here with the Main. Today Mainz is the headquarters of the Rhenish wine trade.



© Meritt Minshall

LIKE A FAIRY PRINCE'S CASTLE IS SCHLOSS PRUNN, WITH LUDWIGS CANAL AS THE MOAT

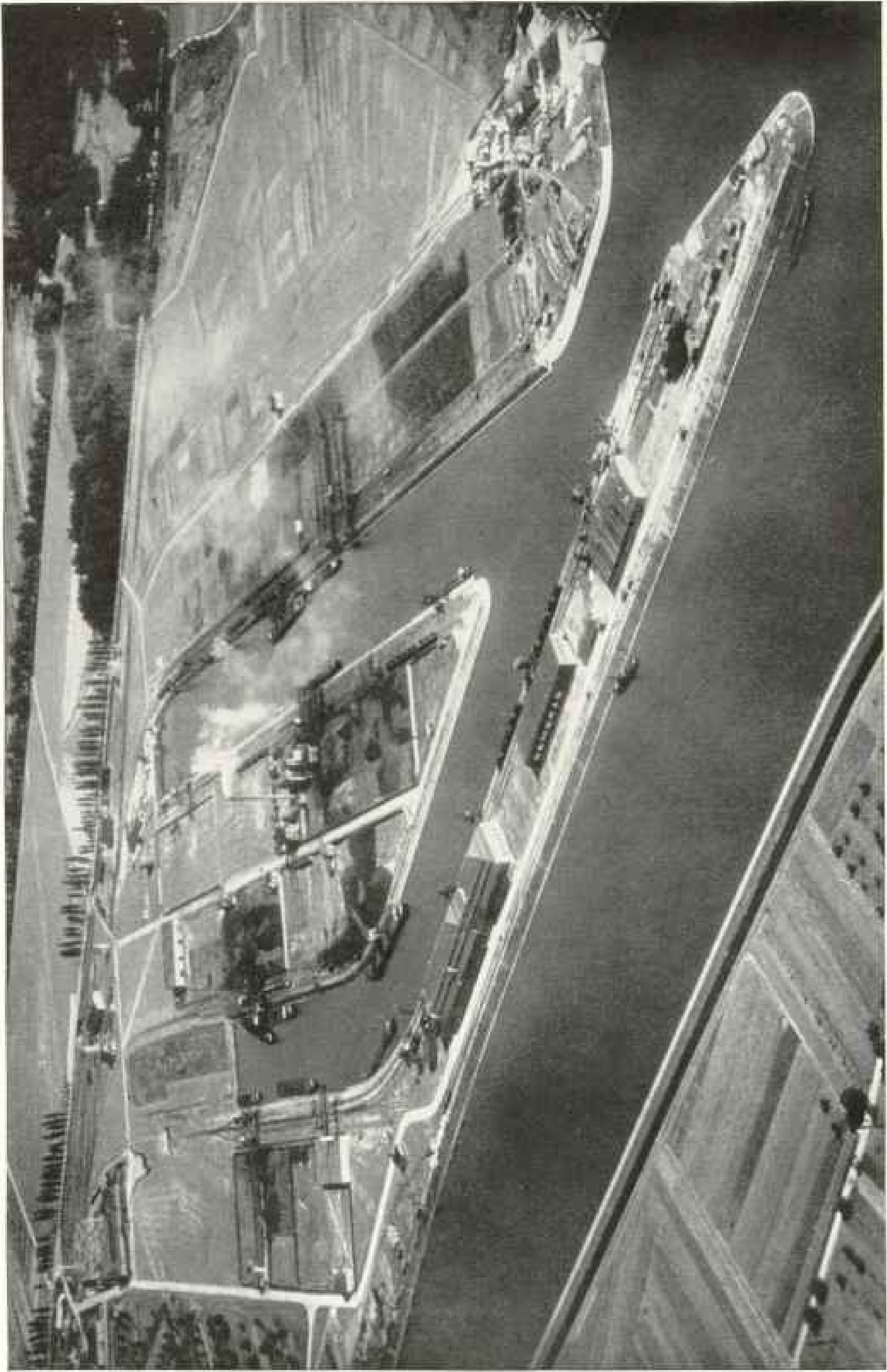
High above *Heide*, its sheer walls seem a continuation of the sharp promontory (page 553). For small, rocky building sites such as this, medieval architects developed a many-storied fortress-home with a restricted inner courtyard. Bavaria's green hills bristle with scores of romantic castles.



© Stella Mitchell

CURIOUS WÜRZBURGERS GATHER BESIDE THE DAM TO LOOK AT THE LITTLE SHIP FROM FAR-OFF ENGLAND

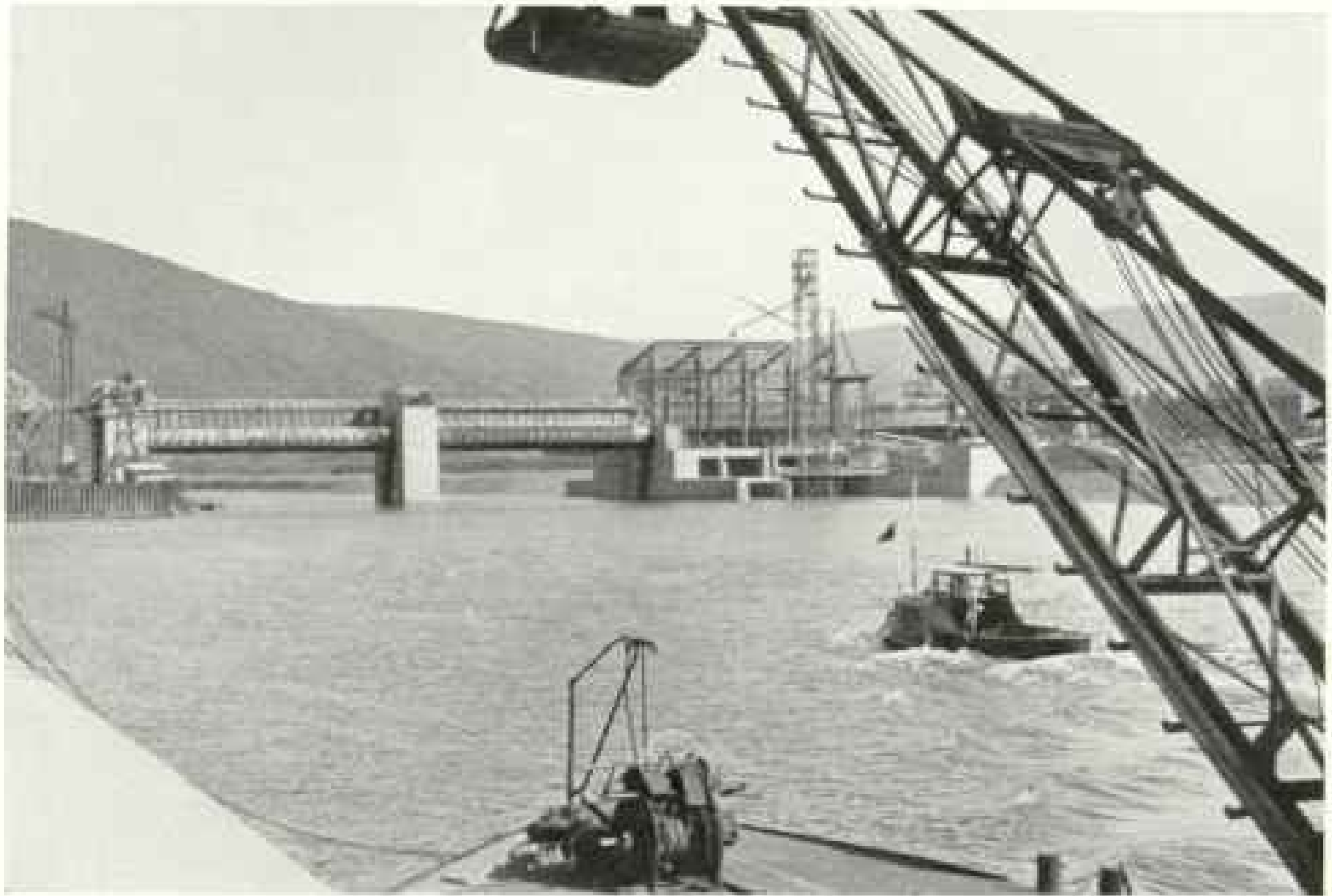
A concrete sluice under the bridge forces most of the river into a swift stream. After work, daring youths plunge into this current, shoot under the structure, and drift into the slower water below. Twelve huge statues of saints line the bridge, which was under construction when Columbus discovered America. The author arrived here in time for the festival in honor of St. Kollan, an Irish missionary who was martyred at Würzburg in 689 (page 555).



Photograph by Ewing Galloway

ABOVE ASCHAFFENBURG'S MODERN HARBOR THE MAIN BECOMES SWIFT AND NAVIGATION DIFFICULT.

In part of the river a heavy chain is laid on the bottom for the *Kettenschiff*. This strange tug has a mechanical "chain gang" which grasps the links and hauls the boat up against the strong current. *Hauske* was given a tow by the craft (page 52).



MODERN ENGINEERS DIG THE CANAL THAT CHARLEMAGNE DREAMED OF

Construction of a Rhine-Danube waterway proved too big a job for the Emperor of the West, who died in 814. Traces of the work he attempted may still be seen. King Ludwig I of Bavaria joined the two rivers in 1846, but his canal was too small to compete with the growing railroad.



Photographs © Merlin Minshall

MUSICIANS BOARD "HAWKE" AS SHE ENTERS THE FIRST LOCK IN LUDWIGS CANAL

The "hitchhikers" serenade Skipper and Crew to pay for a ride as deck passengers. Little used today and weed-grown in places, the old canal carries vessels over the Bavarian mountains, reaching at its highest point more than 1,300 feet above the sea. On the "sail among the clouds," the author and his wife, standing on deck, looked down on villages far below and fairy castles on distant crags.

defied the Emperor Charles V. Today there stands a striking memorial to the reformer. Not far away is the Liebfrauen-Kirche, which has given the name of "Liebfraumilch" to the famous wine, of which a tenth part is grown in the small vineyard that lies around the church.

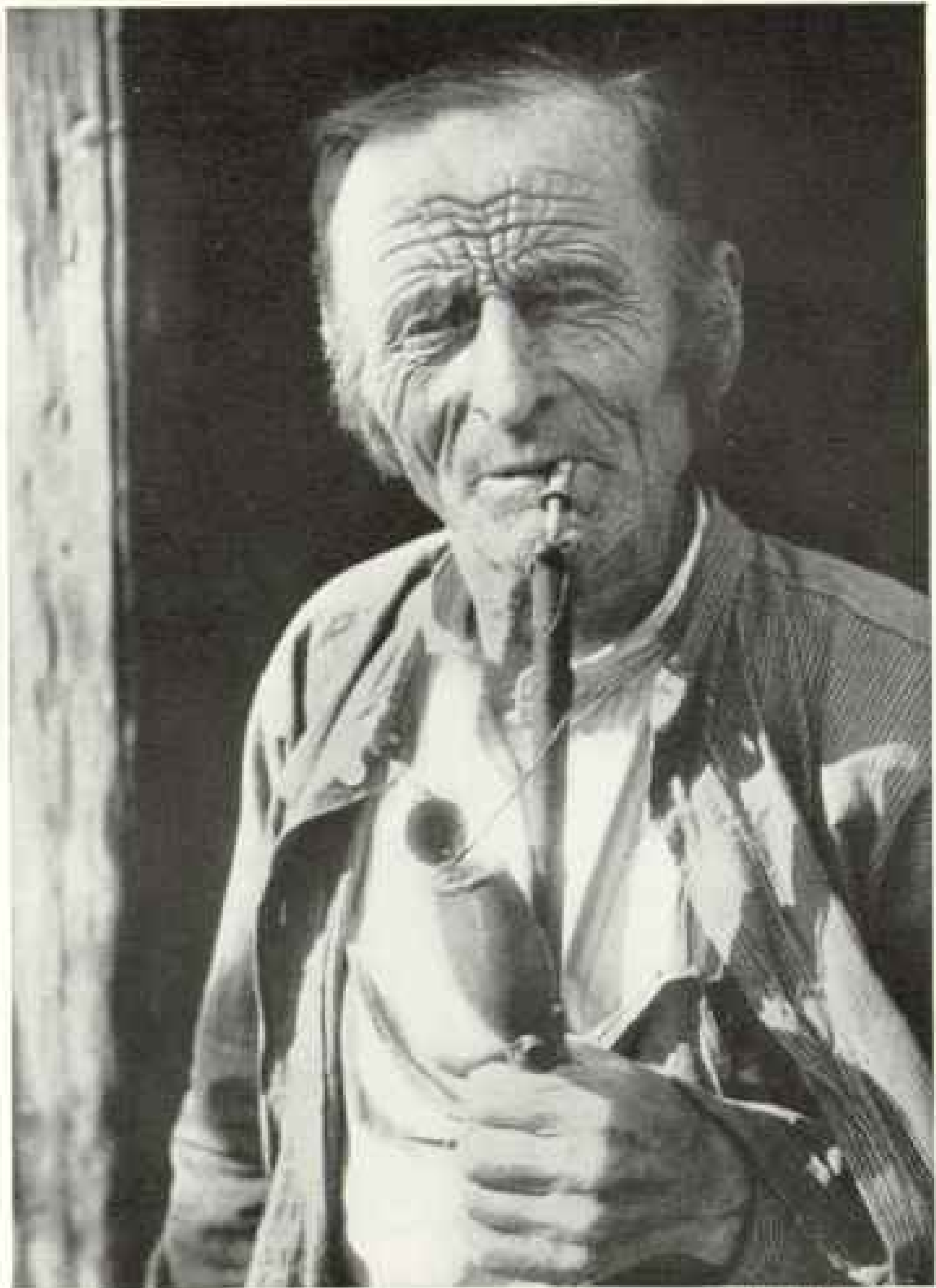
After Worms begins the vineyard district of the Rhine.

The hills on either side become precipitous with steep-stepped little terraces where every inch is scrupulously cultivated, while here and there castles appear. Our last night on the Rhine was spent at the foot of the castle of Oppenheim, which gives its name to another brand of hock.

On the whole, however, we found the Rhine altogether too congested for pleasant sailing. As soon as Mainz showed up on our port bow we put the helm over, and, setting an easterly course up the Main River, began the long climb up to the Ludwigs Canal.

With little difficulty we reached Frankfurt, where we received a rousing welcome. Here we were entertained royally, and *Hawke* once again aroused interest. We found the town a place of striking contrasts. On the one hand is the most daring modern architecture, and then, almost across the way, is seen the little Alt Stadt (Old Town) that has remained almost unchanged for 400 years (pages 544 and 545).

Every midday saw us wandering through the narrow, crooked streets and taking our lunch in the open market place, which claims to be the original home of the "hot



© Merlin Minshall

NEVER A SAILING SHIP HAD HE SEEN BEFORE "HAWKE" CAME

Most of this wrinkled Bavarian's life has been spent in the quiet mountains near Ludwigs Canal, where he tills a small farm and contentedly smokes his enormous pipe.

dog." At night we used to roam along the same dimly lit alleyways—Rapunzel Gasse, and the Römerberg, where, around every corner, we expected to see lurking the shadowy figures of goblins and witches, emperors and men-at-arms.

"HAWKE" STRANDED IN A CORNFIELD

But we had a long and arduous climb before us, as we discovered soon after leaving Frankfurt. Slowly we struggled past Offenbach, where Goethe visited Lili, and on toward the field of Dettingen, the last place where an English monarch, George II, led his troops on the battlefield.



© Merlin Minshall

"GRAF ZEPPELIN" SOARS OVER NÜRNBERG AS NAZIS SALUTE REICHSPFÜHRER HITLER

Down a steep, narrow street, past sedate gabled houses bedecked with red swastika banners, citizens hurry to watch legions of brown shirts from all over Germany parade before the Realm-leader. Once an important distributing point on the medieval trade route between Germany and the East, Nürnberg owes her modern prosperity to manufactures, including toys and lead pencils.

Just before Aschaffenburg we anchored one night, and woke up with the dismal sight of *Hawke* standing high and dry in a cornfield. Such was the caprice of the river floods. It took two tugs and many marks to drag us back into the narrow channel, but that night we anchored in deep water under the frowning castle of art-loving Ludwig I of Bavaria.

From the lofty windows of the royal bedroom is visible the Pompeianum, built by Ludwig, a reproduction of the house of Castor and Pollux at Pompeii.

At Aschaffenburg begins a great project for making a new fresh-water link through to the Danube, an undertaking which has

already cost the Government many millions of marks.

After a few days we set off again, but what appeared to be a gentle stream was in reality a millrace.

TOWED BY A "CHAIN BOAT"

After no more than ten miles we had to drop anchor and await the passing of the *Kettenschiff* (chain boat), an antique tug that worked itself up on a continuous chain all the way from Aschaffenburg to Bamberg.

This strange-looking craft progressed in cable-car fashion, clanking and grumbling as it swallowed and disgorged the rusty

links of a chain nearly two hundred miles long. Barges and other boats hitchhiked behind.

So began for us a pleasantly lazy period in tow, when all day long Crew lay back basking in the sun, watching the beauties of the landscape unroll their changing colors.

At times the river wound through deep wooded gorges; at others through a rolling farmland in which little fruit trees stood among the variegated plots of rye, barley, and tobacco. We passed medieval villages, and little walled towns that look today much as they must have appeared to Albrecht Dürer when the artist made his famous journey by boat down to the Netherlands, more than 400 years ago.

PEASANTS AND FLOODLIGHTS

At Würzburg we left our tug and paused once more to explore. This little baroque town offers more to the traveler than most places of its size. There was the Residenz, with its famous cellars, the towering castle above the town, and Veitshochheim, that unique residence of the gayest of the old prince-bishops of Europe.

Our arrival coincided with the annual fair, the feast of St. Kilian, Würzburg's patron saint. So we had the good fortune to see the whole town specially floodlighted, the bridges festooned with colored lights, and everywhere the neighboring peasants clad in their native costumes (page 548).

But once again when we were ready to leave, the river rose perversely in flood, and the Kettenschiff service had to be suspended. Fortunately for us, when we were just despairing of ever reaching Bamberg, a large Diesel tug appeared, and behind its convoy of barges we hooked on. Customs of the Middle Ages still prevail among these river folk, and after the second day it no longer surprised us to hear curfew rung, nor to be awakened by the ship's bell ringing matins.

Here the river went through an arid stretch of steeply stepped vineyards. We passed many more villages with blue and gold Madonnas gazing placidly from under baroque canopies across the rushing stream. One evening the four towers of Bamberg's mighty cathedral loomed ahead, and by sunset Crew and I knew for certain that the "Lost Waterway of Europe" really did exist.

We found, too, that it actually was pos-

sible to go through, so now, having reached the canal, we were determined to reach the Danube as well.

A week was spent in formalities, and during this time we had leisure to explore what must surely be the sleepest town in western Europe. Just because it happens not to be on a main route, Bamberg has never been spoiled, and yet it can truly boast some of the finest medieval sculptures in all Germany. For sheer loveliness the old Episcopal Residence, the Alte Hofhaltung, has few rivals.

In Bamberg it would have been easy to while away pleasant months, but we still had a long way to climb to the summit of the Bavarian highlands. So one day there was a great stir in the quiet old city, for the unusual was happening—a ship was passing into the Ludwigs Canal! (P. 550.)

Then unexpectedly, along the deserted banks, we suddenly found ourselves in the heart of Nürnberg, where the "Reichsparteitag," the foremost Nazi festival, was in full swing (opposite page).

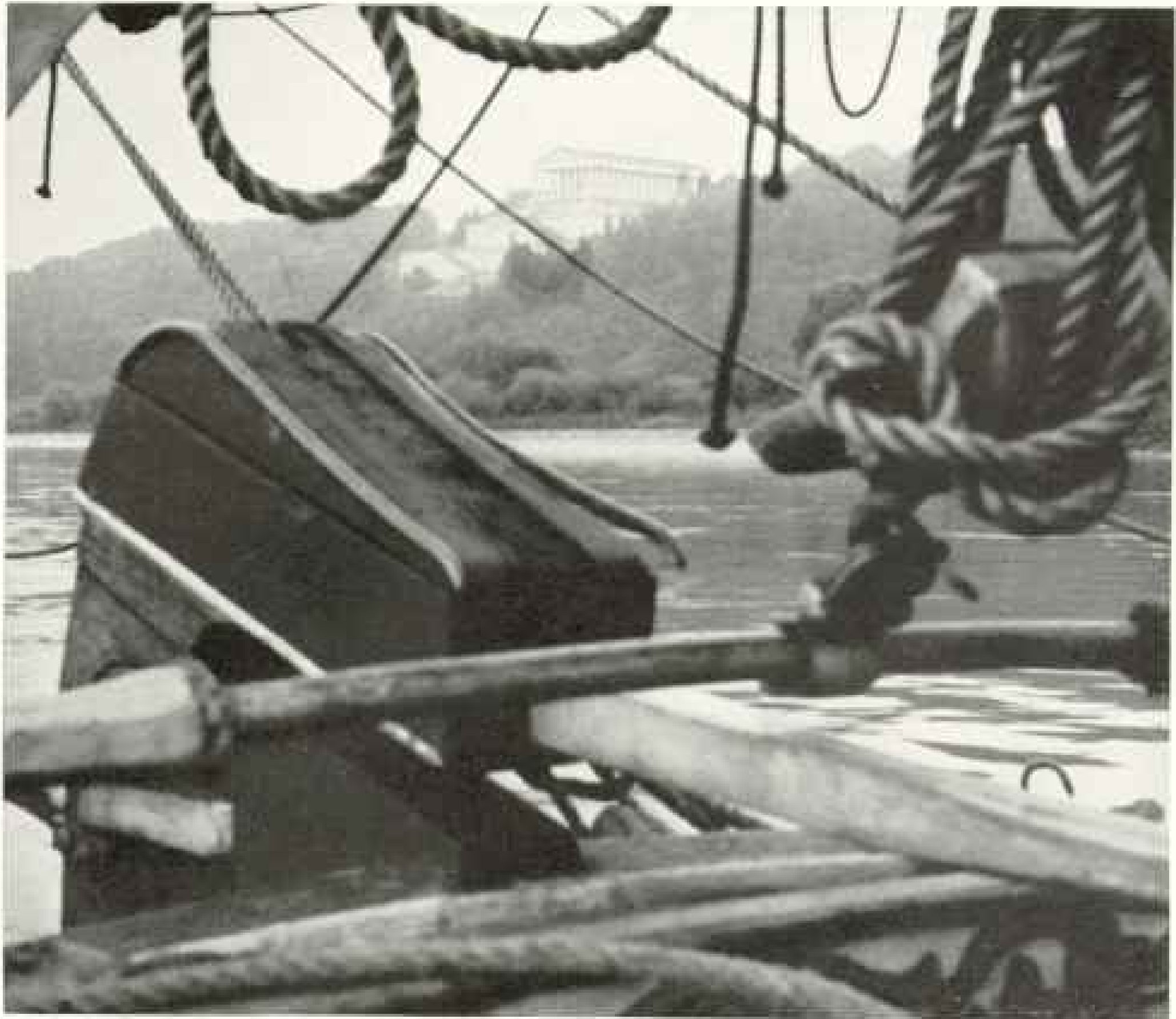
It was unforgettable, seeing this venerable town transformed by flags, banners, and myriad brown shirts into a gigantic military parade, noting the wild enthusiasm as each day Herr Hitler drove through the streets in state to address some mass meeting. Every night the entire town was illuminated by fireworks displays and torchlight marches, while ceaselessly, day and night, droned overhead the might of Germany's air squadrons.

It was almost impossible to visit the many antiquities, and so we went on our way, having but improperly observed one of the most interesting towns in central Europe, with its Meistersingers, its castle, and the all-pervading spirit of the immortal Dürer.

"EUROPE LAY AT OUR FEET"

After Nürnberg the canal begins climbing steeply through thickly wooded hills, and as we rose higher there came the strange sensation of looking down from *Hawke's* decks upon the roofs of little villages far below us, with fairy-tale castles away on the distant hills, until one day we had reached the summit and found ourselves under full sail right among the clouds. Europe lay at our feet.

Soon we were descending rapidly through a pleasant countryside, and came unexpectedly upon the gigantic fortress of Prunn, celebrated as a resting place of the



© Merlin Mitchell

HIGH OVER THE DANUBE, LUDWIG I BUILT VALHALLA FOR GERMAN HEROES

Seen over *Hawke's* rudderstock, the Bavarian monarch's marble Hall of Fame resembles the Parthenon at Athens. Ludwig, who had a passion for erecting monumental buildings as well as the canal, dedicated this columned temple near Regensburg in 1842. A terraced flight of steps leads up to it from the river.

Nibelungen (page 547). Then we reached Kelheim, where the Danube comes out from its narrow gorge, showing us a river that might be beautiful, but certainly was not blue.

AFLOAT, WITH THE HELP OF FARMERS

Once again we had the usual controversy with the river authorities about taking a pilot, but, obstinate as ever, we set off alone, and within two miles had run hard aground in midstream. We were saved the ignominy of returning for help by the kindness of twelve young Bavarian farmers, who swam out to our rescue. In half an hour we were afloat and rushing toward the first real danger spot, the famous bridge of Ratisbon (Regensburg).

The impassability of this bridge dates

back to the time when medieval Venice was at the height of her prosperity. To prevent a Rhine-Danube waterway from being constructed, that city's agents saw to it that the bridge obstructed navigation. Venice could not afford to lose her monopoly of the overland caravan routes!

As skipper I took the precaution of making a trial trip in a small skiff, but this did not allay our anxiety. However, there was nothing for it but to hope for the best and, with hardly an inch to spare, *Hawke* squeezed through at an estimated 12 knots, to the wonder and amazement of the inhabitants of Regensburg.

VALHALLA FOR GERMANY'S GREAT

Next, as we went flashing through the pine forests, was Valhalla, another creation



Photograph by R. Zacharius

ENGLAND'S KING ALFRED IS HONORED AMONG FAMED TRUTONS IN VALHALLA

Ludwig himself chose the celebrities who were to be enshrined under the gilded ceiling. Among the 108 marble busts are those of the philosopher Kant and Emperor William I. Bismarck and Von Moltke were added later, as was the seated statue of Ludwig at the end of the mosaic floor.



© Meritt Marshall

SKIPPER AND CREW TAKE LIFE EASY WHILE BEING TOWED UP THE MAIN

Browned by many weeks "before the mast," they lounge on deck and watch medieval villages, wooded gorges, tiny farms, and terraced vineyards roll by along the river.



"GOOD-BYE, AND THANK YOU FOR THE SHOW!"

At the end of the performances each child in turn says good-bye to the puppet clown. In Austria and Germany the Punch character of the familiar Punch and Judy plays is known as "Kasper."



Photographs by Kurt and Margot Lafinski

ENGLISH LESSONS SEEM EASIER IF TAKEN WITH ROLLS AND COFFEE

Instead of receiving pupils at home, this private teacher invites them to a cafe to practice pronunciation. Vienna's taste for coffee dates back 254 years when the Turks, driven from the city after the famous siege of 1683, left behind a supply of the beans.



IN SMART SAILOR UNIFORMS, VIENNA'S BOY CHOIR TOURED THE UNITED STATES
In 1955 and 1956, 21 members of the *Sängerknaben* (singing boys) sang in New York, Washington, and other American cities. Here they give an open-air choral in their native land.



Photographs by Kurt and Margot Lubinski

VIENNA POLICE SWING ONTO THEIR "WHEELS" WITH MILITARY PRECISION

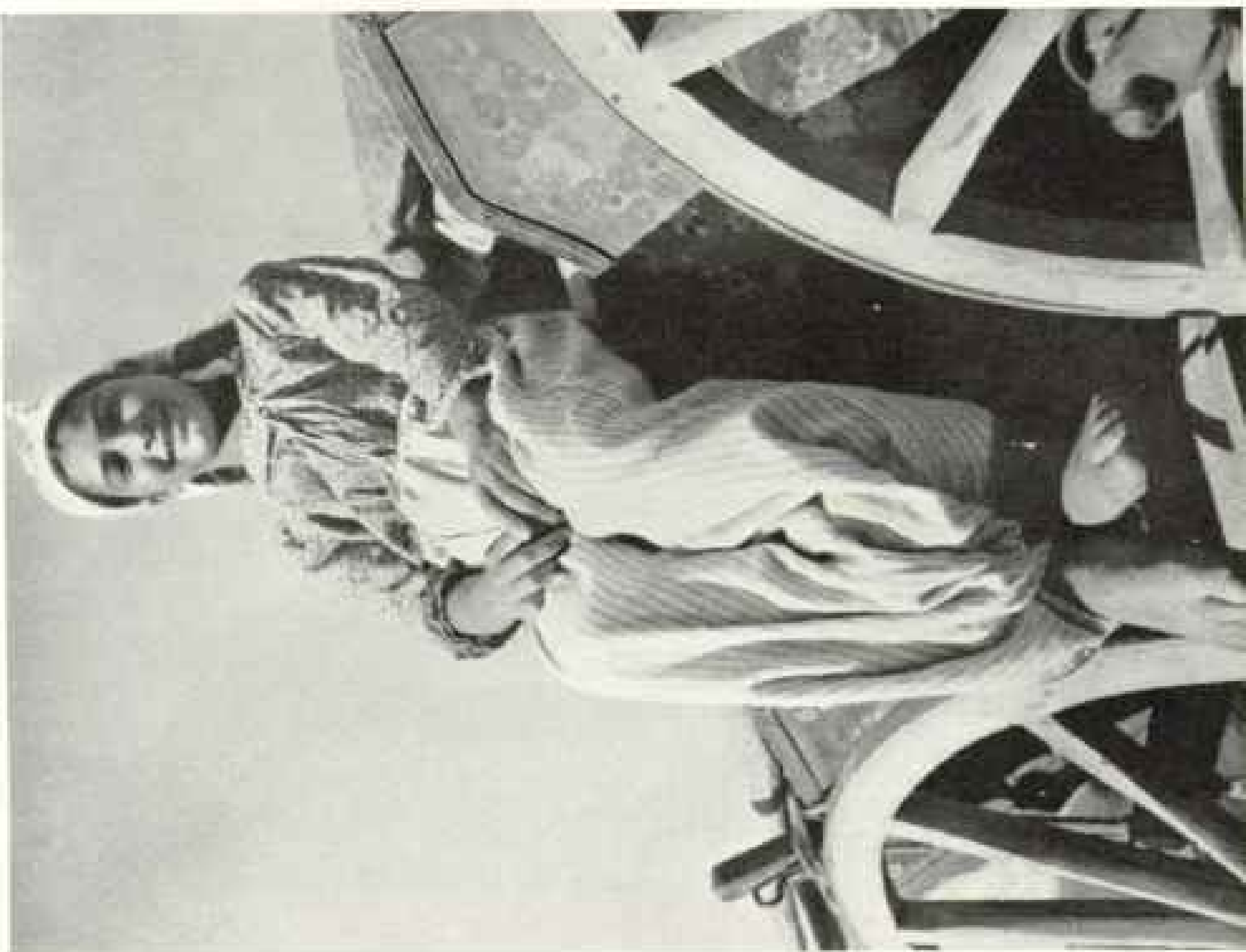
Trained like soldiers, they know how to use rifles, tear gas, and even machine guns in emergencies. Horses, motorcycles, and armored cars are also their "mounts." Recently the force, numbering about 10,000 men, was equipped with steel helmets.



Photograph by Heinrich Schumann

A RICH ROBBER BARON, "FEAR OF THE FOREST," ONCE COMMANDED ACGSTEIN CASTLE.

Into his "rose garden," a deep slit in the mountainside, this legendary figure hurled his victims. A young prisoner finally escaped, returned with his men and captured the castle. The Baron was "hung to a beam in the hall where he had been feasting, and the rose garden was planted" with the robber's chief lieutenant. Only a skeleton of the castle remains today, perched 1,066 feet above the Danube flowing through the Wachau Gorge.



© Metlla Minshakli

"WANT YOUR FORTUNE TOLDE?"

Perched on her painted cart, this young girl is one of the thousands of gypsies that roam the Balkans. A ruler of Rumania, in 1478, granted her ancestry "freedom of air and soil to wander about and free fire and iron for their smithy."



Photograph by Edgar S. Ahrlich

IN DAZZLING APRONS, SERBIAN FARM GIRLS GO TO TOWN

Costumes of country folk color the streets of Belgrade, Yugoslavia's capital, on market day. Skipper and Crew were guests of one of the Russian exiles who settled here after the overthrow of the Tsar.



© Merzia Mitchell

BUDAPEST YACHTSMEN GATHER FOR A REGATTA, BUT "HAWKE" DOES NOT RACE!

The little vessel from the other side of Europe received a warm welcome when she nosed into the twin city's lively river traffic, with its scurrying ferries and barges, whose curved prows suggest ancient galleys. Seldom blue, despite Strauss's waltz, the Danube is more apt to be gray, green, or yellow.



Photograph by Erno Vadas

SHADOWY ARCHES FORM A TRIPLE PICTURE OF BUDAPEST'S WATERFRONT

The Danube divides this beautiful capital of Hungary into two parts, Buda and Pest. On the Pest side rises the immense Parliament House, whose long portico becomes a gay outdoor cafe at night.

of the same King Ludwig of Bavaria. Not content with his Pompeianum (page 552), he went even further afield, erected a full scale reproduction of the Parthenon, and filled it with effigies of Germany's great men (pages 554 and 555).

On we sped past Straubing, and drew near to the cataract of Vilshofen. But where we expected to find rapids, we came upon a broad expanse of water, the result of the new hydro-electric station of Kachlet, which before long will be transmitting power over a wide area. Into a vast lock *Hawke* crept, feeling very much dwarfed, and a full 40 feet she sank, as the top of her mast came just level with the parapet.

The next minute we were swivling round a rocky promontory, and found ourselves in Passau.

Where the Inn rushes down to meet the Danube, there stands a vast rock which makes a strategic site for a town, and here has grown up Passau, with its little arcaded streets and copper-domed, half-Gothic cathedral, so ornate and colorful that it appears somehow as if it had been permanently dipped in Mediterranean sunshine.

We cleared customs and, with an escort of soldiers trying to keep up with us along the bank, sailed away into Austria.

The Austrian frontier at Engelhartzell is situated just where the river seems to put on speed, and it was all we could do to stop, even with an indignant customs boat straining to hold us against the current. We underwent a prolonged search, not, as might be supposed, for opium or whisky, but for Nazi newspapers, of which we unwittingly had a score. Having surrendered these, we were allowed to proceed, and came down through the steeply wooded hills of the Wachau, with its majestic castles and fabled whirlpool.

All this stretch of the Danube is tricky; once we nearly came to grief on the rocky promontory of Dürnstein, where Blondel is said to have discovered his beloved master, Richard the Lion Heart, imprisoned there on his way back from the Crusades.

A BERTH UNDER A BRIDGE

It was a surprise to find that Vienna lay not on the Danube, but had to be approached by a narrow and carefully guarded canal. After the usual tedious formalities we entered this canal and found a berth under the Marien Bridge. Here we stayed for many weeks; it was long since *Hawke*

had been in such pleasant surroundings.

From our deck we could see away up the Rotentum Strasse to St. Stephen's Cathedral, while the Ring itself lay just beside us.

It was quite evident now that *Hawke* could not go on this winter—nor, for that matter, could she go back. The pack ice on the Danube was something that even *Hawke's* two-inch oak timbers had to respect.

So with no very definite plan for the future I returned to England, leaving Crew in Vienna for winter sports and *Hawke* for a winter overhaul.

What happened to me during the next eighteen months is no part of this story, but I did not return to *Hawke* until the spring of 1935, having in the interval driven cars in international road races, designed a hotel, seen a little of life and most of Europe. Crew meanwhile had settled down permanently in England.

"HAWKE" RESUMES HER JOURNEY

My return to Vienna was precipitated by a firm intimation from the Austrian Customs that, as *Hawke* had stayed more than a year in Austrian territory, she was now liable to a duty of 21,390 Austrian shillings—and in 1935 an Austrian shilling was worth nearly 25 cents!

So I had *Hawke* refloated in split seconds (that means about ten days in Austria) and with a scratch crew sailed away from Vienna, cleared the customs at Hainburg, and set off through the interminable willow swamps for Budapest.

All went well for a few miles, and then in the middle of the Czech town of Bratislava, under the shadow of the ruined castle of the Empress Maria Theresa, we failed to notice some telegraph wires, which *Hawke's* 40-foot mast brought down *en bloc*. As *Hawke* had no permit to stop in Czechoslovakia—it was assumed that she would go directly through into Hungary—we hurried on. But fate decreed that we were not to escape that easily, for a hidden sandbank caught us, and this time even the wind, which was blowing half a gale, failed to move us.

So the skipper had to return on foot to the scene of our misdeeds to try to get help. But help was not forthcoming, and with the water falling hourly, things began to look rather black. Finally the skipper marched more boldly than he felt into the local barracks and put his case before the



© Meritt Minshall

SHOOTING THE DANUBE'S IRON GATE IN ROMANIA, "HAWKE" IS ALMOST CRUSHED BETWEEN TWO BARGES

Made fast to the vessels, the author's craft was towed through the dreaded seven-knot current, where sharp rocks are hidden just below the surface. Soon after the picture was taken, the towropes snapped and *Hawke* was left helplessly spinning in the raging stream. Luckily, the yacht's small motor started immediately and took her clear of the rocks after a half-hour struggle (page 564).

commandant. Luckily this Czech soldier proved to be a sportsman, and volunteered to put at *Hawke's* disposal the entire visible Czech Navy—which comprised some 30-foot motor gunboats.

Thus, what had appeared a disaster, ended happily, for the Czech Navy had *Hawke* floating in less than an hour; no questions were asked about her missing papers, and without further trouble we came to the Hungarian frontier at Szob. From there, with no more arduous formalities than the affixing of an enormous lead seal, *Hawke* arrived in Budapest.

Immediately we became the center of in-

terest, and everything was done to make our stay agreeable, even to providing a police landing stage and placing two policemen at our disposal. Everybody was more than kind, and many weeks were spent in an enjoyable round of dinners, visits to country estates, and regattas.

A background for all these pleasant diversions was the city itself, offering an enormously rich variety of interest.* There were new foods, new wines, new costumes, and even new dances to study—that is, if

* See "Budapest, Twin City of the Danube," by J. R. Hildebrand, NATIONAL GEOGRAPHIC MAGAZINE, June, 1952.



© Mettu Mitchell

"HAWKE'S" MAINSAIL IS FURLED AS SHE HALTS AT A RUINED FORTRESS WHERE
SLAV FOUGHT TURK

George Brankovich, a Serbian prince, built these battlemented walls and square towers more than 500 years ago, but they were not strong enough to repel Turkish invaders. From vineyards here at Smedzrevo, on the Danube below the Yugoslav capital, Brankovich transplanted vines to his estate of Tokay in Hungary, and from the grapes comes today's celebrated white wine.

one were bold enough to attempt Hungary's wild traditional *csárdás*—while always, like a golden thread running through a rich tapestry, was the haunting melody of gypsy music.

Before leaving for the descent into the real wilds of the Balkans, we picked up two Netherlands journalists, the Viennese crew having had to return home. Then we set off toward Yugoslavia.

No sooner had we crossed the border than we noticed an extraordinary change. People and officials alike seemed suspicious of *Hawke*. At Bezdan the harbor master refused us permission to pass, and we had

no option but to escape at night and hurry on to Belgrade to get the necessary permits through the British Legation.

Belgrade had some of the aspects of an overgrown village. A number of ships were tied up at the port, and we were on the point of leaving for lack of room when the commodore of the Russian Yacht Club came to our rescue and made us his guests.

NEARING THE DREAD IRON GATE

All the way down from Budapest the river had offered little of interest, beyond a wide expanse of willow swamps with very occasionally a small village, but soon after



© Merlin Mitchell

PLENTY OF WATER IN THE DANUBE, BUT BULGARIANS PREFER IT COOL AND PURE

A long sweep, pivoted on the post to the right, raises the bucket from the smaller well in the background. The woman with a yoke has just obtained her household water supply. Flowing slowly, sometimes half a mile wide, the river separates Bulgaria from Romania on the opposite shore.

Belgrade we entered Romania and approached the dread Iron Gate. Already the water was so low that it had become dangerous for the regular passenger service, and for *Hawke* to keep steerage way in a seven-knot current seemed taking rather a big chance.

Engaging a pilot, with the inevitable confusion of languages, was likely to make matters worse, so at Drenkova we waited for one of the big motor tankers that ply between the Romanian oil fields and Vienna. Behind this we tied on, and came at breakneck speed into the Kazan Gorge.

Here the Danube, swift and treacherous, cuts its way between the Balkan Mountains and the Transylvanian Alps, and here, some

2,000 years ago, passed the Emperor Trajan, victorious from his Dacian campaign. Just where the river narrows down, and where the remains of Trajan's bridge still stand, we came near losing *Hawke* altogether (page 562).

TENSE MOMENTS

The strain was too much, for suddenly, with the report of a gunshot, one of *Hawke's* oak bollards came in half. Immediately the second towrope snapped, and we were left helplessly spinning in the most dangerous spot on the Danube.

Sails couldn't help us; it was a windless day. Everything depended on the motor. It started at the first swing, but not until



© Merlin Mitchell

"HAWKE" ANCHORS IN ROMANIA, BESIDE AN OLD WATER WHEEL.

After the spring floods, farmers hurriedly plant corn or wheat in the rich alluvial soil, hoping to harvest their crops before the next inundation. About four out of five of King Carol's subjects live by agriculture or stock-raising.

Hawke had been swept broadside on against the rocky shore. There followed an agonizing half hour fighting to keep clear of the rocks.

But at last we arrived in the still water beside Turnu-Severin and proceeded to anchor for the night.

A SHOT IN THE NIGHT

Just as dusk fell, and we were beginning to think our troubles for that day were over, two shadowy figures appeared on the shore and demanded that we land immediately. Before the skipper could explain that we were an English boat bearing an international permit for this part of the river, there came the rattle of a magazine,

and the next moment a bullet buried itself in one of *Hawke's* massive oak leeboards.

Immediately we put out our anchor light, and placed a temporary barricade in the cabin. It was clearly no use trying to argue with people whose rifles went off so easily, and so the night was spent wondering when the next shot would hit us.

Next morning while it was still dark the anchor was raised silently, and *Hawke* drifted away downstream, to the extreme annoyance of the soldiery, who only discovered our escape when we were already a speck in the distance.

The same afternoon we arrived at Calafat and reported the events of the previous night to the harbor master. That official



© Merlin Minshall

SHAGGY AS A BEAR, A BULGARIAN VISITOR BOARDS "HAWKE"

His heavy sheepskin cloak contrasts with the brief trunks worn by the bronzed journalist, one of the Netherlanders whom the author took aboard at Budapest. The bull terrier is now a seasoned yachtsman, having cruised all the way from England.

apologized sincerely for the misdeeds of his countrymen, and advised us strongly to remain always in midstream to avoid further misunderstanding.

We again set off, and as the heat grew worse the current went slower, while all day long there was not so much as a bucketful of wind and we had to chug along on the motor.

These lower reaches of the Danube we found monotonous because the river merely wound through barren swamps. Everything seemed lifeless; even the water fowl, herons and sad-faced pelicans, gazed at us immobile as we slid past. The farther east we went the more unusual became the

costumes among the peasants who flocked down to watch us go by. Long baggy trousers, yashmaks (veils), and turbans were daily sights, and now and then would appear needlelike minarets, tokens of a not-long-distant Turkish rule.

BARTERING CIGARETTES FOR FOOD

Ever since Budapest, food had been a problem. After the first few attempts, we had given up the idea of eating meat, and milk and butter were unobtainable, so we became dependent upon such fruit and vegetables as we could barter for a few cigarettes. Even the finest watermelons and grapes begin to pall in time, so that

often, for days at a stretch, we ate little.

Then one day around a corner showed up, quite out of place in this desolate region, the once-important grain town of Brăila, where we paused to rest and lay in provisions for the last lap.

Now all difficulties of navigation were past, as the Danube Commission still keeps a 20-foot-deep dredged channel for grain ships between Brăila and the Black Sea.

From Brăila we sailed down to Galati, where we visited part of the Romanian Navy lying at anchor. Then once again we were out in a flat, desolate countryside. Passing Reni and Isaccea we came to Tulcea which, with its arcaded bazaars, swarthy turbaned peasants, and minarets, seemed like a picture right out of the "Arabian Nights."

Here we left the Danube proper and entered the canal that cuts through the reed-strewn lagoons that border the seashore. Then ahead appeared the three red domes of the Russian church of Sulina, a tall white lighthouse, and a limitless expanse of blue waves.*

Hawke had sailed across Europe!

At our first sight of the Black Sea we were all so jubilant that we talked of going

* See "The Spoil of Romania," by Henrietta Allen Holmes, NATIONAL GEOGRAPHIC MAGAZINE, April, 1934.



© Merlin Minshall.

SULINA, BLACK SEA PORT, IS JOURNEY'S END!

Marking the "finish line" is the curious Russian church with its three bright-red towers crowned by golden crosses. Here Dr. Minshall loaded the *Hawke* aboard a cargo steamer and shipped her home to England.

on to Istanbul and even to the Mediterranean. But too little food and too many mosquitoes had given us all a good case of malaria, so such ideas had to be abandoned. I found an English wheat ship loading up and for a few pounds the captain undertook to ship *Hawke* home:

The little craft had done remarkably well. Few boats would have stood up under the brutal treatment she had received during those three years of intermittent voyaging. She had withstood ice and subtropical sunshine, unkind rocks and unfriendly sandbanks. Built away back in 1876, she was now in her sixtieth year and well deserved an honorable retirement.

BUTTERFLY TRAVELERS

Some Varieties Migrate Thousands of Miles

BY C. B. WILLIAMS

Chief Entomologist, Rothamsted Experimental Station, Harpenden, England

MANY people believe that all butterflies live but a few days, and that they keep quite close to the locality where they hatched from a chrysalis. This is true of most species, but there are others which live for weeks, sometimes for months, and instead of fluttering around they may set off in a definite direction and fly some hundreds, or even thousands of miles from their birthplace before settling down to lay their eggs.

This habit of changing location, or migration, has been known to occur in birds and locusts since ancient times, and has been suspected for about a century in the butterflies and moths. The Cotton Worm Moth of the southern United States (Plate VI, figure 10) was one of the first in North America to come under suspicion. Today the habit is also known among some dragonflies and beetles, particularly the ladybirds, and more rarely in other groups of insects.

The butterflies may migrate singly or in large numbers. Flights estimated to contain more than a thousand million individuals have been recorded. The sight of one of these butterfly movements, the insects passing for hours and even days, steadily pressing on in one direction, is an event in the life of any naturalist.*

EVIDENCE LIKE A JIGSAW PUZZLE

By piecing together scattered and incomplete information, much as one might try to fit together a jigsaw puzzle of which most of the pieces have been lost, we begin in a few cases to have some idea of the extent of the movements; of where the butterflies start, what route they take, and where they come to rest.

By far the best known of the migrants is the Monarch or Milkweed Butterfly (*Danaus plexippus*, Plate IV). This magnificent insect has its headquarters in North America and has spread, chiefly in historic times, to the Cape Verde Islands

and Madeira in the Atlantic, and to most of the islands of the Pacific. It is said to have reached New Zealand about 1840 and appeared in Australia about 1870. In both of those countries it is now established.

In the past sixty years nearly a hundred individuals have been seen in Great Britain and a much smaller number in France and Portugal. Nearly all these were observed in the autumn. The food plant, milkweed (*Asclepias* sp.), does not exist wild in Europe, so the butterfly has never become established there. It is not yet known for certain whether the European specimens have flown across the Atlantic, assisted by the prevailing westerly winds, or have been carried across in ships.

In North America this butterfly is found during the summer throughout the United States and Canada as far north as Hudson Bay and, in the West, occasionally as far as Alaska. In the early autumn, the butterflies congregate into bands and fly southward, starting from Canada about the end of August and reaching the Gulf States about the beginning of November. On the west coast they do not go so far south, and may winter in the neighborhood of San Francisco.

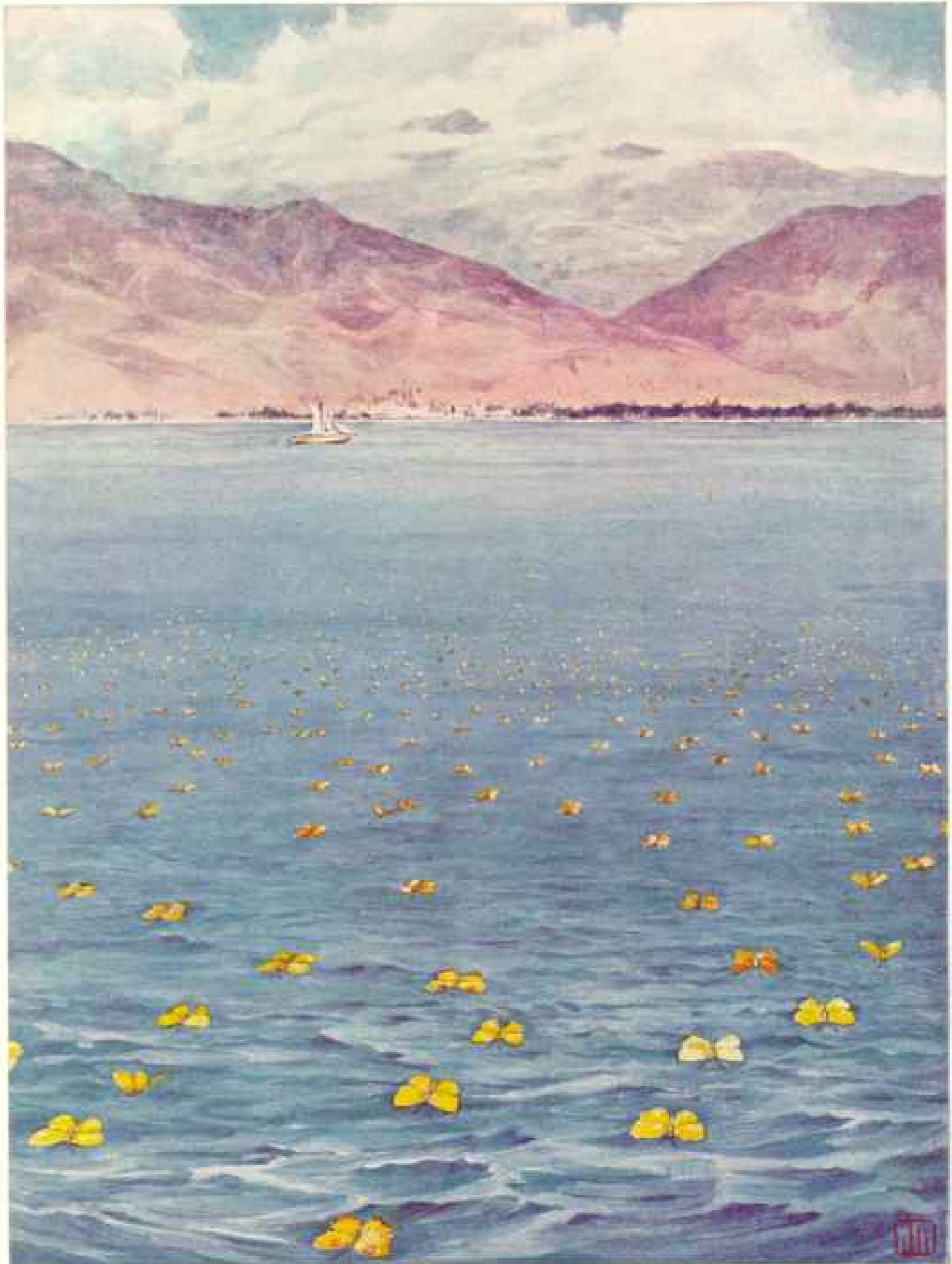
Having reached the end of their southward flight, the butterflies settle on trees, still keeping to their large bands, and spend the winter in a state of semi-hibernation. They flutter around a little on fine warm days and in cold weather creep closer to the shelter of the trees.

The same group of trees may be used year after year by hibernating Monarchs, although the same individuals never return south a second time. One of the localities, on Point Pinos on Monterey Bay, California, is a show place for visitors.

In the spring the bands begin to break up, and the butterflies fly northward individually, pausing here and there to lay eggs as they go. They start about March, reach the level of West Virginia about April, and Canada at the end of May or early June. The return flight starts after about three generations in the middle States, two in the North, and after a single generation in Canada.

* See, in THE NATIONAL GEOGRAPHIC MAGAZINE, "Butterflies—Try and Get Them," by Laurence Isley Hewes, and "Who's Who Among the Butterflies," by Austin H. Clark, May, 1936; also "Strange Habits of Familiar Moths and Butterflies," by William Joseph Showalter, July, 1927.

NOMADS AMONG THE BUTTERFLIES



© National Geographic Society

Painting by Hashime Murayama

FAR-FLYING WANDERERS, WINGS FLAPPING VIGOROUSLY, HEAD FOR THE OPEN SEA

Thousands upon thousands of butterflies make up this golden horde, seen from a steamer deck near La Guaira, Venezuela. Seldom do they rise more than three feet above the surface of the Caribbean. Where they go, and why they leave home, no one knows. The yellow "Traveling Butterfly" (Plate II, fig. 3) comprises nearly half the group; numerous also is the orange *Phoebis argante* (Plate II, fig. 5). Stragglers include *Phoebis philea* (Plate II, fig. 4) and *Phoebis cypris* (Plate II, fig. 6). About 250 species of butterflies are known to migrate. Most of them take only one-way passages from their birth-place; a few make return flights.



Photograph courtesy American Museum of Natural History

MASSED LIKE SWARMING BEES, MONARCHS CLING TO A TREE

With infinite patience and skill, 1500 of the butterflies (*Danaus plexippus*) were mounted and arranged in these lifelike positions for the exhibit in the American Museum of Natural History, New York. Monarchs are the most familiar of the migrating butterflies in northeastern United States. Much larger gatherings than this have been observed in nature (Color Plate IV).

So far as I am aware, no Monarchs are normally found in Canada and the northern United States during the winter, although individuals have been seen in Toronto as late as the beginning of November.

The southward-flying swarms are often very conspicuous, as they may consist of tens of thousands of butterflies flying up to three hundred feet or more in the air, and when they settle for the night they may actually seem to change the color of the vegetation by their numbers.

MILLIONS ON THE WING

Hamilton, writing of a swarm in New Jersey in 1885, said: "The multitudes of this butterfly that assembled here in September are past belief. 'Millions' is but feebly expressive. 'Miles of them' is no exaggeration."

Ellzey, in 1888, describing a flight that he saw in Maryland, wrote: "The whole heaven was swarming with butterflies. There were an innumerable multitude of them at all heights, from say 100 feet to a

height beyond the range of vision except by the aid of a glass. They were flying due southwest in the face of a stiff breeze."

Shannon, in 1916, suggested that this butterfly used definite flight routes on its way south, but the small number of records still available makes it doubtful if his conclusion is justified.

Another of the world's great migrant butterflies, more widely distributed but less completely understood than the Monarch, is the Painted Lady (*Vanessa cardui*).

In North America this butterfly is practically never seen in the winter in any stage (although actually one was recorded in Colorado on January 1, 1935!). In the spring in some years countless millions of Painted Ladies pour into southern California (and probably also into Arizona, New Mexico, and Texas) from some unknown source in Mexico or beyond.

One such flight, seen by McGregor in April, 1924, was at least 40 miles wide and was passing for three days at a speed of about six miles an hour. McGregor esti-

mated about 300 butterflies per acre, or a total of about *three thousand million* in the whole flight.

There are records of similar great invasions in 1901, 1914, 1920, 1924, 1926, and 1931, but in other years scarcely any butterflies are seen.

PAINTED LADY AS FARMER'S FRIEND

The Painted Ladies spread northward and eastward over the United States and southern Canada, and in 1931 they were so abundant in some of the North Central and Northeastern States that farmers rejoiced at the wholesale destruction of their thistles and asked the Department of Agriculture if these valuable insects could not be encouraged! They are not everywhere so popular, however (page 585).

We have to admit that nothing is yet known about what happens to the offspring of these immigrants, except that they disappear. The most natural explanation would be that they return to the South in the autumn, as do the Monarchs, but there is little evidence to support this belief.

The Painted Lady makes even more definite flights in Europe and North Africa. Swarms appear to originate somewhere just south or north of the North African desert-belt in the early spring. They come into the coastal areas of North Africa from the south about April, cross the Mediterranean (sometimes in hundreds of thousands), and pass more or less northward through Europe. They reach England about the end of May or the beginning of June, and occasionally carry on as far as Iceland, where they have been recorded about six times in the last sixty years.

Farther east they spread northward through the Caucasus and on into Russia, where they have been recorded almost as far north as the Arctic Circle.

Except in the extreme north, the immigrants lay eggs which hatch and grow to be adults, and there are some records of autumn flights which are evidently composed of the offspring of the spring migrants; but, as in North America, the evidence is insufficient at present to prove a return to the south. If such a return flight does take place, it is probable that the insects move individually (as in the spring flight of the Monarch) and not gregariously.

The only known record of the start of a flight is an observation made many years ago in the Sudan, when a naturalist (S. B. J.

Skertchly) in March, 1869, saw thousands of chrysalides of the Painted Lady hatch simultaneously and the resulting butterflies fly off in a mass.

Perhaps the best circumstantial evidence of the return flight in the autumn comes also from Africa, as an elderly ornithologist has told me that some years ago in Egypt he saw, on more than one occasion, Painted Ladies coming ashore on the north coast in August and September, along with the migrating quail.

Farther south, in Nigeria and the Gold Coast, the Painted Lady appears suddenly about September or October, and there are three or four records of mass flights out at sea between the African coast and the Cape Verde Islands, also in the same two months. How these fit in with the movements farther north is not yet clear.

SOME PAN AMERICAN FLYERS

In North America another regular migrant is the Cloudless Sulphur or "Traveling Butterfly" (*Phoebis sennae* or *cutule*, Plate I and Plate II, figure 3), which appears to come north from tropical America in the spring and to return south in the autumn. There are records of the southward flight in Georgia more than 50 years ago, and also in South Carolina, New Jersey, Alabama, and Arkansas, but the northward flight in the spring is less documented.

The same species, along with the Embossed Wing Sulphur (*Phoebis statira*), *P. phileca* (Plate II, figure 4), *P. argente* (Plate II, figure 5), and other members of the genus, is a regular migrant in tropical America, for example in Venezuela, Trinidad, and British Guiana. It has also been seen in flights as far south as Argentina, where it goes northward toward the Equator in the Southern Hemisphere's autumn (March and April) with many other butterflies.

The Great Southern White (*Ascia monuste*) makes flights in Florida chiefly toward the south in May and June, and has also been seen in mass flights in Jamaica, Costa Rica, British Guiana, Uruguay, and Argentina.

The Snout Butterfly (*Libythea bachmani*) has been seen several times in enormous migrations in Texas, usually in August or September. One of these flights in September, 1921, was said to extend over a front of 250 miles, and one and a quarter million butterflies passed per minute on the whole front. The flights are



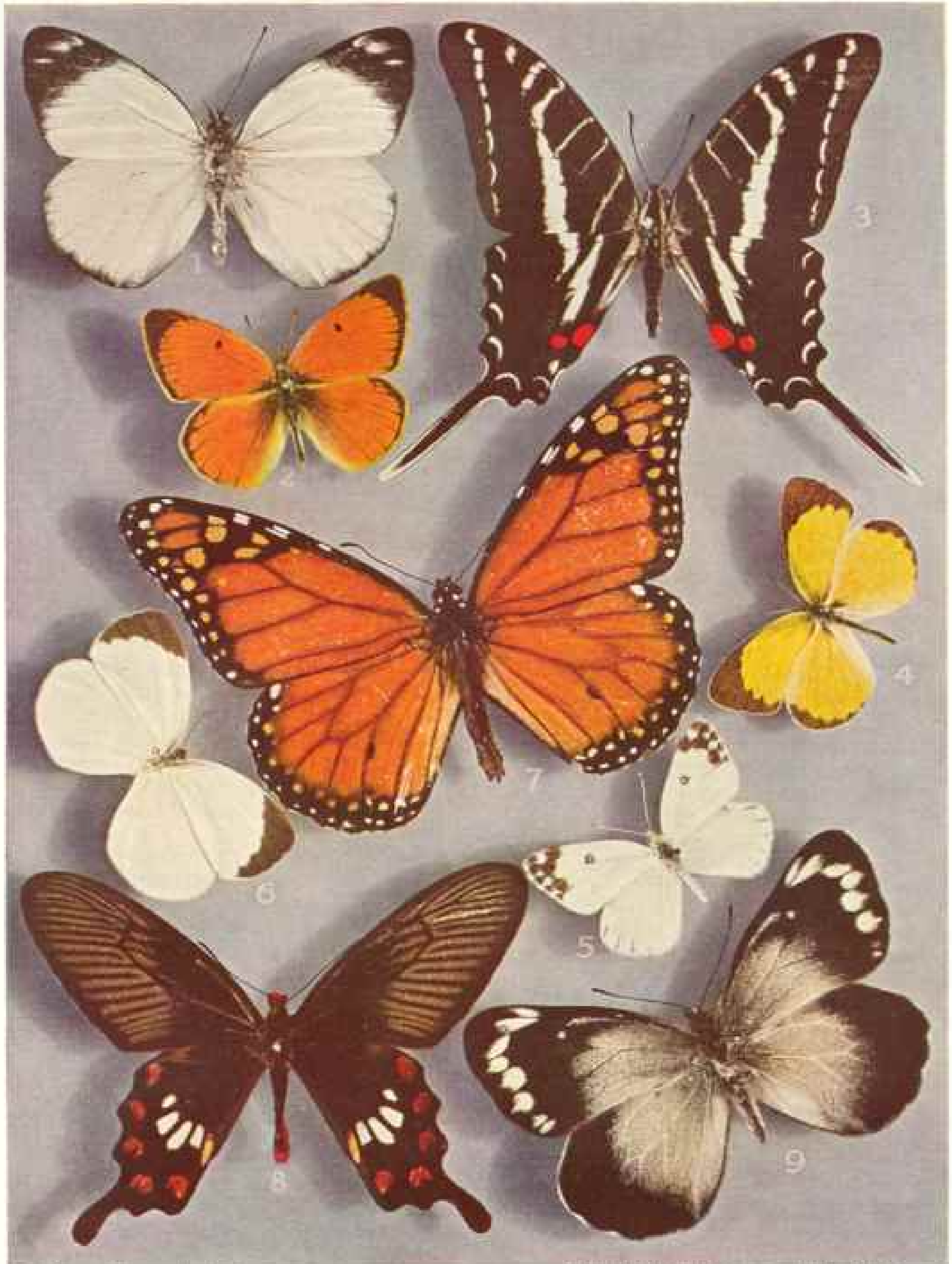
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Natural Color Photograph by Willard R. Culver

MANY STRONG-WINGED EXPLORERS WEAR BRIGHT COLORS

(1) *Terracolus fausta*, Syria; (2) *Terias lydia*, Mexico; (3) a close-up of the yellow "Traveling Butterfly" (*Phoebis cubile*), portrayed in mass migration in Plate I, tropical and subtropical North and South America; (4) *Phoebis philea*, tropical America, has been caught in New York and Nebraska; (5) *Phoebis argente*, tropical America; (6) *Phoebis cypria*, tropical America; (7) *Terias veneta*, India; (8) *Appias albina*, East Indies; (9) *Terias hecabe*, Philippine Islands; (10) Western Checkered White (*Pteris occidentalis*), western United States.

NOMADS AMONG THE BUTTERFLIES



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AMONG THESE MIGRANTS FROM FAR AND NEAR ARE SEVERAL OFTEN SEEN AT SEA

Under sides of wings are frequently more brilliant than the upper. (1) *Delias nigripa*, upper side, Australia (under side shown in Plate VII, fig. 1); (2) *Colias lesbia*, Argentina; (3) *Papilio philolaus*, Central America; (4) *Terias lisa*, eastern North America; (5) *Pontia daplidice*, northern Africa; (6) *Terias albula*, South America; (7) *Danans crippus*, South America, which resembles its North American cousin, the Monarch, and is seldom observed over the ocean; (8) "Rose Butterfly" (*Papilio aristolochiae*), Ceylon; (9) *Delias*, species undetermined, Australia, which also prefers to stay on land.

usually moving toward the east or southeast, but nothing is known of their origin or destination.

A remarkable flyer is the little yellow butterfly *Terias lisa* (Plate III, figure 4) which on several occasions has appeared in great numbers in the Bermuda Islands. Undoubtedly these had flown from the North American Continent, whose nearest point, Cape Hatteras, is more than six hundred miles away.

Other lesser known migrants include the Gulf Fritillary (*Dione vanillae*, Plate VI, figure 5), which is said to appear in Kansas only between August and November and has also been seen in flights in the Galapagos Islands and Argentina; and the Californian Tortoise Shell (*Aglaia californica*), the mass movements of which have been seen almost entirely in the autumn in Oregon, California, and British Columbia, often thousands of feet up on the mountains.

While motoring from Medford to Crater Lake, Oregon, July 24, 1932, the Editor of THE GEOGRAPHIC and his wife ran into such myriads of Californian Tortoise Shells that every few moments it was necessary to stop the car to clean the windshield of the crushed bodies. The following day from the crater rim, 8,239 feet, they watched the butterflies flying across the lake in countless numbers, coming from the north and headed south. The flight continued for several days.

The Brazilian Skipper (*Calpodex ethlius*) has been recorded in great swarms in Central America and in the West Indies, and stragglers occasionally reach as far north as Washington, D. C., or even New York, where the caterpillars have been found on cannas. In the island of St. Vincent in the West Indies growers of arrowroot find them a serious pest.

THE MYSTERY OF THE COTTON WORM

As noted, the Cotton Worm Moth (*Alabama argillacea*, Plate VI, figure 10) is a moth that has been known to be a migrant for many years (page 568). It appears in the spring in the Cotton Belt of the Southern States from some unknown source in tropical America and breeds for several generations in the cotton fields.

Then in the autumn, when one might expect it to return south, whence it came, the only evidence that we have is the extraordinary fact that millions of moths suddenly appear around lamps in some of the cities and towns of the Northeastern States

and southern Canada, many hundreds of miles north of the nearest cotton fields, and in an area where it would seem impossible that a single individual could survive.

Are we to suppose that this is the normal behavior of the species? Or do most of them really return to the South, and are these northward wanderings merely mistakes of Nature?

SOME EUROPEAN MIGRANTS

Turning once more to Europe, we find there are a number of migrant butterflies that also are known in North America. *Aglaia antiopa*, which the British call the "Camberwell Beauty" and Americans, more soberly, the "Mourning Cloak," is an autumn visitor in Great Britain, possibly from Scandinavia. It arrives in small numbers nearly every fall and then hibernates.

Very rarely is a survivor seen in the spring, and there is no record of the species ever having bred in Great Britain in spite of the continued search for caterpillars by amateur entomologists for more than a hundred years. There seems to be practically no evidence that the butterfly migrates in North America.

The Red Admiral (*Vanessa atalanta*) is another regular migrant in Great Britain, arriving in the spring and breeding during the summer. Definite evidence is now accumulating that there is a southward movement in the autumn, but a small proportion of the population does undoubtedly hibernate and survive till the following spring without leaving the country.

The three common Cabbage Whites of Europe—*Pieris brassicae*, the Large White; *Pieris rapae*, the Small White, and *Pieris napi*, the Green-veined White—are all regular migrants, the last named, however, much less so than the other two. The Large Cabbage White appears to have a headquarters in some of the islands of the Baltic Sea or in southern Scandinavia, and about July or August countless millions, often like snow storms, are seen passing southward through Germany.

Farther west they appear to fly more toward the west and reach the southeastern shores of Great Britain, where they are at times seen coming in from the sea in large numbers. The Small White, and more rarely the Green-veined White, are often found mixed in the same flights.

The Small White, which was accidentally introduced into North America about eighty years ago, has already increased to suffi-

cient numbers in its new home to indulge in similar mass flights, one of which was seen on the shores of Lake Ontario in August, 1917. The species has also, within the last few years, been introduced into New Zealand, where it is multiplying with great rapidity. It will be interesting to see how soon mass movements occur there, and what direction they will take.

Two other regular migrants in Europe are the Clouded Yellow (*Colias croceus*) and the Pale Clouded Yellow (*Colias hyale*), both of which appear to come north from southern Europe in spring and reach Britain about the end of May or the beginning of June. Here they lay eggs which produce adults in August, but none of these survive the winter in England.

There have, however, been one or two records recently of flights of Clouded Yellows to the south in France in the autumn, so that it is possible that this species also returns to its original home.

Half of the British Hawk Moths (Sphingidae) and many of the smaller moths are also migrants. The Silver-Y (*Plusia gamma*) and the Rush Veneer (*Nemophila noctuella*) are of special interest, as they appear in large numbers, usually at the same time as the swarms of Painted Lady Butterflies. Despite the difference in their size and feeding habits, there is some evidence that all three species migrate in company.

DAGGER WINGS FLY IN COLUMNS

In addition to the species already discussed (page 571), there are a number of other regular migrants in tropical America.

One of the more striking is the Many Banded Dagger Wing (*Athena chiron*, Plate VI, figure 6) which migrates regularly in Mexico, British Honduras, Nicaragua, Costa Rica, and Panama. It was first recorded in 1872 by Thomas Belt in his "Naturalist in Nicaragua." He writes: "They occurred, as it were, in columns. The air would be comparatively clear of them for a few hundred yards, then we would pass through a band perhaps fifty yards in width, where hundreds were always in sight and all traveling one way. I took the direction several times with a pocket compass, and it was always southeast."

Belt concludes: "The beautiful tailed green and gilded day-flying moth, *Urania leilus*, also joins in this annual movement." He was actually mistaken in the name he

used for his species, but the two day-flying moths (*Cydimon leilus* and *C. fulgens*) are perhaps the most beautiful and conspicuous of all the Central American migrants.

The insect known in the West Indies as the "Green Page Moth" (*C. leilus*, Plate VI, figure 7) is found chiefly in Trinidad, the Guianas, and Brazil; while the closely related species, *C. fulgens*, the one seen by Belt, is known to migrate in Mexico, Nicaragua, Costa Rica, and south to Ecuador.

In British Honduras the Swallowtail Butterfly *Papilio philolaus* (Plate III, figure 3) has been recorded passing in great numbers in one direction.

In temperate South America many of the North American migrants reappear, including *Dione vanillae* (Plate VI, figure 3), *Ascia monuste*, *Phoebis cubule* (Plate II, figure 3), and *Vanessa corye*. Charles Darwin, in 1832, saw a great flight, like a snow storm, of yellow butterflies out at sea off the Bay of San Blas, in Argentina. The flight was 600 feet high, a mile wide, and many miles long. The species is now believed to have been *Colias lesbia* (Plate III, figure 2), which is closely related to the North American Clouded Sulphur and to the English Clouded Yellow.

MIGRATIONS IN AFRICA

North Africa appears to be the source of a number of the European migrants and its problems are those of Europe. Tropical Africa is quite separate and has entirely different migrants in the east and in the west. South Africa appears to be closely associated with the East African area.

In western Africa the two principal migrants are *Libythea labdaca* (Plate VI, figure 9), which moves in enormous swarms in Nigeria and the Gold Coast, and *Cymothoe coenis*, which has been recorded in mass flights in the Belgian Congo and Uganda. The former species has been seen moving southward about March or April.

Writing of the former species, Farquharson, in 1918, said: "Early in the rains for two or three days thousands of migrating butterflies pass here (Ibadan, southern Nigeria), flying southward. The negro peasant knows that after this he may safely sow his cereal crops. . . . Towards the end of the rains swarms of the same butterfly return northwards. One may conclude that the rains are over." No more recent observer has reported seeing the return flight to the north.



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Painting by Harbinge Murayama

MONARCHS BY THE SQUADRONS GORGE ON GOLDENROD TO STORE ENERGY FOR THEIR MIGRATORY FLIGHT

These nomads of North America are better known as "Milkweed Butterflies" (*Danaus plexippus*) because the caterpillars feed on that plant. During early autumn, adults frequently congregate in flocks and fly south for the winter. When spring comes, they move northward again, sometimes reaching Hudson Bay and Alaska. Monarchs have spread to Madeira, Formosa, New Zealand, and Australia, where they are now common. A few specimens have been caught in Europe. Whether they flew across the ocean or were carried on ships still puzzles naturalists.



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LIKE FAIRY FRIGATES ABOUT TO BE LAUNCHED SEEM THESE MUD LOVERS WITH HOISTED "SAILS"

On warm, sunny days, myriad wanderers congregate in groups on muddy banks of southern streams. Large yellow ones are travelers shown in Plates I and II, fig. 3; the smaller yellows, Lesser Sulphurs, also fly far (Plate III, fig. 4). The striped butterflies reflected in the water are Zebra Swallowtails (*Papilio marcellus*). Three "Silk Butterflies" (*Papilio philenor*) sun themselves at the extreme left; above the yellows rests a Giant Swallowtail (*P. cresphontes*), and to their left is a single Spicebush Swallowtail (*P. croceipaltes*). In the center is a lonely Parusip Swallowtail (*P. polyxenes asterius*).

Painting by Hishime Murayama



In East Africa there are three principal migrants, a yellow sulphur butterfly (*Catopsilia florella*), and two closely related brown-veined whites (*Belenois mesentina* and *B. severina*). *Catopsilia florella* has been seen migrating in South Africa, Rhodesia, and East Africa, and in the Sudan, and is known to appear suddenly in numbers in Egypt at long intervals.

A FLIGHT FOR 16 WEEKS—AND STILL GOING STRONG!

I observed a thin migration of this species flying to the north in Tanganyika in 1929. The flight continued every fine day for 16 weeks and was still going on when I left the locality.

Belenois mesentina has much the same range, and also regularly appears as an immigrant in southern Palestine. In East Africa it moves in huge bands nearly every year between January and April, but is then replaced by the second species, *B. severina*, which appears to continue moving till about the end of July. Both butterflies feed on the caper plant (*Capparis*), found in arid and semi-desert country. This probably explains why they are not seen on the damp, forest-covered west coast.

On the east coast of Africa there is also a migrant skipper butterfly (*Andronymus neander*), which passes through northeastern Tanganyika nearly every year in March, flying to the south. One flight that I saw lasted for 48 days and reached a maximum intensity of about 500 insects per minute passing on a twenty-yard front.

MIGRANTS IN ASIA AND AUSTRALIA

In Asia by far the most regular movements of butterflies have been recorded in Ceylon, where more than 60 species are known to take part in them. The flights are grouped chiefly into two seasons; one in November-December, more or less at the beginning of the northeast monsoon, and another in February to April, toward the end of the monsoon. The direction of the flights is confused, but it has been suggested that some of the species fly southward down the east side of the island, westward along the south coast, and then turn northward up the west coast.

In the absence of observers and records it is impossible to say whether they complete the circuit by flying eastward along the north coast and so end up where they started from! There is undoubtedly some

interchange of migrants between India and Ceylon, particularly along the line of islands known as Adam's Bridge.

In southern India, Mr. J. Evershed, an observer in the Palni Hills at an altitude of about 8,000 feet, noted for many years a big southerly movement of butterflies in October and a smaller return flight to the north in February and March. The species in the southward flight included many of the principal Ceylon migrants, but in the return flight only the Pierids (*Catopsilia* and *Appias*) were represented.

Some of the commoner migrant butterflies of Ceylon and southern India are illustrated in the color plates, including several swallowtails—Plate III, figure 8; Plate VI, figure 4; Plate VII, figures 3 and 7; and Plate VIII, figures 5 and 6. *Danaus aglea* (Plate VII, figure 2) is a relative of the Monarch Butterfly. Two are species of the great family of "whites"—Plate II, figures 7 and 8; and three are nymphaline butterflies—Plate VI, figures 1, 2, and 8.

In northern India there appears to be a regular movement up to the highlands of the Himalayas in the spring at the beginning of the hot weather in the plains. The species include the Long-tailed Blue (*Lampides boeticus*, Plate VI, figure 5) and the Cabbage White (*Pieris brassicae*), both of which are migrants in Europe.

In Iran there are records of the movement of an orange-yellow butterfly, *Tetracolus fausta* (Plate II, figure 1) in addition to the ubiquitous Painted Lady.

There are several records of mass movements of butterflies in Burma, Siam, and the Malay Peninsula, chiefly of species of *Catopsilia*, *Appias*, and *Danaus*, but at the moment we have not a single record for the whole of China, and only one for Japan. This last is a note on a flight of the Small Cabbage White (*Pieris rapae*) across Kagoshima Bay in 1886.

In Australia the two chief migrants are a white butterfly (*Belenois java*) and a skipper (*Badamia exclamationis*). The former, which is a close relative of the two African migrants *Belenois mesentina* and *B. severina*, appears at times in enormous numbers in the spring (November to January) in southeastern Australia, particularly in New South Wales. The swarms have been recorded flying out to sea and dead butterflies have been found washed up along the coast line for many miles.

The skipper is found farther north in

Queensland. One observer near Cairns reports that there are two or three flights a year. These last for two or three weeks, and are always to the northeast. He estimates that 24,000 insects pass over every 100-yard front each hour. Another says that the butterflies fly south at one time of the year and north at another. Still a third observer says that the swarms originate in New Guinea, come south into Queensland, and then return four months later.

Two species of *Delias* (Plate VII, figures 1 and 5) have also been recorded as making mass flights in Australia, but there are no recent records and more information is much needed.

MIGRATION HABIT IS WORLD WIDE

Thus, in nearly every country in the world there is evidence that some species of butterflies take long flights more or less in one direction. In a few of these species there is evidence of a return flight in the opposite direction at another time of the year. In the majority of species there is no evidence of a return, but this, of course, is not proof that the return does not take place. Absence of evidence is not evidence of absence. It is probable that in some cases the flights in one direction are very much thinner than in the other, and hence much more difficult to observe.

The flights in the temperate and subtropical parts of the world appear to be away from the Equator in the spring and toward it in the autumn, as is the case with most birds, but there are a few exceptions to this. In the eastern Tropics, particularly in southern India and Ceylon, there is some evidence that the migration seasons are related to the monsoon.

The flights may consist of a few hundred individuals only, or up to thousands of millions. They may pass a point of observation in a few minutes in a compact mass, or may form a thinner flight which may continue passing for days or even weeks. The flight may even be so thin that the individual butterflies are quite out of sight of each other; in this case the movement is not likely to be noticed except by an expert who is on the lookout.

A CHALLENGE TO NATURALISTS

It is difficult to state the lower limit of distance that we could call a migration. But there is no doubt that the upper limit is surprisingly high and that some migrant

butterflies cover well over a thousand miles, more or less in one direction, before they settle down to their normal life again.

A statement of such extraordinary facts is a challenge to any naturalist. A hundred questions arise in his mind. What species of butterflies migrate? At what season of the year is the habit developed? When and where do they start? What route do they take? When do they stop? Is the movement correlated with any particular weather conditions or food supply?

Such questions can be answered only by more and more observers recording more and still more facts—always watching out for evidence of movement of insects, and putting it on record whether it proves or disproves their own particular theories.

Then there are questions of theory and explanation. Why do the butterflies leave their starting point? What makes them choose one particular direction more than another? And what makes them stop?

Last of all there are the fundamental questions. Why do they migrate at all? How did the habit start? What good is it to the individual or to the species? And, if we can prove a benefit, have we explained the habit?

The evidence at present available indicates that migration takes place in about 250 species, but in many of these there is only a hint or a single record of movement. The species in which the regularity of migration is really well established have practically all been mentioned above.

It is, however, almost certain that the actual number of migrant butterflies is much higher than this, perhaps a thousand or more species. In Great Britain, where the subject has been more intensively studied, and where there are records of amateur collectors going back well over a century, we know that 13 species of the 68 found in that country are wholly or partly migrants. Since one or two of the 68 are practically extinct, we can say that one-fifth of the species are migrants.

In Ceylon more than one-quarter of the known butterflies have been recorded in mass movements. If these ratios are anything like normal for the rest of the world, it is easy to see what a small proportion of the migrants have yet been recognized.

Exactly how does a migration differ from an ordinary flight?

Observations on the flight of migrants made over measured distances with a stop



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Natural Color Photograph by Willard R. Culver

COLLECTORS IN MANY LANDS SNARE THESE RESTLESS FLYERS

(1) *Precis lemoniaz*, India; (2) *Precis aluana*, Ceylon; (3) The Gulf Fritillary (meaning spotted), under side, *Dione vanillae*, tropical and subtropical America; (4) *Papilio hector*, India; (5) *Lampides boeticus*, Africa; (6) *Athena chiron*, Central America; (7) the "Green Page Moth" (*Cydinon leilus*), Trinidad; (8) *Precis iphita*, India; (9) *Lilytkea labdara*, west Africa; and (10) *Alabama argillacea*, of which the caterpillar is known as the "Cotton Worm" in southern United States.

NOMADS AMONG THE BUTTERFLIES



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NATIVES OF AUSTRALIA AND INDIA ARE THESE GAUDY ADVENTURERS

A south India observer reports that two annual butterfly migrations occur in the Pulni Hills. A huge southward flight takes place in October, and a smaller one northward in February or March. Shown here are (1) *Delias nigrina*, Australia, under side (Plate III, fig. 1); (2) *Danaus aglaia*, India; (3) *Papilio agamemnon*, India; (4) *Teracolus amatus*, India; (5) *Delias harpalyce*, Australia, under side; (6) *Danaus affinis*, Australia; (7) *Papilio demoleus*, India.

watch indicate that the speed is little, if any, faster than normal flight; speeds of from 5 to 15 miles an hour have been noted. If a butterfly is on the wing for several hours a day in normal flight it must cover many miles of ground, but the flight is as often one way as another, and it ends up not far from where it has started.

In my opinion the chief characteristic of the migratory flight is that it is normal flight straightened out—that the insect has a sense of direction and is able to keep to one direction hour after hour and day after day. This and the fact that it appears to be less distracted by the way-side temptations of food and sex are sufficient to account for the great distances covered in a straight line.

WHY DOES A FLIGHT START?

The start of a migratory flight has been attributed to various causes—to starvation, overcrowding, too many parasites, and unfavorable weather conditions. Starvation, I think, may be ruled out as a general cause, because the migrating individuals are usually well developed specimens, often with a large reserve of food in the form of a "fat-body" stored up during the caterpillar stage from surplus nourishment.

There does, however, appear to be some evidence that crowding in the caterpillar stage brings about the migratory instinct. In the butterflies the evidence is somewhat indefinite. Thus it has been stated that where caterpillars have been crowded migration has followed, and, indeed, it would be difficult to imagine some of the enormous swarms of butterflies originating without the caterpillars having been crowded to some extent.

There is some evidence of the reverse, however, as great swarms of overcrowded caterpillars have been known to produce swarms of butterflies which did not migrate, even when the habit was known to exist in the species. Also, Monarch Butterflies, which have developed from scattered larvae, actually congregate just before migrating; although it is possible to bring this into line by saying that it is the crowding in the adult stage which releases the instinct.

The really important evidence for the fact that overcrowding, instead of food shortage, is a cause of migration, comes from another group of migratory insects, the locusts. In this group the migrating and nonmigrating individuals of the same

species can be distinguished from each other by structure, color, physiology, and behavior, and it has been shown experimentally that from the same hatch of eggs migrating forms can be produced by overcrowding and nonmigrating forms by isolation.

In the butterflies, experimental evidence on this point is not forthcoming, nor, so far as I am aware, do the migrant individuals ordinarily differ in color or structure from the nonmigrants.

BUTTERFLIES FLY A BEE LINE

The instinct to keep flying in one direction, and the ability to do so, are so highly developed in migrating butterflies that they have been known to fly through railway tunnels, and into the windows of rooms and out at the other side if they could, rather than deviate from their course.

In East Africa I have seen migrating white butterflies (*Belenois mesentina*) beat themselves against the wall of my bungalow which happened to be in their way. They also were observed rising to the top of a tall tree, shaped somewhat like a Lombardy poplar, and descending on the other side, when a movement of three or four feet, left or right, would have taken them past the obstruction with one tenth of the effort.

How does the butterfly keep to its direction? We have not the faintest idea.

An analysis of several hundred records in which both flight and wind direction were known showed just as many flights into the wind as against it, and migrations have been known to go on steadily when there was not enough wind to move a feather.

It also has been suggested that the butterflies orient themselves by the sun. Do they then allow for the gradual movement of the sun across the sky from east to west? And what about insects that migrate at night, the moths for example? Also, many butterflies migrate at midday in the Tropics when the sun is exactly overhead.

A magnetic sense has been suggested. It sounds very simple. But what about magnetic storms? And how could allowance be made for the continually changing difference between the true north and the magnetic north? No morphologist has yet found in any insect an organ that is sensitive to the magnetic field.

Of course "memory" is ruled out, because no butterfly makes the journey twice

in the same direction. Even in the case of the Monarch, which makes a round trip, the southward flight is made by butterflies which have never migrated before and which are children, grandchildren, or even great-grandchildren of the last migrants.

So we must, for the moment, call the sense of direction an "instinct," recognizing that we have no explanation, and we must continue to look for further evidence both in the field and in the laboratory.

THE END OF THE FLIGHT

It seems quite clear that the butterflies do not set off for some promised land flowing with milk and honey and settle down when they reach it. Sometimes they do, indeed, come to areas suitable for temporary breeding; areas which have been reached many times before. Almost as often they pass through these countries and instead of settling down they may fly on and on, out into the ocean or to the Arctic lands where practically all perish.

It would appear that while the migrating instinct (one might almost call it "hysteria") is on, they must continue flying until the stimulus has worn itself out, and it is more or less chance if this happens in suitable or unsuitable country.

If one imagines two countries, one of which is suitable for occupation by a particular insect only in one part of the year, and the other country in the other half of the year, then the insect would be able to survive only if it could develop a habit of moving regularly twice a year from one country to the other. The habit would not be merely useful to the species, but a vital necessity.

We do not know enough about the migration of butterflies to say whether such a simple case occurs, but on the whole the evidence appears to indicate something different. The insects in most cases seem to migrate from a country which can and often does support them in small numbers all the year round, and fly to areas which are suitable only for temporary habitation.

For example, the Monarch migrates northward from the southern United States in the spring, but can survive in the South without moving. The same is apparently true of the Painted Lady in North Africa and southern Europe; we have no evidence that it is unable to survive in the south in spite of the fact that so many move north.

This brings us to the fundamental im-

portance of the return flight from the theoretical view of the evolution of the habit. If a butterfly lives permanently in one country and at intervals sends off migrants to other areas which can only be temporarily occupied, and if none of these ever return, then we are faced with a grave difficulty.

We have an instinct which has persisted for thousands or millions of years, yet the species is perpetuated solely by the individuals which do *not* develop that habit but stay behind in the permanent breeding ground. This is exactly contrary to Darwin's theory of evolution by the survival of the fittest.

It is therefore interesting to note that about twenty years ago it was thought that there was practically no evidence of a return flight in any species, with the exception of the Monarch. Since then, however, evidence has been accumulating rapidly and we now have records that support the idea of a return flight in at least 20 species. Perhaps we shall find eventually that the difficulty of explanation was due only to our lack of knowledge of the true facts.

It might be pointed out here that an alternative to migration for avoiding a period of unfavorable conditions is an ability to go into a dormant stage, such as hibernation or estivation. The birds, for example, have specialized in migration and none hibernate, but among the mammals hibernation is quite frequent and migration much less so. It therefore is curious to find that the Monarch Butterfly migrates a thousand miles or so, apparently only to hibernate when it reaches the end of its journey.

MIGRANT INSECT PESTS

The subject of the migration of butterflies and moths has a distinct economic interest; for of what value is it to advise a farmer to take precautions against the multiplication of a pest, if that multiplication takes place a thousand miles away?

Some of the migrant butterflies and many of the moths are serious pests in various parts of the world. The Painted Lady, although useful as a thistle eater in North America, is a plague on artichokes in the south of France. The Cotton Worm has already been mentioned (pages 568, 574).

In Egypt there is a moth, known as the Greasy Cutworm (*Agrotis ypsilon*), which damages wheat in the winter and cotton in



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Natural-Color Photograph by Willard R. Culver

SWALLOWTAILS OF SIAM (1) AND INDIA (5 AND 6) WANDER FAR FROM HOME

Traveling butterflies vary greatly in size, shape, and color. Some varieties cover the same routes year after year, while others have less regular habits. (1) *Papilio antiphates pompilius*, Siam; (2) *Danaus gilippus*, Argentina; (3) *Terias senegalensis*, Africa; (4) *Terias marshalli*, Africa; (5) *Papilio crino*, India; (6) *Papilio nomius*, India; (7) *Danaus chrysippus*, Africa.

the early spring. A considerable amount of money was spent in trapping the moths in tens of thousands in March and April, before we discovered that it was a regular migrant, and that all the individuals we were destroying would have left the country within a few weeks and would have laid their eggs somewhere to the north in Europe.

AN APPEAL FOR INFORMATION

It only remains to point out once again the need for more information. May we ask everyone who has ever seen a mass movement of butterflies, in any part of the world, on land or at sea, to send as full particulars as possible to the writer of this article in care of THE NATIONAL GEOGRAPHIC MAGAZINE?

The information most desired is: the date (month and year if the exact day is not known), the locality, the direction of the movement, and specimens of the insects concerned. If specimens are not obtainable, then a short description should give the color and size, or any other point that might help to identify the species.

Over and above these four most important points, many other details may be given if known: for example, how long the flight lasted; an estimate of the numbers of insects concerned; how fast they flew and how high above the ground; the time of day; the direction of the wind, and any general notes on the weather at the time.

These points also should be kept in mind in case a flight is seen in the future. If such a thing happens, every effort should be made to get some specimens. One is far better than none and fifty is not too many. The condition of the specimens is of no vital importance and a single broken wing in a letter is better than a perfect specimen which has escaped.

We need the specimens to settle questions of identity and sex. Some migrants are almost indistinguishable from each other when in flight, and sometimes several species are represented in a single flight; so the more specimens the more reliable the information.

A point on which information is specially needed is the location of winter quarters of the Monarch Butterfly. Will anyone who knows of any locality where these

butterflies have spent the winter send me full particulars, including if possible the kind of tree most frequented? The study of some of these places and the behavior of the butterflies from the time of their arrival to their departure should provide a most fascinating piece of work for any naturalist—professional or amateur—who has the opportunity to carry it out. It has not yet been done.

CAN YOU FIND A BUTTERFLY ON A SHIP?

There is another unsolved problem in connection with the same butterfly. It has been suggested that the Monarchs that are occasionally seen in Great Britain have been carried over from the United States in ships. Has anyone ever seen one on board a ship? Are they in the habit of flying around ships which are loading for England, perhaps with fruit, in the ports of the United States or the West Indies? Is it possible for them to get shut up in holds or lockers? Any exact information would be valuable.

In Europe we do not yet know the place of origin of the swarms of Cabbage Whites that fly southward through Germany about midsummer. Anyone who visits the islands in the Baltic or southern Scandinavia about that time could well keep a lookout for evidence, either positive or negative.

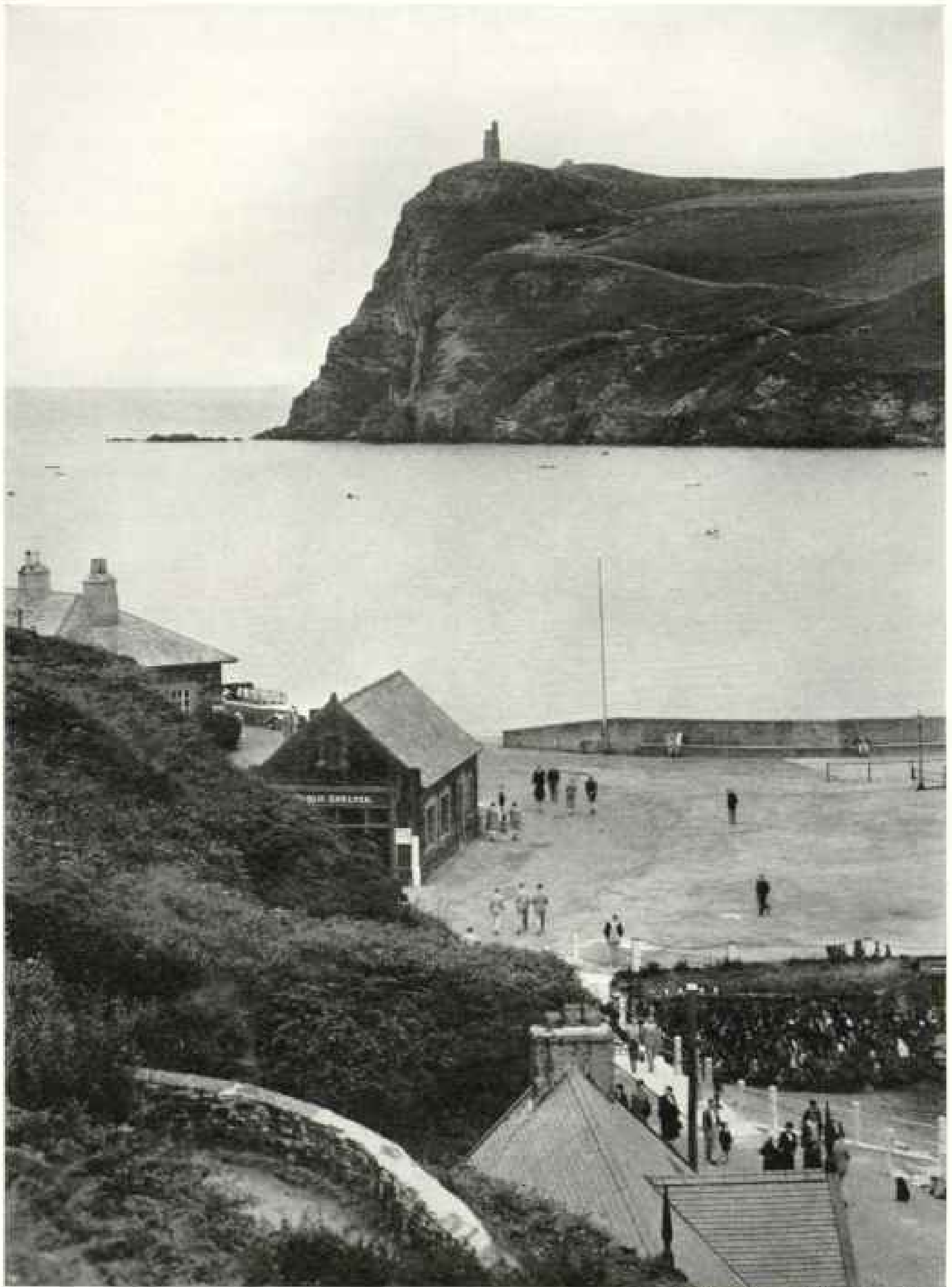
THE NATIONAL GEOGRAPHIC MAGAZINE goes to the uttermost parts of the globe. Can any of its readers tell us whether or not butterflies migrate in China? Or what was likely to be the identity of a butterfly found on the ice by the survivors of the wreck of the *Jeannette*, near Bennett Island, 700 miles north of the Arctic Circle, on July 12, 1881?

In England we now have an organization of several hundred amateur observers who watch out each year for the arrival of certain migratory butterflies and moths.

We even have obtained the help of many of the keepers of lighthouses and lightships around the coast. Perhaps other countries could build up a similar organization.

We look forward to being able one day to trace a migration of butterflies from its source to its goal. One method would be to build up a network of observers over a large area and to correlate all their records. Another, which appears to be more and more possible every year, would be to follow the swarm with an Autogiro. I wonder which will come first!

NOTE—Valuable assistance has been rendered THE GEOGRAPHIC by Austin H. Clark, of the National Museum, in the reading of proofs and in the selection and arrangement of the subjects of the color plates.



Photograph by R. Anthony Stewart

BOLD BRÁDDA HEAD IS A BUTTRESS IN MAN'S WALL OF ROCK

The bluff, rising 400 feet on the north side of Port Erin Bay, is topped by the Milner Tower, a memorial to an English benefactor of Man. In Port Erin is located the Marine Biological Station and Aquarium, a laboratory for important researches in fish and lobster culture.

THE ISLE OF MAN

BY CAPTAIN F. H. MELLOR

MANXMEN travel all over the world and sometimes settle in out-of-the-way places, but they never seem to forget their little island, which lies almost midway between England, Scotland, and Northern Ireland, set like a jewel in the Irish Sea.

Tradition says the island came into existence when a legendary hero, Finn MacCool, hurled handfuls of Irish earth at some giant enemy; but, though reluctant to doubt this story, we shall be nearer the mark, perhaps, if we believe the geologists who tell us that it was once attached to the neighboring mainlands and is geologically akin to the English Lake District.

The stories of the early inhabitants are just as strange as those concerning Finn MacCool. We hear, for instance, that fairies made their kingdom in Man, and that St. Patrick, fresh from triumphs in Ireland, came to Christianize the island and turn out the snakes.

But even when we leave the legends and turn the pages of island history, the truth is exciting and romantic enough. The Celtic inhabitants were at different times ruled by Irish, Scandinavian, Scottish, and English kings.

When the island passed to Edward I of England, he and his successors presented the little kingdom to various favorites until in 1405 it came into possession of the great house of Stanley. This famous Lancashire family ruled in Man up to 1736, when the lordship passed to the Duke of Athol.

Twenty-nine years later the island was sold to the British Crown. Fortunately, however, all the old laws and customs were preserved, so that today the island, which is only 30 miles long and 12 broad, still possesses its own law courts and its own legislative bodies, though enactments, of course, are subject to the approval of the British Government.

ON THE "QUEEN OF MY HEART" TO THE ISLE OF MAN

Only last year, on a beautiful summer day, I crossed to the island for a prolonged holiday. The first thing that struck me during the voyage was the fact that the good ship *Ben-my-Chree*, or *Queen of my Heart*, was flying a red flag bearing the Three Legs of Man. This is the ancient

emblem of the island, which decorates the hilt of the 13th-century Sword of State and in addition is seen almost everywhere (Color Plate VI).

It seems certain that this emblem is of Sicilian origin, for many Sicilian vases in the British Museum bear a similar design. The only difference is that in the Manx version the feet are booted and spurred and a curious motto states: "Whichever way you may throw me, I shall fall on my feet."

The voyage was pleasant, and I passed my time watching the Lancashire folk who crowded the ship and showed by frequent bursts of song how much they were looking forward to their holiday.

Their destination was Douglas, the modern capital, which is built on a magnificent bay (page 590 and Color Plate VIII).

While most of the Lancastrians made off to the Douglas boarding houses, I went to the railway station to take a train for Castletown, the ancient capital and chief center of romantic interest, in the southern end of the island (map, page 588).

The train, apart from walking, is the most amusing means of progression, for things are rather in miniature on this pocket island and the railway carriages and fussy engines are no exception to the rule.

GRANDEUR CLINGS TO CASTLETOWN

Castletown, though deprived of its former importance, still retains an air of aloof grandeur. The inhabitants rather look down upon those who live in less favored places. There is an atmosphere of peace about the place, for the "trippers," who in summer turn the other towns into perpetual playgrounds, are satisfied to see the castle and then pass on.

Most of the town, built on Castletown Bay, is grouped around Castle Rushen. The streets are so old and narrow that sometimes the inhabitants, after nearly being annihilated by a motorbus, remark pathetically, "Why, there isn't room to swing a cat here!" All the same, they are proud of their old houses and would not have it otherwise.

One large square, facing the castle, is remarkable for its monuments. In the center stands a lofty column, erected, so a tablet explains, as a memorial to Colonel Cornelius Smelt, a former Lieutenant



Drawn by Newman Bumstead

ISLE OF MAN IS A GREEN JEWEL SET IN THE IRISH SEA

Blending mountain and moor, farmland and jagged seacoast, Man is only a few miles from England, Scotland, Wales, Northern Ireland, and the Irish Free State (see inset). Visitors from many countries, but chiefly industrial England, flock to its shores. The traditional first ruler, Mannanan Beg, from whom its name derives, could hide it by magic in a mist whenever enemies threatened invasion.

Governor of the island. One wonders why there is no statue on the top, until some kind passer-by explains that insufficient money was forthcoming to complete the memorial.

This seems odd, but odder yet is the time-keeping apparatus displayed. First, there is an old sundial, which, so it is said, can be used to tell the time by either the sun or the moon, though, as I soon discovered, not by me.

A SINGLE-HANDED CLOCK

But strangest of all is a large clock presented by Good Queen Bess. At first glance it looks very imposing and useful, but then one discovers there is something seriously amiss. There is only one hand, the hour hand (page 598).

As a result, the stranger is very likely to miss trains and buses, but in this, as in other things, practice improves even if it does not make perfect, and in time one be-

comes quite a good guesser. The Manx people do not mind, for after all their motto is "Time Enough."

Castle Rushen is one of the finest specimens of a medieval castle in existence. The local limestone has wonderfully withstood the storms of centuries.

Robert Bruce captured the castle in 1313, by dint of a long siege. As a fortress it looks impregnable, and, in fact, was so in the brave days of old, before the development of artillery.

During the reign of Charles I, who was beheaded in 1649, the seventh Earl of Derby, known to this day as the Great Stanley, built a house in the grounds after the style of his Lancashire seat, Knowsley Hall.

This great man, and his gallant wife, Charlotte de la Tremouille, played a prominent part in the British Civil War. While he raised men for the King in the Isle of Man, she defended Lathom House in Lancashire. Later, when Charles II made his unfortunate raid into England, the Earl fought by his side at Worcester and was captured and executed.

Greatest of all the Lords of Man, he knew how to make himself popular, so that, although the people had to support numerous troops and were heavily taxed, he was well liked. Some of his own words have come down to us and they explain the secret of his success:

"When first I came among the people, I seemed affable and kind to all, so I offended none. For taking off your hat, a good word, a smile or the like, will cost you nothing, but may gain you much."

When he died the Countess was ruling in Castle Rushen and one William Chris-



Photograph by R. Anthony Stewart

SIX EYES SCRUTINIZE A CAT-O'-NO-TAIL!

Islanders will tell you, with a grin, that long, powerful hind legs and the slope of the back downward from "stern to stem" indicate that Manx cats are a cross between a cat and a rabbit! Visitors to the island have taken away so many tailless souvenirs that the breed is now quite scarce and artificial docking is resorted to (Color Plate II).

tian, receiver of the island, was in command of the militia. This man at once led the militia against the Countess and captured all the strong places with the exception of Castle Rushen and Peel.

The Parliamentary forces then landed on the island, and Christian surrendered on condition that the Manx should retain their laws and liberties. A few days later the Countess was compelled to give in.

In the days of the British Civil War passions ran high, so what was more natural than the condemnation and execution of Christian as soon as Charles II enjoyed his own again? It is said, however, that the court was "packed" and many islanders told me they regarded Christian rather as an unlucky patriot than as a traitor.

HAUNT OF GHOSTS AND TAILLESS CATS

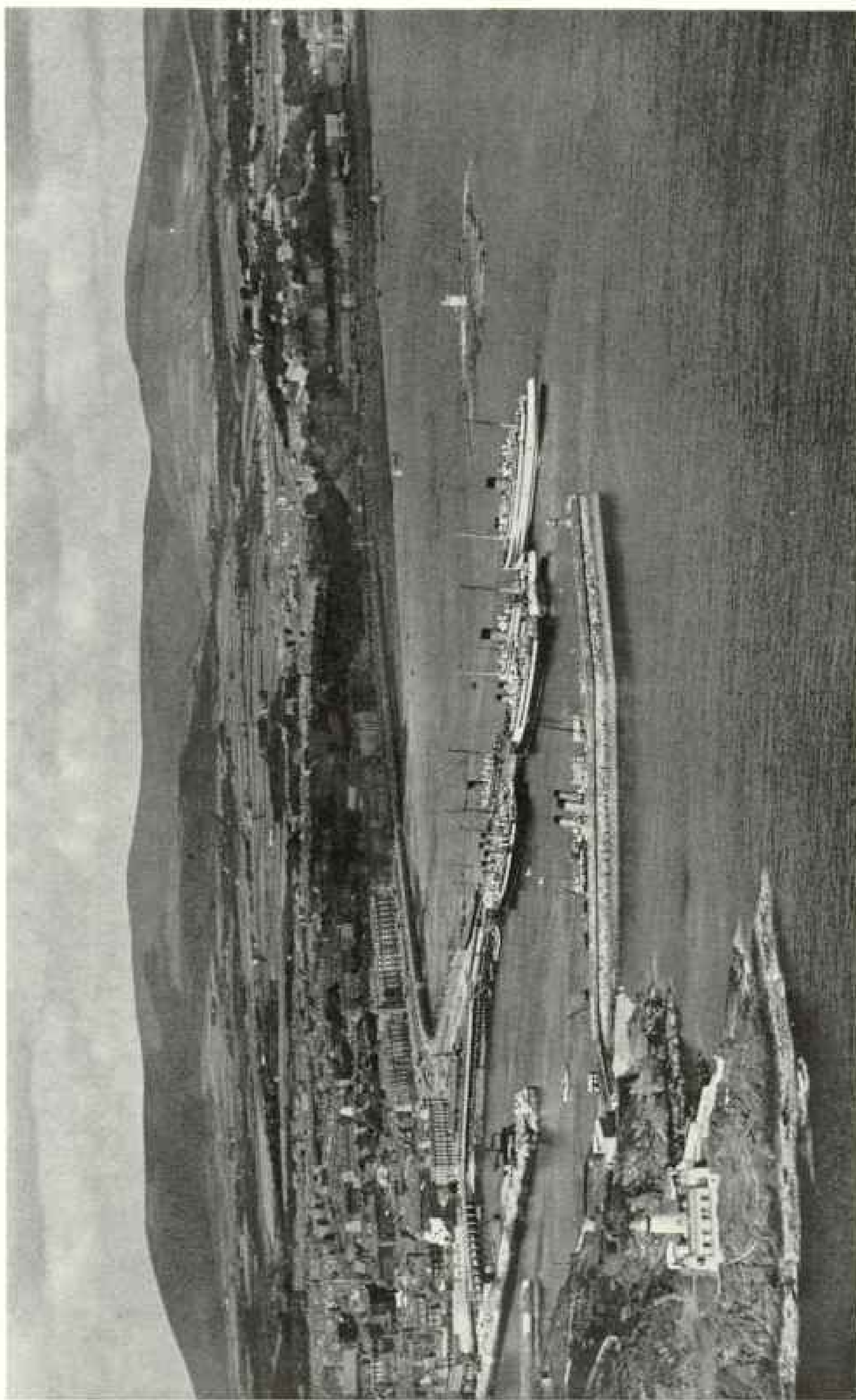
The castle is no doubt a wonderful specimen of medieval architecture, but I could not help thinking how dreadfully uncomfortable it must have been for all those who had to live there. Thick walls, tiny win-

dows, and holes through which to pour boiling pitch may be admirable for defensive purposes, but do not increase the amenities of a dwelling.

Indeed, the only consolation the residents can have had is the knowledge of the even greater discomforts suffered by the prisoners in the underground dungeons. There are, it is said, ghosts haunting the castle, notably a lady in white who appears in unexpected fashion out of the main gateway at midnight.

This is doubtless a myth, but the Manx cats are no myth; there are still some about, looking very strange minus their tails. Little is known about them, though I have heard it said that the original specimens came off a galleon of the Spanish Armada wrecked on the rocky shores of the island. But whatever their origin, they are far wilder than English cats, in shape rather like a miniature leopard, and singularly bold and fearless.

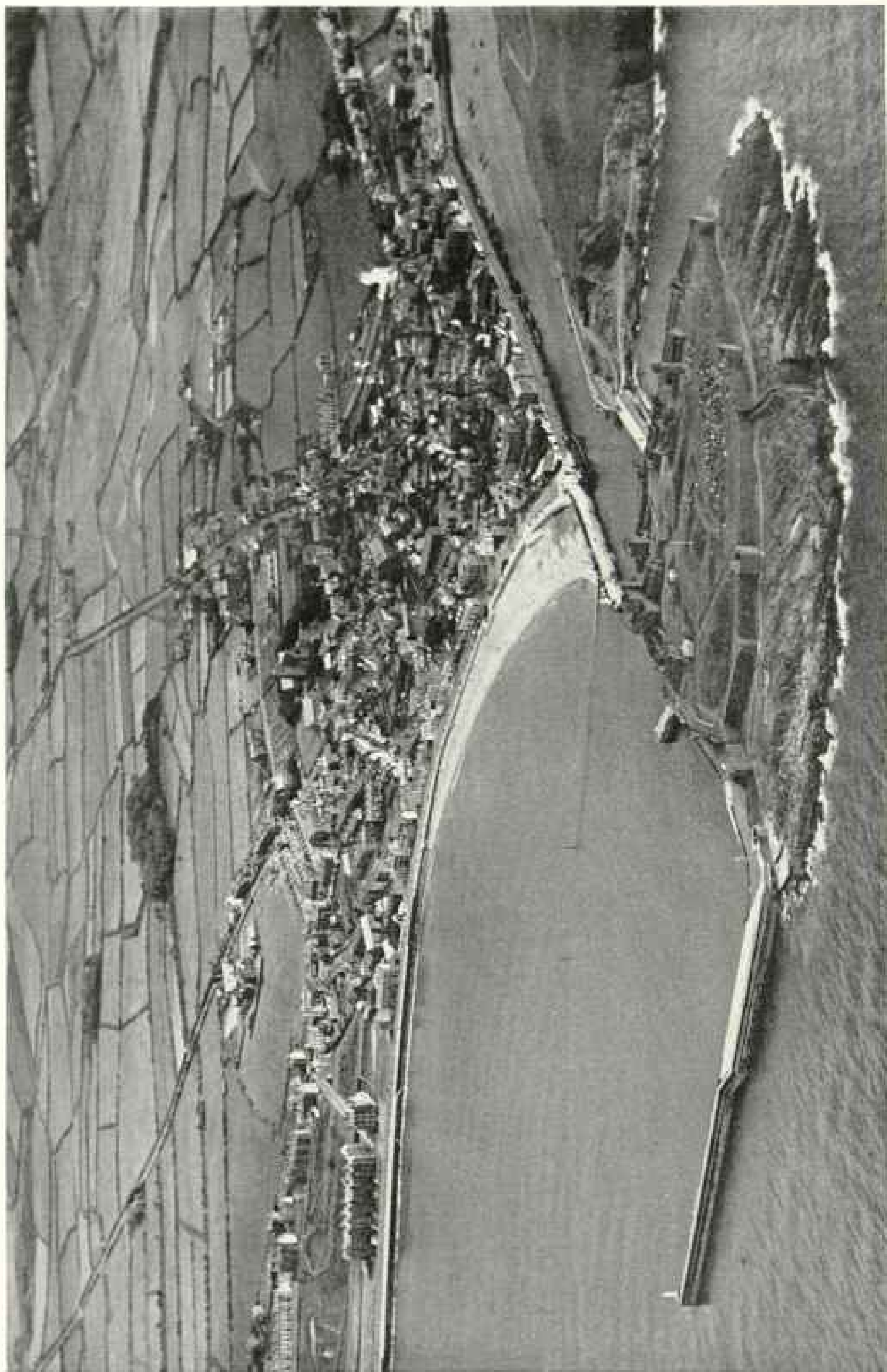
Half a mile from the center of Castletown is Hango Hill, the ancient execution



Photograph by Abignatho, © Douglas Corp.

TWO GIANT CONCRETE ARMS REACH OUT TO WELCOME SHIPS—AND VACATIONISTS—TO DOUGLAS

Thousands of tons of concrete blocks have converted an exposed river mouth into the Isle of Man's chief port. From 20,000 to 30,000 visitors often land here in a single day. The spot of white on Conister Rock, to the right, is the Tower of Refuge (page 597). Sir Hall Caine, one of Manxland's most famous sons, has said of this renowned holiday resort: "There is not a town in Europe so absolutely given over to enjoyment as Douglas in the month of August."



Photograph by Altigraph, © Publicity Board

THE ROCK WEDGE OF FOAM-FRINGED ST. PATRICK'S ISLE PROTECTS PEEL'S BROOD OF "NICKKEYS"

From the air, the walls and ruined buildings of the history-stepped isle are clearly seen. Ghost-haunted Peel Castle and St. Germain's Cathedral occupy the bluff towards the town, with its fishing fleet moored to the docks (Color Plates I and V).

ground where William Christian was shot.

This macabre hill rises from the sea-shore, and immediately behind it the inspiring pile of King William's College dominates an enormous green playing field, one of the largest I have ever seen. Anyone who wishes may visit this great public school, where most distinguished Manxmen, and some distinguished Englishmen, received their education.

From here one can ramble on to the fishing village of Derby Haven, formerly a center of smuggling but now remarkable as the island airport, and visit the white farmhouse of Ronaldsway, the old home of Christian and the place where he hatched his plot to rise against the Countess.

But the most interesting place for a ramble in the whole island is only a mile or two away: Langness, a narrow piece of land, jutting into the sea, which divides Castletown Bay from Derby Haven. There is a golf links there now, so that everyone interested in a game on a good course amid lovely surroundings should bring his clubs and play a round on the green turf where, in the old days, the famous Derby races were run.

On a fine day it is beautiful indeed; all around one sees the gold of the gorse and the purple of the heather; the sea lapping on the beaches; the open, low-lying country gradually rising to the two mountains of South Barrule and Cronk-ny-Irey-Lhaa. Such a view as this brings the island very near to one's heart.

After a day's excursion of this sort the evening is sometimes remarkably pleasant also, for the band plays in Castletown square, the people sing, and sometimes traditional folk dances are performed with much agility and skill. Custom and tradition are still kept remarkably alive in the island, though the Manx language is gradually dying out and a mere handful of people know it now.

FISHING UP TO RUSHEN ABBEY

A few miles from Castletown, at Ballasalla, stands the ancient Abbey of Rushen. It is a favorite resort for the pleasure-seeker, being noted alike for its gardens, its strawberries and cream, and—somewhat incongruously—a jazz band. In addition it is a famous beauty spot (page 594).

So one day, after rain, when the little Silver Burn, which flows into the sea at Castletown, looked in good order, I decided to fish up to the Abbey. Good trout water

this, one of the few easy stretches of fly-fishing to be had in the island.

Just outside Castletown I noted an old mill, and the miller, who chanced that way, told me it was mentioned in the Domesday Book. Nothing by this time surprised me in an island so full of historical memories, and I could not help thinking of Kipling's lines:

See you our little mill that cacks,
So busy by the brook?
She has ground her corn and paid her tax
Ever since Domesday Book.

The river banks were bright with the golden blossoms of the cushag, the Manx national flower, while the fields on either side of the stream appeared remarkable for their orderly and well-kept appearance. The Manx are skillful farmers as well as skillful fishermen, and of course it is a busy occupation to feed the thousands of English visitors who every year flock to the island.

A creel full of trout had rewarded me for my efforts by the time I arrived at Rushen Abbey, so I was able to bear disappointment. For of this once great edifice nothing remains to-day save a watchtower, pigeon loft, and part of the refectory, and it seems rather odd to watch dancing and hear jazz music in a place where formerly the peace of the cloister reigned.

Hundreds of years ago the Cistercian Abbot of Furness founded Rushen and it became great and powerful before being swept away at the time of the Reformation.

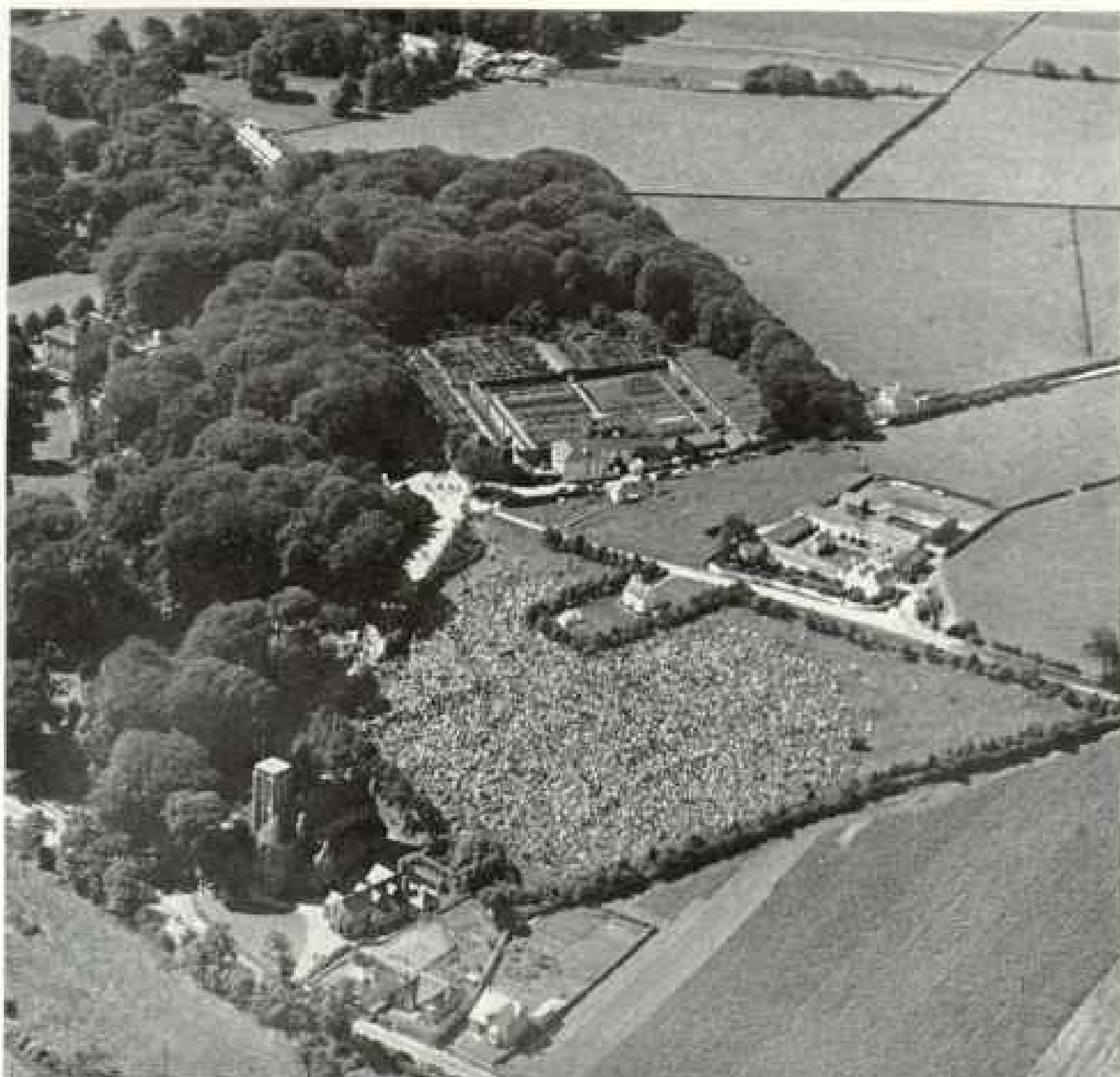
But one thing the monks have left us, though little could they have dreamed that it alone would survive entire—Monk's Bridge. There the scene is quieter, more peaceful, and the Silver Burn still flows on, under the triple-arched, humpbacked bridge, just as it did five hundred years ago.

The fisherman who does not mind a walk can try his luck in another stream, the Santon Burn, beginning at the "fairies' bridge" a couple of miles away. But before doing so he should touch his hat to the "little people," as every good Manxman does.

LAWS PROCLAIMED ON TYNWALD HILL

Once a year, on July 5, all laws passed during the year in the House of Keys and Legislative Council, which sit together in the Tynwald Court, or Manx parliament, must be promulgated from Tynwald Hill, at St. John's, before they can come into force.

To our certain knowledge this has been done ever since the first Tynwald Court



Photograph by Altigraph, © Douglas Corp.

THOUSANDS OF WORSHIPERS GATHER FOR KIRK BRADDAN'S OPEN-AIR SERVICES

Loud-speakers broadcast the vicar's voice to crowds assembled on the outskirts of Douglas. Once the electrical equipment broke down and most of the audience, unable to hear, filed away, disappointed. The church at the lower left is New Kirk Braddan. In Old Kirk Braddan, hidden by the foliage, is held an annual service in the Manx language.

was held here in 1577; but the origin of this old custom is far more ancient and it seems probable that the laws were promulgated in like manner when the Scandinavian kings ruled the island. The fact that Scandinavian courts were formerly held in the open air upon mounds, or tumuli, lends color to this theory.

Like everyone else, visitors and residents alike, I was eager to witness the ancient ceremony, and a Manx friend was good enough to take me to St. John's in his motor-car. We arrived early and had no difficulty in obtaining a place in the front row of spectators at the foot of the famous hill.

The hill itself is an artificial mound

twelve feet high and about eighty feet in diameter at its base. Tradition says that the earth which composes it was brought from the island's seventeen parishes.

Four circular platforms provided seats for the clergy, the members of the House of Keys, and other official personages. Rush-strewn steps led to the top, where the state chair awaited the Lieutenant Governor.

From the mound to St. John's Church led a straight, narrow path, two hundred yards long, both sides of which were lined by a dense crowd of spectators. Military display was provided by a contingent of the officers' training corps from King William's College, the only troops in the island.



Photograph by H. Anthony Stewart

SIDE BY SIDE RUN ROAD AND SILVER BURN PAST RUSHEN ABBEY

During the 12th and 13th centuries the monks of Rushen Abbey wrote the earliest history of the island, the "Chronicle of Man," now in the British Museum. Tea gardens, adjoining the monastery at Ballasalla, serve home-grown strawberries and cream, and guests may dance here to a jazz band.

A religious service always precedes the ceremony, and about twenty minutes after our arrival the doors of the church opened. The procession emerged, advancing slowly between the lines of cheering spectators.

A military officer bearing the Sword of State, a historic weapon used at one time, so it is said, as a poker in a law office, preceded the Lieutenant Governor of the island. Behind him came the Lord Bishop of Sodor and Man in his robes, the Deemsters, or Judges of the island, in scarlet, the clergy, the members of the House of Keys, and the captains of the Parishes, all of whom combined to present a colorful picture.

Suddenly, as the Lieutenant Governor approached the hill, a word of command rang out, swords and bayonets flashed in the sun, and the band played the royal salute.

The Governor mounted the rush-strewn steps and seated himself. Then, in accordance with tradition, the court was "fenced." This was done by the Coroner * of Glenfaba, who used these time-honored words:

"I do fence the King of Man and his officers, that no manner of man do brawl or quarrel, nor molest the audience, lying, leaning or sitting, and to show their accord, and answer when they are called, by license of the King of Man and his officers. I fence this Court, I fence this Court, I fence this Court."

The titles and brief summaries of new laws were then read in both English and Manx, the coroners for the past year resigned their wands of office, new coroners

* The six Coroners of the Isle of Man have functions similar to those of a sheriff. They hold office for one year.



Photograph by H. Anthony Stewart

TWO MANX LASSIES UNDERSTUDY THE SHY FAIRIES WHO HOLD REVELS IN GLEN MAYE!

Creepers, ferns, and soft mosses, wild hyacinths, violets, and dog roses bedeck this sylvan nook. Islanders say the glen is haunted by the spirit of a man who tried to ride a *Cabbyl-Ushiey* and was thrown when the phantom mount plunged into the sea.



Photograph by H. Anthony Stewart.

HORSE AND BUGGY DAYS ARE HERE AGAIN ON THE ISLE OF MAN

Even horsecars drawn by prancing steeds with short-cropped tails are popular with the gay summer visitors. A reminder of the gallant rôle played by Manxmen in the World War—one out of every eight enlistments fell on Flanders fields—towers above the Harris Promenade in Douglas.

were appointed, and the procession, having reformed, made its way back to the church where the Governor signed the laws just promulgated.

After wandering around the fair where the visitors were enjoying themselves, my friend and I went on to the ancient town of Peel, passing on the way a precipitous hill. Down this, he informed me, it was once the amiable Manx custom to roll witches in spiked barrels.

Peel is a pleasant town on the sea, possessing, like Castletown, old houses and narrow streets. It is also the headquarters of the island's herring trade (Plates V, VII).

The Manx are noted, with good reason, as bold and skillful sailors. Therefore it is not surprising to discover that in addition to farming and accommodating visitors, herring fishing is a prominent industry. Not only are the fish enjoyed by those

on the island, but also they are converted into kippers of a most delectable kind and dispatched to titillate the palates of people on the mainland.

But unfortunately, in addition to having a character of their own, fishing quarters possess also a smell of their own, so I soon made my way to St. Patrick's Isle, at the entrance to the harbor. Only seven and a half acres in extent, it contains a noteworthy castle and cathedral (Plate I).

THE "SPECTRE HOUND" OF MAN

One of the ancient fortresses of the Lords of Man, the castle must have been almost impregnable before the causeway was built connecting it with the mainland. Like many other places in the island, it has its legends, the strangest of all being concerned with the Moddey Dhoo. This tale was repeated to me by the old Manx guide as we



"HEAVE HO, MY HEARTIES, AND WE'LL BE SAILORS SOON!"

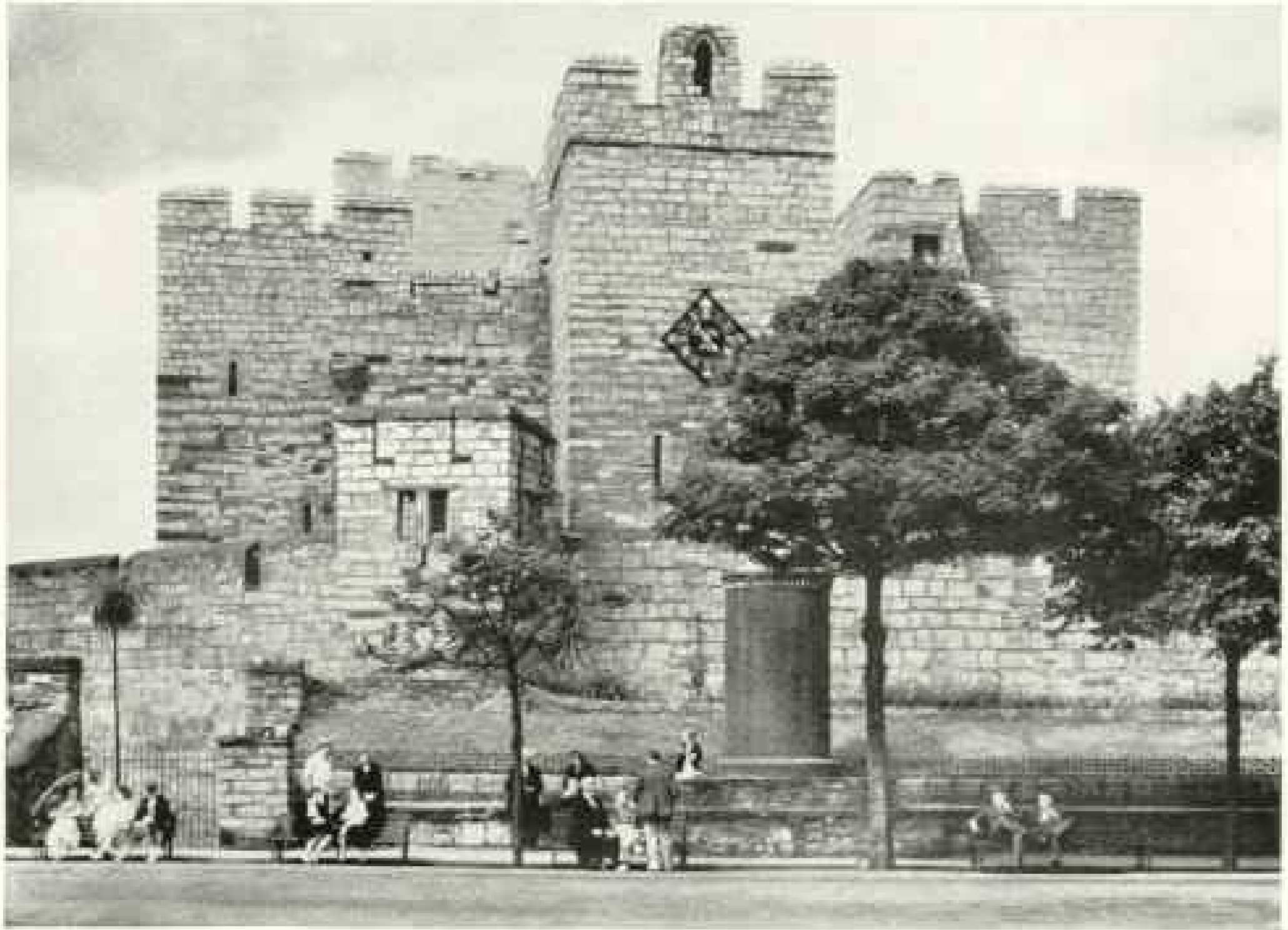
Play is always serious when boys tussle with a boat on the beach at Douglas. Under the smoke plume of the afternoon boat from Liverpool stands the Tower of Refuge, of which Wordsworth wrote in his sonnet "On Entering Douglas Bay." The castellike tower was built in 1832 to keep ships from running afoul of Conister Rock and as a haven for shipwrecked mariners.



Photographs by B. Anthony Stewart

PRIDE COMES BEFORE A FALL WHEN RIDING A HURRO

Sleepy-looking donkeys on Port Erin's beach are switched into a trot by the "groom," behind. The photographer noticed that one rider in three took a somersault when the steeds balked.



TRAINS ARE MISSED IN CASTLETOWN BECAUSE THIS CLOCK HAS NO MINUTE HAND!

When the photograph was taken the arrow hand indicated 4:30. Presented by the first Queen Elizabeth, the clock is decorated with crowns and three-legged symbols. In front stands an old sundial. After the death of her husband in the British Civil War, the Countess of Derby, holding Castle Rushen, gallantly defied the Manx forces until a Parliamentary army forced surrender (p. 588).



Photographs by R. Anthony Stewart

THE MANX MILKMAN FILLS YOUR ORDER FROM "A TIN COW"

This Ramsey boy carries his product in the tall can, draws off the milk from a spigot at the bottom, and pours it into a pail held by the housewife. After completing their deliveries, milkmen sometimes drive home with their brightly painted carts full of family groceries.



Photograph by B. Anthony Stewart

A COZY WHITEWASHED COTTAGE INVITES A VISIT

To prevent high winds from peeling off roofing thatch, it is bound down to projecting beams at each end with straw ropes. Beyond the couple and the automobile stretch the grassy lowlands of this sandy tract near Point of Ayre. The road leads out to Man's northernmost lighthouse.

passed the guardhouse, near the entrance to the castle, and ran somewhat as follows:

"At one time an apparition of a black dog, or Moddey Dhoo, used to enter the guardroom and sit down before the fire. The soldiers became quite accustomed to it after a time, but when taking the keys of the outer gate to their officer they always went in couples. They had to pass the place whence the apparition emerged at dusk and where it retired at dawn.

"One night, however, a fellow who had drunk to excess cursed his mates and insisted on going alone in the wake of the spectral hound. Soon after, a terrible noise was heard and when at length he returned to the guardroom, he could not utter a word. Three days later he died in fearful agony, but the spectral hound was never seen again, and soon afterwards the passage was walled up."

This strange tale made such an impression on Sir Walter Scott that in "The Lay of the Last Minstrel" he refers to the terrors of Deloraine in these striking words:

For he was speechless, ghastly, wan,
Like him, of whom the story ran,
That spake the spectre hound in Man.

Indeed Sir Walter Scott was deeply interested in the island, part of his "Peveril of the Peak" dealing with Manx life in the reign of Charles II of England and the eighth Earl of Derby, Lord of Man. Still today a tower of the castle is known as Fenella's Tower, commemorating the occasion in the novel when Julian Peveril, leaving secretly on an important mission, finds that Fenella has thrown herself into his boat. The fortress lacks the impressive strength of Castle Rushen and the cathedral has fallen into ruin and decay, but it is pleasant to linger in the island, especially when the fishing fleet is in.

CURRENTS SWIRL IN CALF SOUND

We went back to Castletown over the coast road which runs behind South Bar-rule, passing on our way a few thatched cottages, a type of dwelling rapidly dying out, sheltered by magnificent fuchsia hedges. On the one side, far below us, the water seemed a sea of glass; on the other the evening shadows fell upon the purple slopes of the mountains.

On the southwest side of the island the little town of Port Erin is much admired be-

cause of its perfect miniature bay (p. 586). In Calf Sound fierce currents eddy and swirl between the main island and the Calf of Man, where sea birds throng the cliffs.

But we have tarried long in the south, largely because of its historic interest, and now we must see something of the north. There the countryside is very different from the open, almost treeless southern land. Ramsey, a prosperous town on the north-east side of the island, possesses an attractive bay, and a mountain road leads the traveler from Ramsey to Douglas past Snaefell, the highest peak in the island.

VIEWING BRITAIN'S "FOUR CORNERS"

Like almost everyone else who is active enough, I climbed this mountain. It is only 2,034 feet, after all, and I was rewarded with a view of a good deal of the Isle of Man and a glimpse of England, Scotland, Wales, and Ireland into the bargain (Plate III).

Then I came to Douglas and from there visited the reservoir near Injebreck, about eight miles distant, on a fishing expedition. One can stay at the keeper's lodge, and doing so I saw my first and I hope my last apparition!

Fishing one night on the banks of the reservoir about thirty yards from the stone causeway, I saw a ghostly figure which might have been that of a monk. The cowed head was sunk on the breast, the arms were folded, the robe reached down to the level of the water. Slowly the spectral figure glided along the causeway, until it passed out of sight.

Later, local people told me there was a very old abandoned chapel in the vicinity.

Of course there must be some perfectly natural explanation, but the occurrence has always been a mystery to me.

Most of the island in summer is Lancashire's playground, Douglas especially. On holidays it is almost impossible to make one's way through the streets of the town, and the beach on a sunny day becomes so crowded that scarcely any sand can be seen. Twice a day the boats bring in their happy cargoes, and twice a day reluctant holiday-makers return to their daily toil.

The Isle of Man is an ideal spot for those who work at the mills in grimy Lancashire towns, and memories of mountains, glens, burns, and the placid sea must remain long after the holiday is over. Several young men said to me, when I hinted at this: "Eh, lad, but us likes the sea gulls best of all."

And certainly they had made the birds tame enough to eat out of their hands.

Many interests are provided for visitors, who, after all, make up the island's greatest industry: Tourist Trophy motorcycle races, automobile races, horse races, illuminations, and even a Highland gathering, but I cannot help thinking the greatest attraction of all lies in the air, the scenery, and the call of the sea birds as they hover fishing.

The island has an air and character of its own. So have the Manx people. They can be charming; they can also be infuriating. For instance, when it has blown a gale and rained for three days, their invariable form of consolation is to say: "Ah, but it's been far worse across the water," words uttered in a rather soothing sort of voice as if talking to an escaped lunatic.

They call the English "come-overs" and regard them with suspicion, but once they know and like a person they make kind and faithful friends. They have none of the Irish sparkle, none of the Welsh plausibility, but are very musical; they sing excellently, and have much beautiful music of their own. They are also, in their shy way, intensely poetical, though perhaps they do not know it.

FRANK ARE THE MANX

Their outspokenness is astounding, and I remember a large lady, when asking a local tailor to make her a coat, receiving the hesitating reply:

"Well, I'll make ye a coat, but it'll take a pack of stuff."

Manxmen settle in all parts of the world, notably in the United States and Canada, but always they remember Manxland and it is a great occasion when a shipload of home-comers arrives at the island.

There have been many great Manxmen: Bishop Thomas Wilson (1663-1755), noted for his piety and wisdom; Captain John Quilliam, who steered the *Victory* into action at Trafalgar; and T. E. Brown, whose poems will live as long as the English language endures.

It is impossible to leave the Isle of Man without regret, but afterwards one retains happy memories of a sea-girt isle where the gulls call, the water thunders on the rocky coast in winter and placidly laps the shore in summer. In the words of Brown:

It's clad in purple mist, my land,
In regal robe it is apparell'd,
A crown is set upon its head,
And on its breast a golden band—
Land, ho! land.

SUNNY CORNERS IN A FRIENDLY ISLE



© National Geographic Society

Finlay Photograph by B. Anthony Stewart

ISLE OF MAN, TINY GOAL OF MANY A CONQUEROR'S FLEET, IS STILL OPEN TO
INVASION—BY HOLIDAY MAKERS

For almost a millennium, Mona, as Caesar called it, was the shuttlecock of warring nations and feudal lords. Now English, Scottish, and Irish excursionists flock here. Guarding the harbor of Peel, the island's chief fishing haven, rises St. Patrick's Isle with the roofless St. Germain's Cathedral and Peel Castle, long haunted by ghosts. Fearing an attack by Napoleon, an English officer erected fortifications, but Bonaparte never came. A causeway now connects island and town (Plate V).



KITTY GETS THE SPOTLIGHT—BECAUSE SHE HAS NO TAIL!

When the demand for Manx cats exceeds the supply, natives sometimes fill orders with ordinary ones—after docking! Other strange residents of the isle are rumpless chickens.



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Finlay Photographs by B. Anthony Stewart

LADS AND LASSIES DON THEIR BRAWS FOR THE HIGHLAND GATHERING

During this summer festival held in The Nunnery grounds near Douglas, Gordon Highlanders in kilt and sporran re-enact the original Raising of the Regiment. Taking the part of the 18th-century Duchess of Gordon, one young lady welcomes each recruit with a shilling and a kiss.

SUNNY CORNERS IN A FRIENDLY ISLE



"WOULD YOU LIKE A ROSE?" ASKS A COTTAGER IN WILD SULBY GLEN

The Isle of Man is like a bit of Scotland transplanted—rolling hills and moors purpled by heather, deep glens green and gold with ferns and gorse, and majestic mountain peaks.



© National Geographic Society

Finlay Photographs by H. Anthony Stewart

AROUND ITS SHOULDERS, SNAEFELL DRAPES A HEATHER BLANKET

On clear days, visitors to the summit of this highest of the island's mountains look out over the Irish Sea to the "four corners" of the British Isles—Scotland, England, Wales, and Ireland. From Laxey an electric railway leads to the top of the giant hump.



Finlay Photograph by H. Anthony Stewart

HILKERS LEG IT OVER BREEZY MOORLANDS ROSY WITH HEATHER

High shoes are best for such slopes as this spur of Dalby Mount, near Niarbyl Bay, where stiff heather and spiny undergrowth tear socks and ankles. In autumn golden gorse blossoms scent the air with perfume sweet as that of a lady's boudoir. The buzzing of bees supplies a humming undertone to the crackling of the gorse pods in the hot sun.

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MANXLAND'S "NAVY LIST" INCLUDES THE ADMIRAL OF THE HERRING FLEET, WHO RECEIVES A SALARY OF FIVE POUNDS A YEAR

From time immemorial this traditional office has been filled. Catering to summer visitors now displaces the herring fishery as the Isle of Man's chief industry. Here at Peel, long the center of the Manx kipper trade, "nicker's," as some fishing boats are called, nestle to the quays. Two thousand men and boys manned the Peel herring fleet during its heyday. Nautical legends about mermaids, phantoms, and prophetic voices have become part of the rich native folklore. The concrete causeway (left) leads out to St. Patrick's Isle (Plate 1).

Finlay Photograph by B. Anthony Stewart



"LADY ISABELLA" WAS BUILT TO PUMP WATER FROM LANEY LEAD MINES. Named for the wife of a Manx governor, the big wheel, now idle, was turned by water piped down from the hills. Near-by mines were once among Britain's most productive.



© National Geographic Society

Finlay Photographs by B. Anthony Stewart

LOCH PROMENADE OFFERS NATURE'S TONIC—REST, SUN, AND SEA AIR

Ships land most of the island's visitors at the long Victoria Pier, in the background. Douglas is the seat of the Tynwald Court, one of the oldest continuous parliaments in the world. The nearest flower bed is planted to show the three legs, emblem of the Isle of Man.

SUNNY CORNERS IN A FRIENDLY ISLE



PUTTING TO SEA IN A CART—AND NO ONE SEEMS THE LEAST BIT WORRIED! Reason: they will transfer to a small boat at the "wharf on wheels" in deeper water. Horses also pull streetcars, called "toast racks," on the two-mile promenade behind this beach.

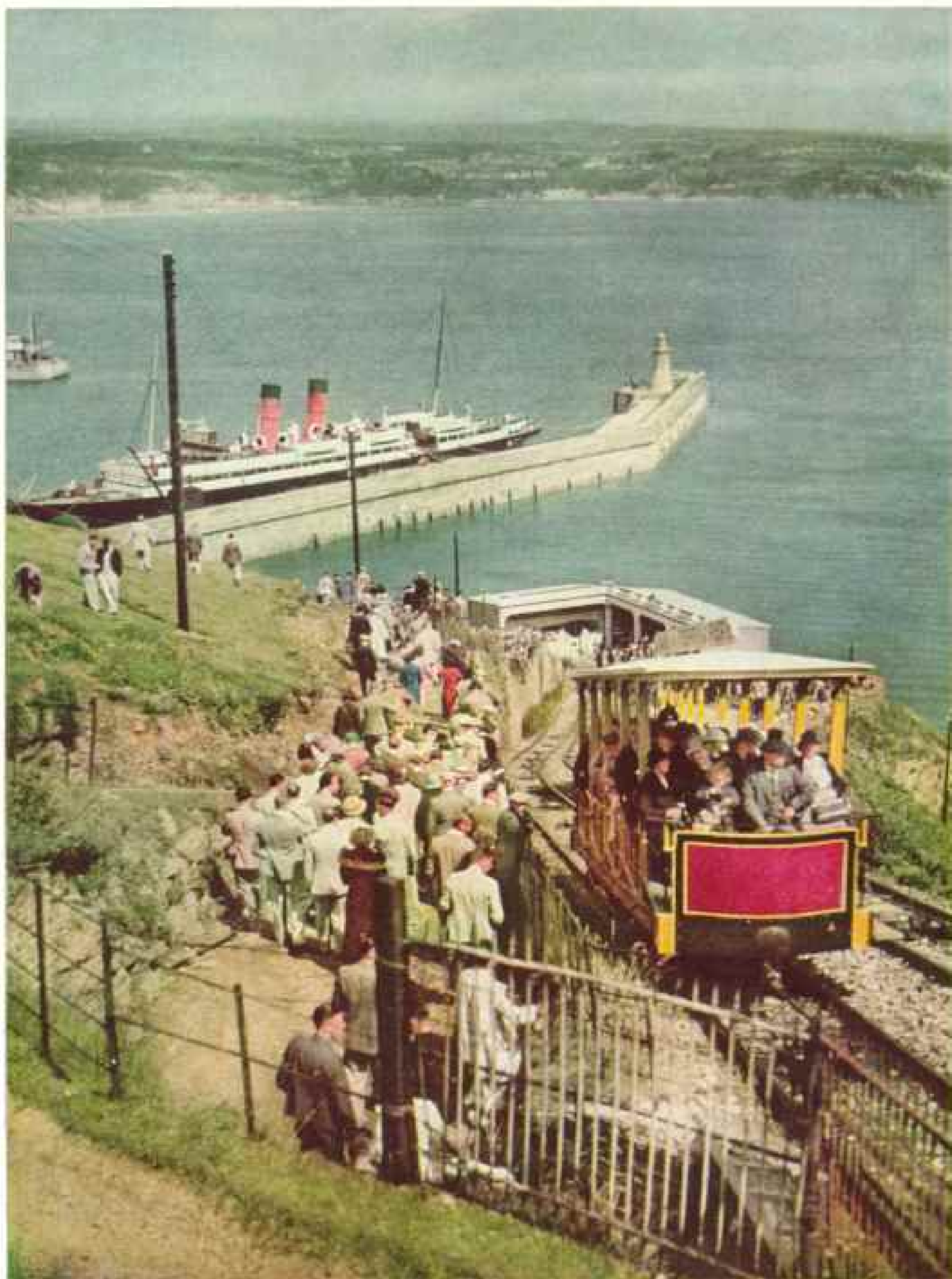


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Finlay Photographs by B. Anthony Stewart

BASKETS OF CLEANED HERRING, TO BE SALTED AND PACKED IN BARRELS

Scottish fisher lassies pick them from the tank behind and gut them almost in one motion. According to a Manx superstition, a diner should never turn over a herring on a plate; if he does, the boat that caught it will surely capsize!



© National Geographic Society

Finlay Photograph by B. Anthony Stewart

PROWS OF SMUGGLERS' SHIPS ONCE FURROWED DOUGLAS'S BLUE BAY

Before Man belonged to Britain, low duties on imports to the island encouraged wily merchants to smuggle liquor and tobacco from Douglas into mainland ports. Now, every summer, half a million visitors sail into the harbor. Crowds descending from a morning minstrel show on Douglas Head pass a cable-carful of excursionists on their way up. Manx pride in the homeland has given rise to the humorous legend that Great Britain and Ireland were originally parts of the Isle of Man.

ALONG LONDON'S CORONATION ROUTE

BY MAYNARD OWEN WILLIAMS

YOUR favorite newspaper, newsreel, and radio will make you, whoever you be and wherever you are, a coronation guest. Broadcast to the far corners of the earth, Britain's polychrome pageant will be monarchy's world-wide salute.

The regal "pomp and circumstance" which Elgar set to music for the crowning of Victoria's son, Edward VII, now assumes the proportions of a world première. In some part of Britain's wide dominions, on which the sun never sets, the Coronation on May 12 will occupy every hour of the clock and millions will rise from sleep to share London's noon-time fervor, Britannia's greatest day in 26 years.

Far from the madding crowd, free from the press of people in the London streets, safe from the crush which "bobbies" dread and against which every precaution is being taken, you will see more than any eyewitness, hear more than the Peers of the Realm.

A bit of program-peeking now may help familiarize you with the setting before the curtain rises on England's greatest outdoor spectacle—the royal ride between cheering throngs from Buckingham Palace to Westminster Abbey and back by way of Piccadilly Circus and Hyde Park (map, page 611).

While a favored few, dressed in purple or crimson velvet costing twenty guineas a yard and wearing historic jewels beyond price, anxiously guard their every practiced movement, you may take your ease. You'll be thrilled, but you won't be there. Why not do as the Lords and Ladies do, and rehearse the scene in advance?

ERMINES IMPORTED FROM CANADA

From the wilds of Canada, ermine and miniver—the Coronation's contribution to common vocabulary—have been collected and shipped to England. Skilled workers in white weasel fur, whose last star performance was in 1911, will still be manufacturing magnificence as you read these lines.

Unexampled crowds may cause the police, as a measure of safety, to change the coronation route. Against such a possibility, involving the return of money to place holders who have crossed wide seas for a first-hand view of medieval magnifi-

cence in a modern world, insurance brokers will fret.

When the eight matched horses, surrounded by Household Cavalry and drawing the brightly painted State Coach, clop-clop forth from the palace gates, approximately five million spectators will be stretched out along a circuitous route more than six miles long. For every lineal foot of the way, nearly eighty persons will line each side of the street.

Well indeed it will be for Milady, whose seat has cost as much as her Atlantic crossing, not to be on the wrong side of the road when the procession starts.

Vanity mirrors will flash high overhead, periscopes rise from the tightly packed throng like crowded chimney pots, and folding stilts enable short folk, for once in their lives, to look down on the tall (page 630).

Between the sound of military bands and the low rumble of saddle drums carried pannier-wise on high-stepping chargers, announcers will bring to you the very feel of the coronation crowds.

But what of the route, submerged in a sea of humanity?

ROYAL ROUTE THREADS MODERN LONDON

With map in hand and photographs to help visualize the setting for this six-mile pageant, let us follow the coronation route, not hidden by grandstands, cluttered with unwonted crowds, and decked out in fluttering banners and bright bunting, but as the lover of everyday London knows it, the neutral background against which all this color and movement are projected by age-old tradition.*

One thing let us note before we start. This is a modern, West End show. St. James's Square, Hyde Park, Mayfair, and Belgravia were off the map of England's early kings. This land route, traversing a cosmopolitan region whose hotels, clubs, and shops are known around the world, has supplanted the water route of the days when a king was rowed to his coronation in a many-oared barge and his highway was the Thames.

* See, in *THE NATIONAL GEOGRAPHIC MAGAZINE*, "Great Britain on Parade," August, 1935, and "As London Toils and Spins," January, 1937.



Photograph from Pictures, Inc.

TWO BY TWO, EIGHT WINDSOR GREYS REHEARSE FOR THE CORONATION DRIVE

Top-batted postilions "key to unison the very clatter of their horses' hoofs." When the ornate State Coach rolls along from Buckingham Palace bearing King George VI and Queen Elizabeth to Westminster Abbey, horses' nerves must be calm amid the roaring applause, waving flags, and shouting crowds massed in the windows, streets, and grandstands.

Many a true cockney* will be among the five million spectators, but the sound of Bow Bells will come faintly, if at all, to this royal road to kingship. Far away is the Tower, the City, and that Saxon London which supplanted Winchester as capital. Second-time visitors, despite the press of people and confusion of crowds, will have scant chance of being lost. This is all familiar ground to them.

They have stood near Victoria's statue to watch the Changing of the Guard, gazed at the helmeted and buckskin-trousered equestrian "statues" in Whitehall (page 617), visited Parliament and Westminster Abbey, fed the pigeons in Trafalgar Square, studied art at the National Gallery, bought steamship tickets in Cockspur Street or Haymarket, attended the theater near Piccadilly Circus, bought linens, gowns, or leather goods in Regent or Oxford Street.

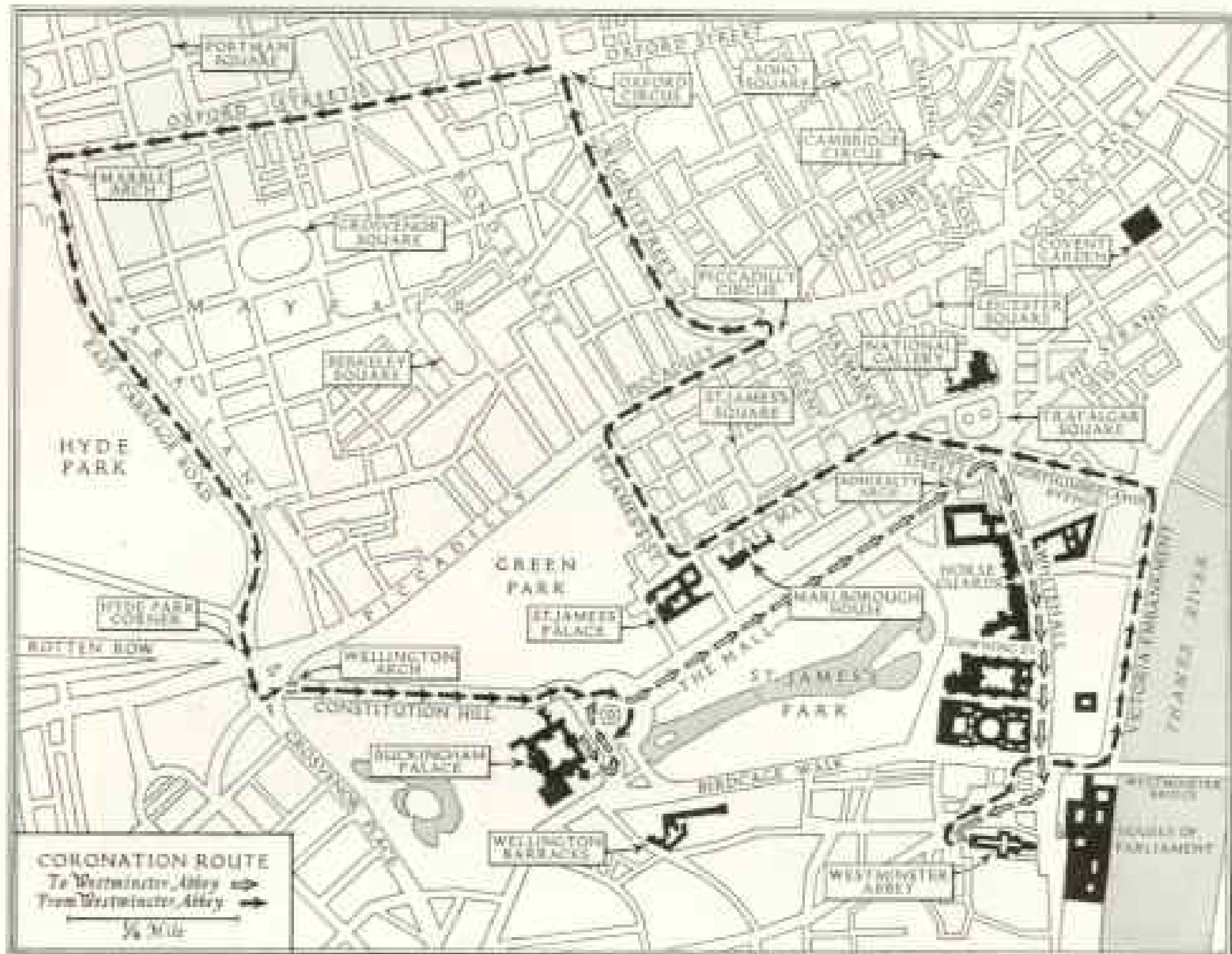
* Traditionally, a cockney was anyone born within sound of the Bow Church bells.

or seen the crocus and daffodil greet the spring beside Park Lane. All this wild suburbia of olden times is now the center of fashionable London, the tramping ground of travelers from far and near.

Training ground, too. Before their mirrors, fair ladies accustomed to modern dress march and countermarch, rehearsing the handling of their trains. Skilled horsemen key to unison the very clatter of their horses' hoofs. Waving flags, gunfire, and shouting have tested equine nerves which must be steady when King and Queen ride by, lest panic spread death in place of happiness.

CAVALCADE STARTS FROM BUCKINGHAM PALACE

The new Queen brings back to the throne one of two great names in England's history—Elizabeth. And here, outside the gates of Buckingham Palace, stands a memorial to the other—Victoria (pp. 614, 615).



Drawn by Newman Barnstead

THROUGH THE HEART OF LONDON WILL WIND THE CORONATION PROCESSION
IN A SIX-MILE CIRCUIT

Leaving Buckingham Palace, the State Coach will proceed through a vast concourse of joyous people along the Mall, through Admiralty Arch, and thence down Whitehall past the Cenotaph and the center of Britain's Government to Westminster Abbey. The coronations of all British Sovereigns since William the Conqueror, 37 all told, have taken place in this shrine of English history where King George VI and Queen Elizabeth will be hallowed by the Archbishop of Canterbury. After the traditional ceremonies, Their Majesties will ride in state down the Victoria Embankment, along Pall Mall, through Piccadilly Circus, up Regent Street, along Oxford Street, and thence by East Carriage Road in Hyde Park and Constitution Hill back to the royal residence.

But for her choice of this stately residence, an island in a green sea of mid-city parks, today's procession might start from St. James's Palace, down the Mall to the left, which gave its name, still unchanged, to the Court of St. James's. Queen Victoria made the mansion of a mulberry gardener and potential silk farmer her royal residence just a century ago.

All the way from Buckingham Palace to the Admiralty Arch, the Mall, with its double row of plane trees, is more parkway than city street. Green lawns, lake, and flower beds isolate it from Westminster; tight-portalied clubs stand between it and the marts of trade.

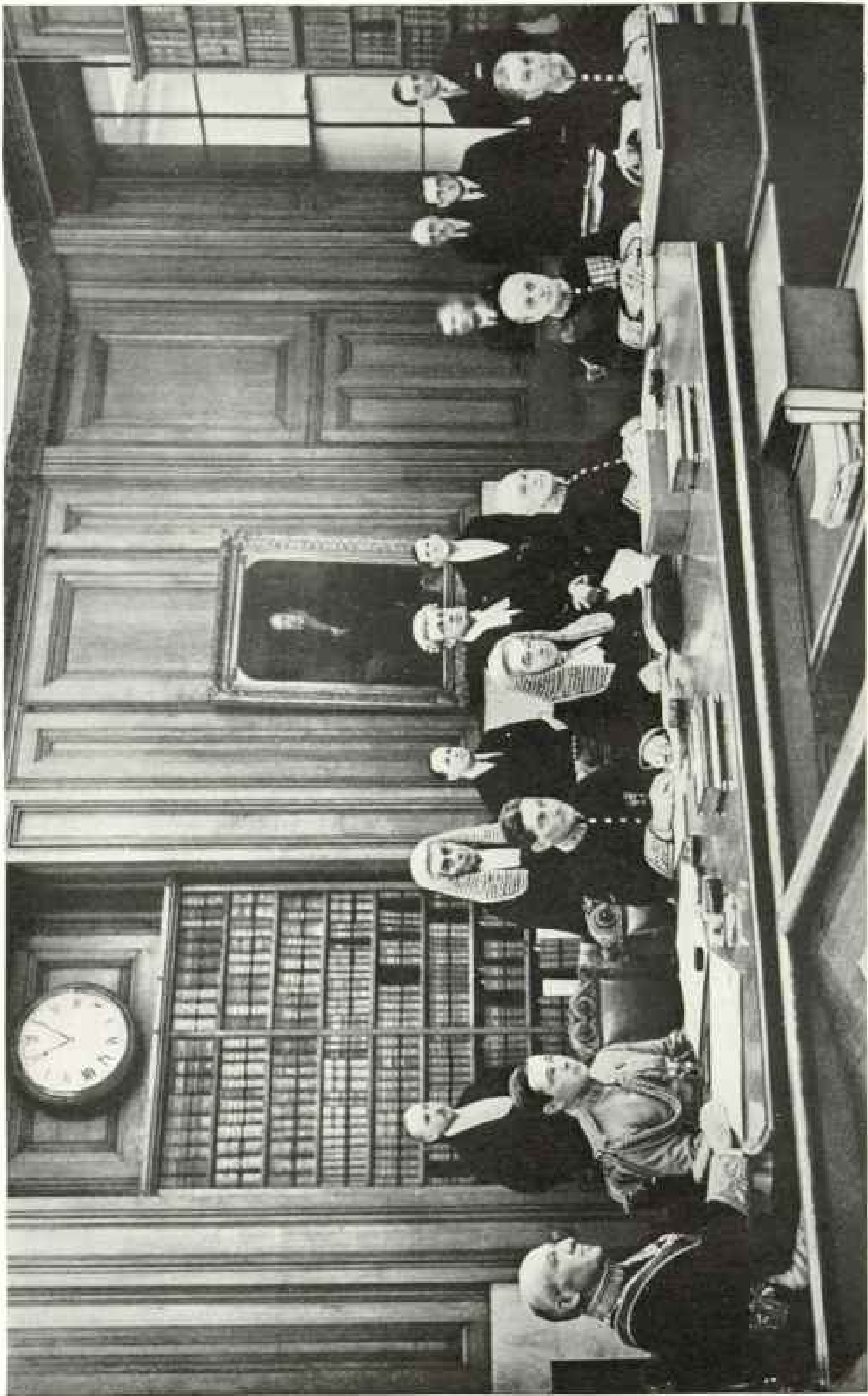
Somewhat as England's fleet protects this right little, tight little isle, so Admiralty Arch seems to guard the sylvan quiet of

the verdant pie-cut between the Mall and Birdcage Walk. Beyond its triple portal one plunges into a surging sea of men.

Atop the 50-year-old New Admiralty are the wireless antennas, Britannia's contact with her fleet. Even while the coronation ceremonies are being broadcast, terse messages in code will thence flash forth to Britain's ships at sea, while Captain Cook, standing close by in bronze, ponders on the results of his circumnavigation of the once wide world.

TRAFALGAR SQUARE, THE CITY'S HEART

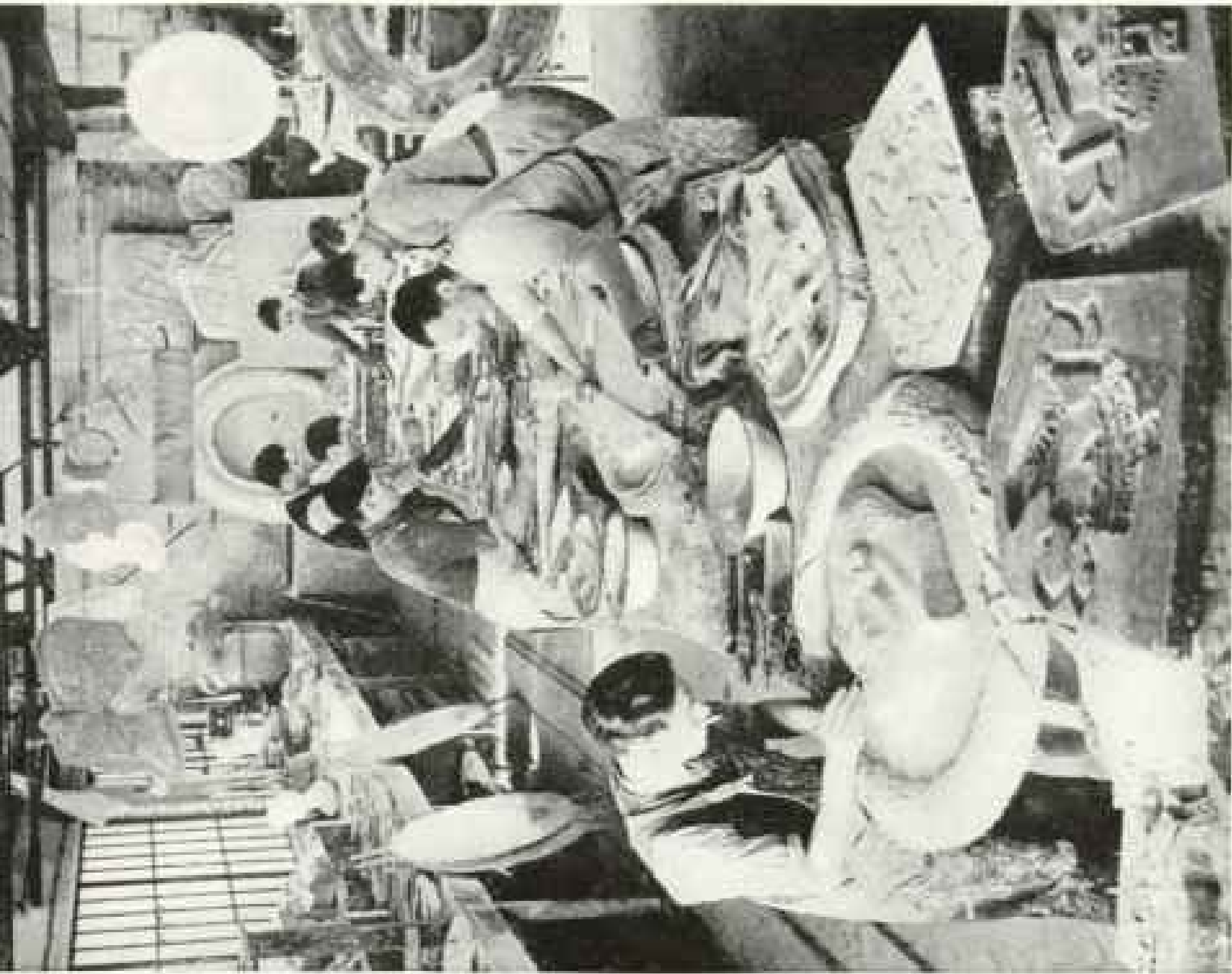
Horatio Nelson, high on his column guarded by the magnificent but tame Landseer lions, between whose paws small children pose for photographs and political demonstrators harangue the crowds, will



Photograph from White World

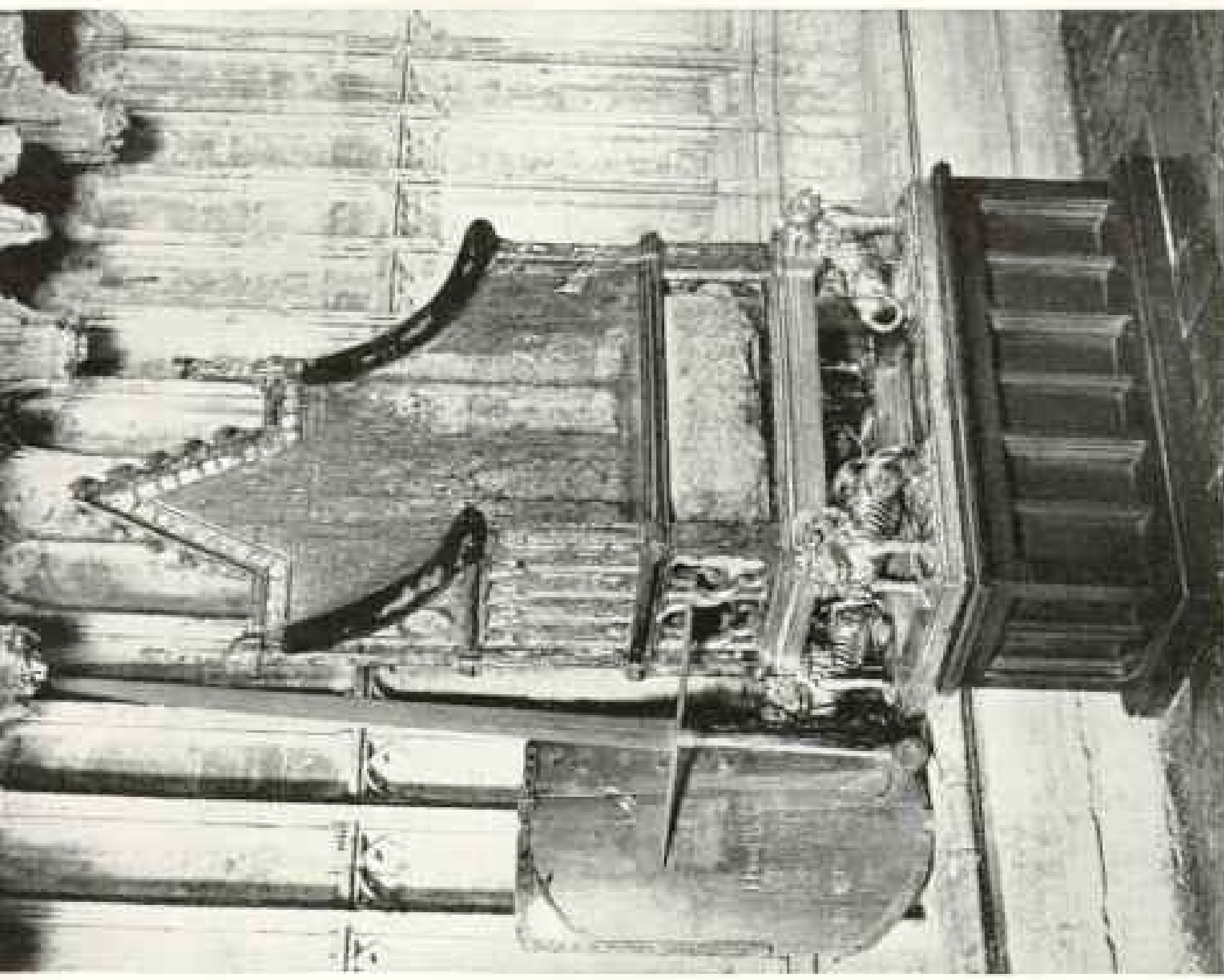
ONLY ONCE IN A GENERATION DOES THE COURT OF CLAIMS CONVEENE TO DETERMINE WHO SHALL BEAR THE KING'S RIGHT GLOVE, GOLDEN SPURS, OR OTHER SYMBOLS OF ROYALTY AND CHURCH

Lawyers present family trees dating back to the 12th century to support their noble clients' rights to perform traditional coronation services for His Majesty. Seated in the Privy Council Office, Whitehall, are, left to right: Earl of Cromer, Lord Chamberlain; Duke of Norfolk, Earl Marshal; Lord Thankerton, a Lord of Appeal in Ordinary; Lord Hewart, Lord Chief Justice, in wig; Lord Wright, Master of the Rolls; Earl of Onslow; and Lord Normand, Lord Justice General of Scotland.



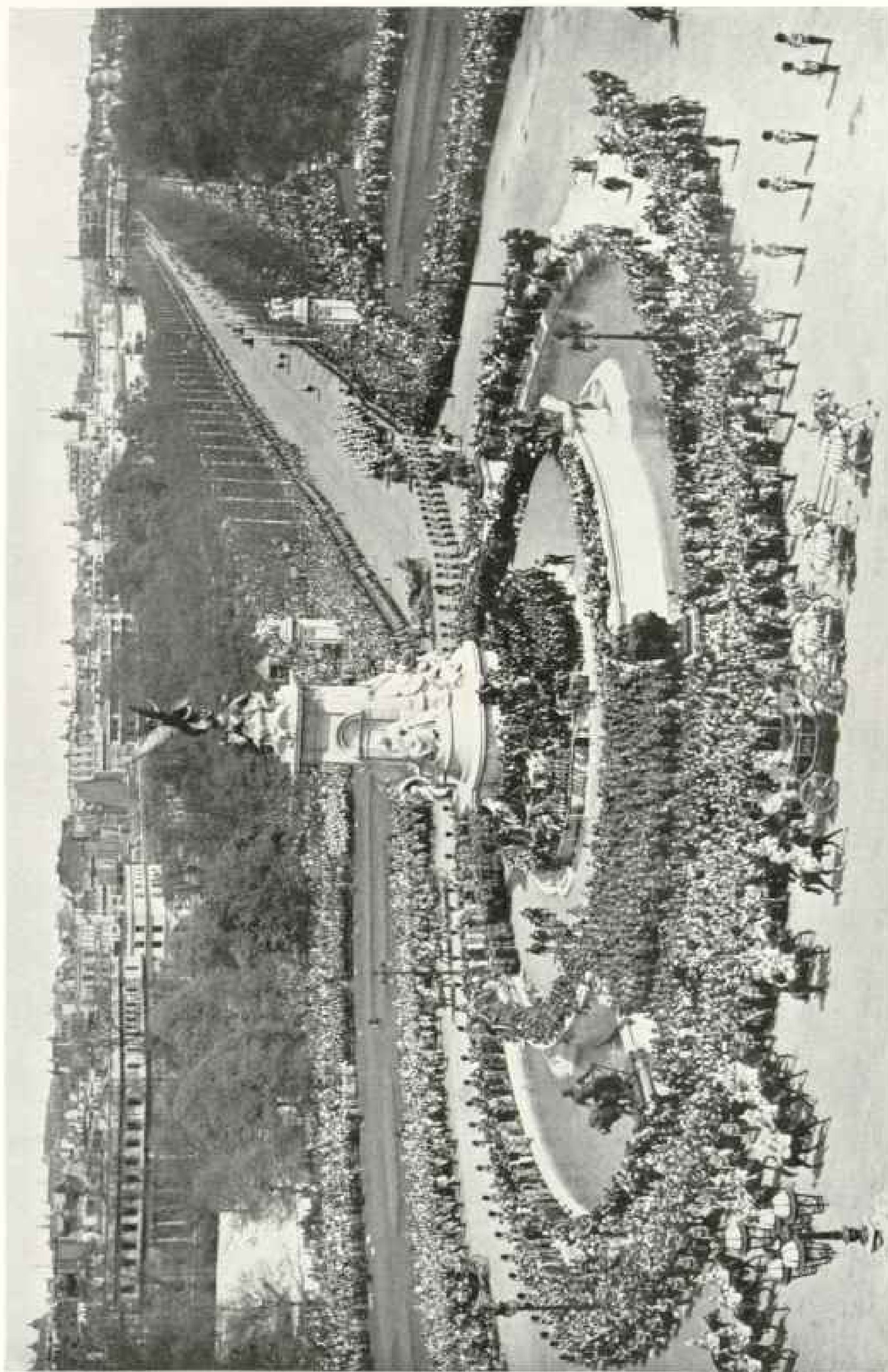
Photograph by AP from Pictures, Inc.
MAKING PLASTER MEDALLIONS OF THE KING AND QUEEN

These plaques will form street decorations along the route followed by the coronation procession (page 618). Among the finished products hanging in the background is a cast showing the heads of Their Majesties, superimposed, one above the other. Many such casts will be cherished for generations as family mementos of the Coronation of King George VI.



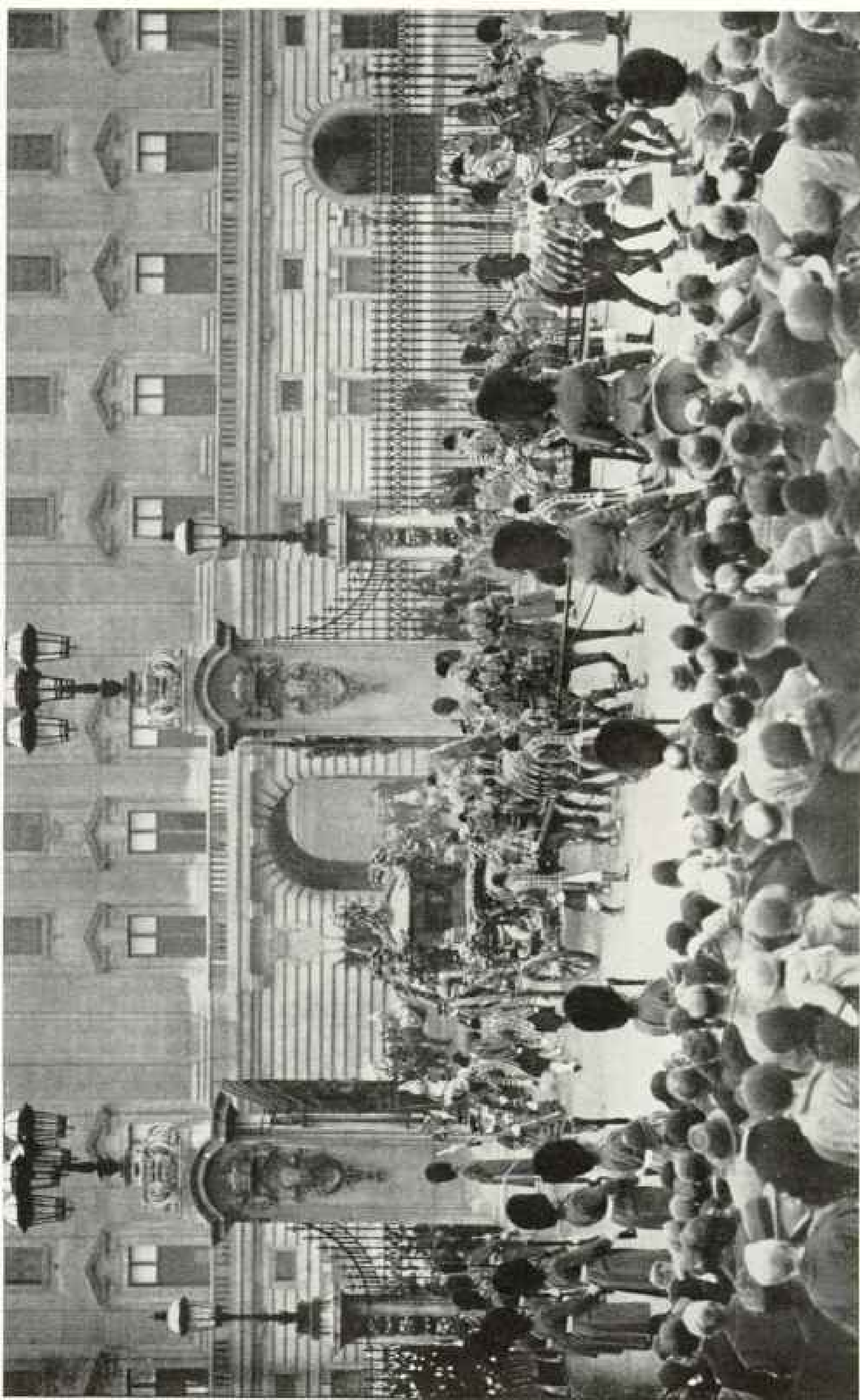
Photograph from Wide World
IN THIS OAKEN CHAIR KING GEORGE VI WILL BE CROWNED

More venerated than any glittering throne is the simple, initial-scarred chair, in Westminster Abbey. In this have been crowned all the Sovereigns of Britain but two since 1308 (p. 617). The rock slab under the seat is the hallowed Stone of Scone on which the Scottish Kings were crowned. The shield and two-handed sword were borne by Edward III when he fought in France nearly 600 years ago.



Photograph by G. Lane, London News Agency

BOUNDING QUEEN VICTORIA MEMORIAL, THE COACH OF KING GEORGE V AND QUEEN MARY RETURNS TO THE PALACE AFTER A JUBILEE PARADE taken from the roof of Buckingham Palace in 1935. The view shows the tree-lined Mall leading to Admiralty Arch (page 639). A seated figure of Queen Victoria looks down the Mall, and on the other sides of the memorial are groups representing Truth, Motherhood (center), and Justice. Winged Victory surmounts the shaft.



Photograph from Tropical Press

CYNOSURE OF ALL EYES WILL BE THIS GLINTING STATE COACH DRAWN BY EIGHT MATCHED HORSES HARNESSSED IN RED MOROCCO

Here the late King George V leaves Buckingham Palace on November 27, 1932, to open Parliament. Escorted by the Household Cavalry and Yeomen of the Guard, he rides in the famous four-ton coach that has borne four Kings and a Queen to their Coronations. Allegorical paintings on its doors and sides depict the success of British arms on sea and land. Four gilded Tritons support the body of the coach, the two leaders blowing conchshells in salute to the Monarch of the Ocean. Above its red roof, four boys hold a crown. Built for young King George III, who first used it to open Parliament in 1762, the coach has been often refurbished at great cost.



Photograph from *Wide World*

BRITAIN HONORS HER WAR DEAD WITH FLANDERS POPPIES ON ARMISTICE DAY, 1936

Rain or shine, no man passes the white Cenotaph without removing his hat in silent reverence. Each year on November 11 the Nation gathers here to preserve the two minutes' silence, and the King-Emperor lays a floral tribute at the base of the memorial. The Unknown Warrior lies in the nave of Westminster Abbey.

look down on a throng so dense that special police measures will be necessary to prevent this one-time site of the royal stables from becoming a shambles. Going and coming, the procession will pass through this pulsing heart of London life (page 622).

Here, where traffic masses in from the Strand, saunters up Northumberland Avenue from the Thames, returns from the theater past the site of Nell Gwyn's grave, or visits the century-old National Gallery—here is the sight which springs to mind at the mention of London.

Whether one follows Gladstone's advice, as Herbert Corey did, and views London from a bus top*; sees that nucleus of British pageantry, a statuesque Guardsman on horseback, or pauses before the statue where Charles I looks down Whitehall toward the scene of his beheading, Trafalgar Square is

* See "London from a Bus Top," by Herbert Corey, *NATIONAL GEOGRAPHIC MAGAZINE*, May, 1936.

sure to figure in the London visitor's day.

Heart of the city, this busy, stone-paved space, with its sparkling fountains and hand-fed pigeons, faces the main artery of the British Empire, a double dike of officialdom between park and river—the offices of Government (page 618).

CENOTAPH PLEADS FOR PEACE

But much of Whitehall's interest now centers in the Cenotaph, a white pedestal in the center of a gray street. English manhood here doffs its hat, not to the man with a portfolio, but before an "empty tomb," a memorial to the Empire dead in the World War. King George V unveiled the Cenotaph on November 11, 1920, and here the gun-carriage bearing the Unknown Warrior to his grave in Westminster Abbey paused for the two minutes' silence.

As King George VI and Queen Elizabeth drive to the Abbey where Albert Frederick Arthur George, as Duke of York, married



Photograph by R. Anthony Stewart

EQUINE BOREDOM ON PARADE!

Yawning chargers of the Horse Guards must tire of inaction on post when they stand immobile for hours, day after day. The pomp and panoply of the Coronation will require their help as escorts for the State Coach, thus breaking the monotony of their lives (pages 615 and 618). They will be aroused from their apathy by the martial music and by blasts from the silver trumpets hung with scarlet banners on which are emblazoned golden lions and unicorns.

Lady Elizabeth Angela Marguerite Bowes-Lyon on April 26, 1923, not the many-halled houses of Government but a simple Cenotaph may be their chief concern. How rule the living and still keep faith with him before whose Cenotaph a still small voice outroars the traffic?

Admiralty and War Office, Home and Foreign Offices, Treasury and Trade, Colonial, Dominions, Education, and India Offices, Scotland Yard—these are the tools. Whitehall is the workshop of Government.

SOLEMN RITES LAST TWO HOURS

In the Clock Tower, Big Ben will be striking eleven (5 a. m., Eastern Standard Time), as the procession passes the Houses of Parliament, ranged wide in their dignity of Commons and Lords, and approaches the west door of the Abbey (page 621).

Eye-witnesses will describe the stately two-hour ceremony. Entrance, Recognition, Oath, Anointing, Presentation of Spurs

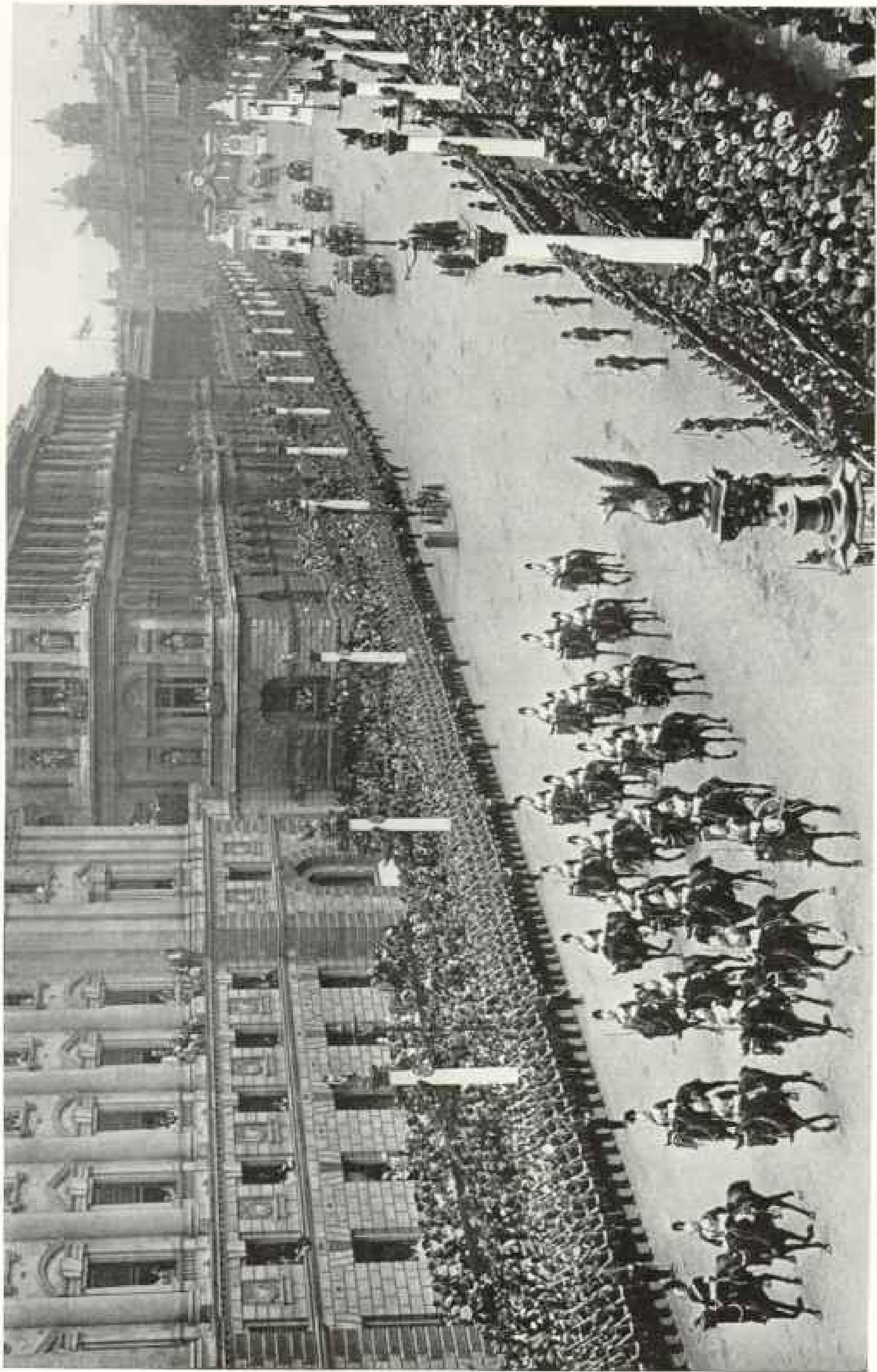
and Sword, Investiture with Armilla, Mantle, Orb, Ring, and Sceptres; the Crowning itself—these are some of the steps in a symbolic religious ritual.

Most impressive are those climactic rites centering about no gorgeous throne but an unpretentious oaken seat—the venerable Coronation Chair (page 613).

In this seat of the mighty all but two of Britain's Sovereigns in the last 629 years have sat to be crowned.

Seating himself in the chair, George VI, behind a pall of gold and silver brocade with golden tassels, will be anointed with the Holy Oil held in a golden spoon. In this the Archbishop of Canterbury will dip his fingers each time before making the sign of the cross on the King's head, bared breast, and palms.

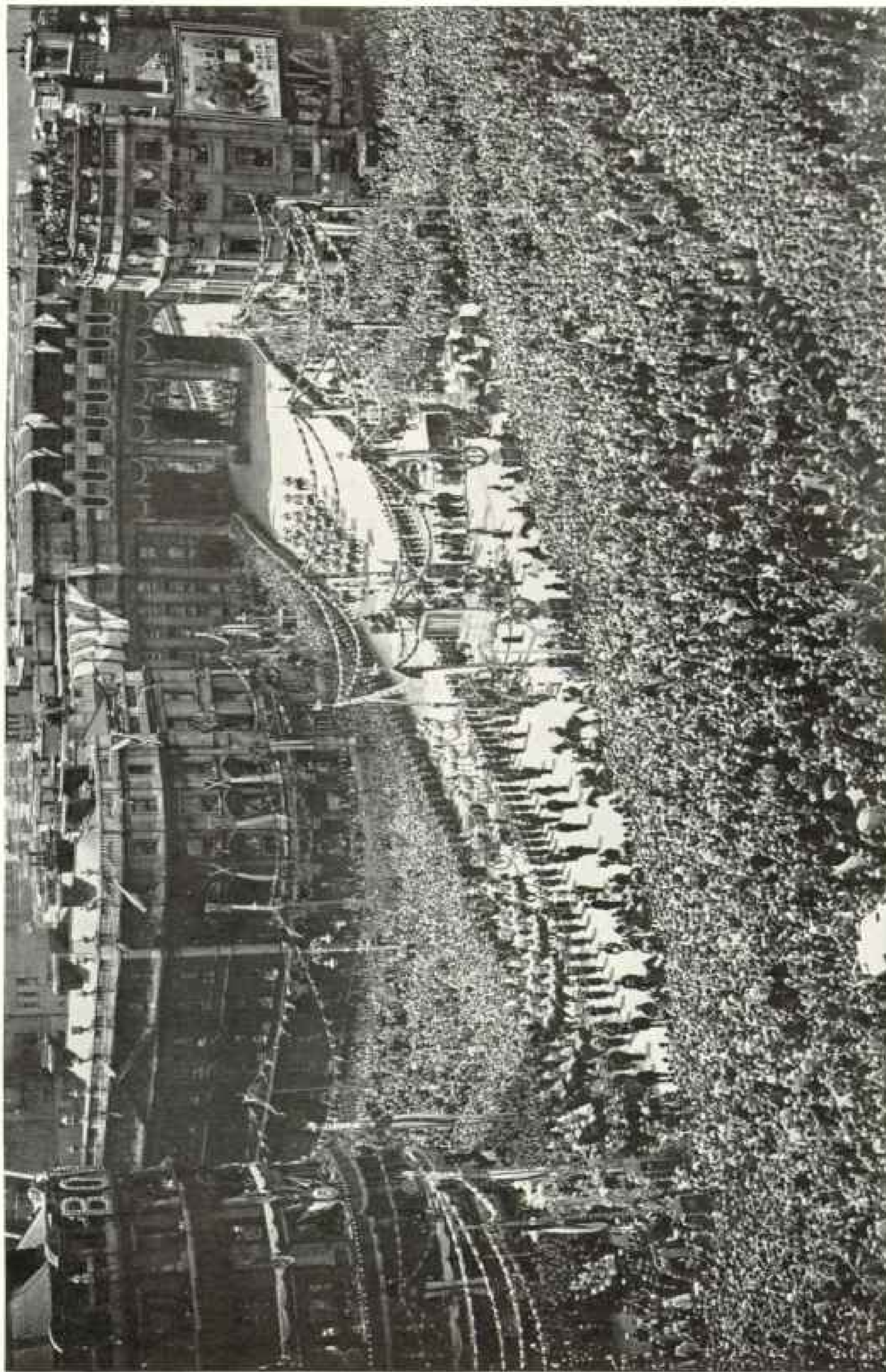
Thereupon, vested in a white cambric surpliselike garment and a loose cloth-of-gold coat, the King will be equipped with the symbols of his power, the Spurs and



Photograph from Typical Press

PERHAPS ONE OF THE SOLDIERS WHO FORMED SOLID WALLS AT KING GEORGE V'S CORONATION IS BRITAIN'S UNKNOWN WARRIOR

Only three years after the historic photograph was taken, many of these men went to France to fight for King and Country. The hallowed Cenotaph, which commemorates Britain's World War dead, stands today about where the third carriage in the 1911 coronation procession is passing (page 616). White pedestals, surmounted by statues and eagles, together with the distant arch, were temporary decorations. Beyond the Household Cavalry rise the Education, Home, and Colonial Offices.



Photograph by G. Lane from London News Agency

FIVE MILLION BRITONS THUNDERED CHEERS AS THE JUBILEE PROCESSION OF KING GEORGE V CLATTERED ALONG THE ROYAL ROUTE

Such a scene will again come to life on May 17, when King George VI and his retinue come through Admiralty Arch (in the background) and turn down Whitehall (upper left) on their way to Westminster Abbey. On the return, the procession approaches from the left and cuts across this corner of Trafalgar Square (map, p. 611).



Photograph by H. Anthony Stewart

BENEATH BIG BEN, QUEEN BOADICEA URGES HER BRONZE STEEDS AGAINST ROMAN INVADERS

Tribesmen crouch beside her in a chariot armed with scythes affixed to the wheels. London first appeared in history when Tacitus recorded how this courageous Queen and her followers burned Roman towns and military posts, and massacred "over 70,000" of the enemy. Although she was defeated and took poison in despair, her subjects thereafter received less severe treatment from Rome. A light by night in this Clock Tower of the Royal Palace of Westminster indicates Parliament is in session.



© The London Times

SWORD UPRAISED, RICHARD THE LION HEART SALUTES THE CHAPEL OF HENRY VII

Floodlights, set up for the Jubilee of King George V in 1935, accentuate the delicate beauty of this chapel of Westminster Abbey. The spirited equestrian statue of Richard stands in the Old Palace Yard, between the Houses of Parliament and the Abbey.

Sword. Now will come the actual crowning.

For this he will be vested in a rich robe of gold and purple brocade and the Coronation Ring will be put on his finger. The Orb, a bejeweled, cross-surmounted ball of gold, will be placed in his hands and he also will receive the Sceptres, symbols of kingly power, justice, and mercy.

A KING IS CROWNED

Then at last the Archbishop, holding the great St. Edward's Crown and praying that God will "bless . . . and sanctify this Thy servant, George our King," will slowly place it on His Majesty's head.

At this climax to the hours of brilliant and solemn ritual the Abbey's brightest lights will flash on, lighting up the gleaming jewels of the Crown.

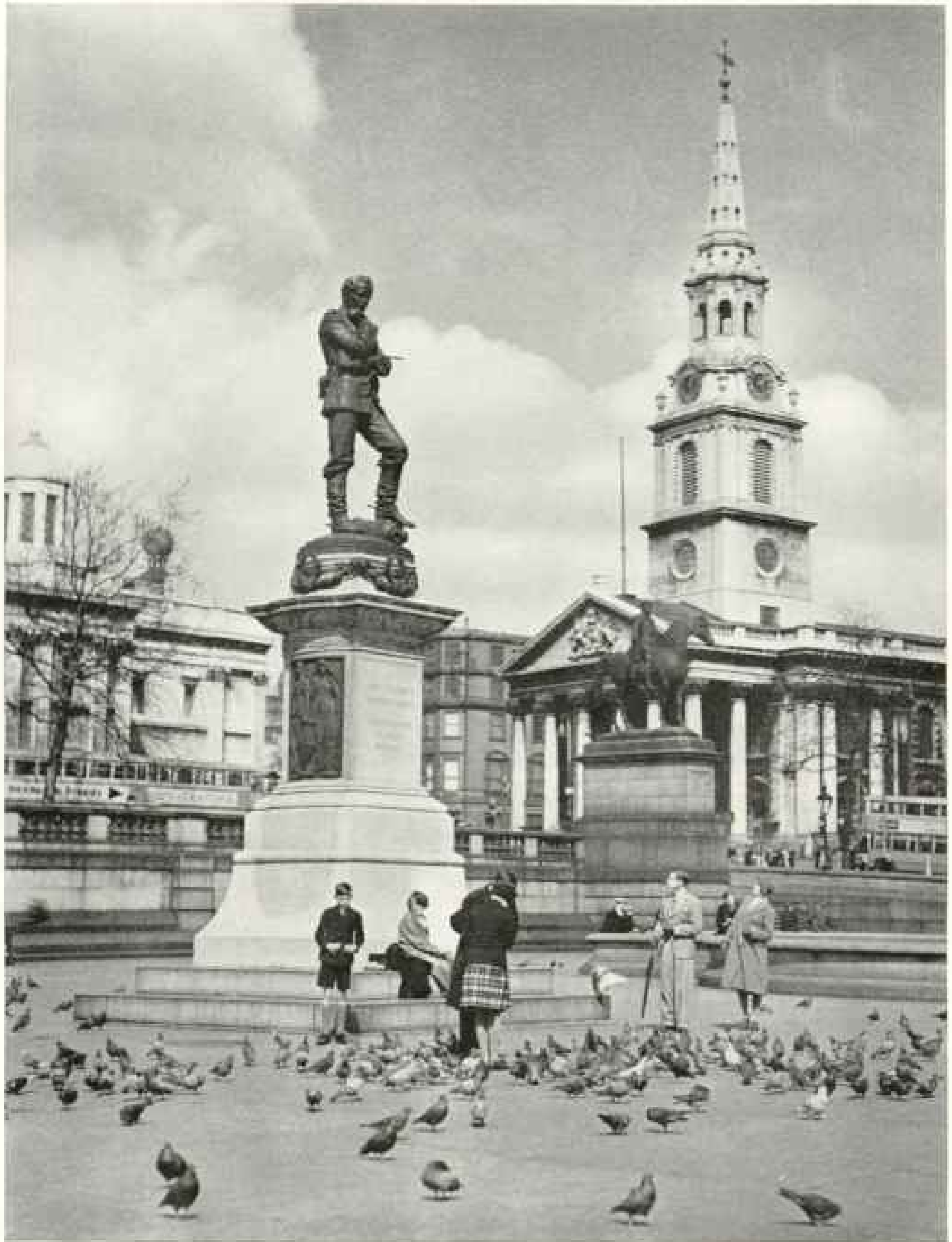
"God save the King!" will cry the crowd,

and far down the Thames will thunder the sound of cannon fired from the Tower (651).

None but a spot reporter can picture that scene. By the magic of radio you will listen in and almost see such grandeur and pageantry as never in history were so widely shared. This year, the undemonstrative Englishman puts on the world's costliest and most spectacular show.

The Coronation has changed the sailings of ships from Shanghai, Singapore, and Sydney. And in far Saskatchewan the weasel has been despoiled of his pelt to add four rows of ermine to the robe of a duchess, three and a half for a marchioness, three for a countess, two and a half for a viscountess, and two for a baroness.

Outside, in the grandstands, thousands will impatiently await the reappearance of the newly crowned King and Queen. But we, spared that suspense, will start back



Photograph by Maynard Owen Williams.

"CHINESE" GORDON, WHO DIED GALLANTLY DEFENDING KHARTOUM FROM THE "MAD MAHDI," CALMLY SURVEYS TRAFALGAR SQUARE

Ordered to China while a young man, Charles George Gordon suppressed the Taiping revolt. In gratitude the Manchu Emperor decorated him with the Order of the Yellow Jacket, and thus he earned his popular nickname. He became the Nation's hero again when he held the strategic outpost at the junction of the White and Blue Niles in the Sudan for nearly a year against overwhelming hordes of Arabs. The city was taken and the garrison slaughtered when succor was only two days away. The church is St. Martin's-in-the-Fields; its crypt is kept open at night as a refuge for the homeless. King George IV is honored by the equestrian statue, and near by, but out of the picture, is a bronze copy of Houdon's famous statue of George Washington.



Photograph from *Wide World*

EVERY GIRL'S A "QUEEN" IN THIS NOVELTY FACTORY

Crowns are only gilded pasteboard, but they set girls' fancies running! For months, shops have been turning out such decorations, souvenirs, and mementos by the thousands. After the Archbishop of Canterbury has placed St. Edward's Crown on the King's head in Westminster Abbey, attending peers will place real coronets on their own heads (page 621). Peeresses also crown themselves after the Queen has received hers.

along the longer route—four and three-quarters miles instead of one and a half—which leads to Buckingham Palace.

Skirting the base of the Clock Tower, with Big Ben surveying the event for whose radio announcement his booming bass will sing the theme song, we head downriver along the Thames (page 620).

Their Majesties, hemmed in by cheering throngs, will not see the view of which Wordsworth wrote: "Earth has not anything to show more fair." But we have time to step aside to look toward the pearly bubble of St. Paul's Cathedral or stroll on past Cleopatra's Needle, twin of the one in New York's Central Park, to the new Waterloo Bridge in whose building John Rennie's granite structure was absorbed.

Once beside the Thames there is the urge to continue to the Tower of London, where royal regalia have survived the royal residents. No longer do the Kings come up the river to their crowning, but the Crown and Sceptres do.

We turn up quiet Northumberland Avenue and plunge once more into the mael-

strom of Trafalgar Square. A step away is Craven Street where lived a rustic wit and philosopher who turned diplomat and statesman—Benjamin Franklin.

A modern cross which stands before a mid-city railway station in that busy part of London known as Charing Cross recalls that Edward I erected near by the last in a series of 15 crosses marking the funeral procession of his queen, Eleanor, who died in 1290. The equestrian Charles I has usurped the true site at the head of Whitehall.

HUMAN TIDE BECOMES A TIDAL WAVE

Dr. Johnson thought "the full tide of human existence is at Charing Cross." Were he to arrive there by train or tube on Coronation Day, the tidal wave of Londoners would almost overwhelm him.

Charing Cross opens on the suburbs, but Cockspur Street looks on the world. Imperial Englishmen and home-bound Americans here entrust themselves to any one of numerous steamship companies.

Advertising posters depicting far corners



© Fox Photos

"DRIVE-TO-THE-RIGHT" AMERICANS BECOME HOPELESSLY TANGLED IN LONDON TRAFFIC

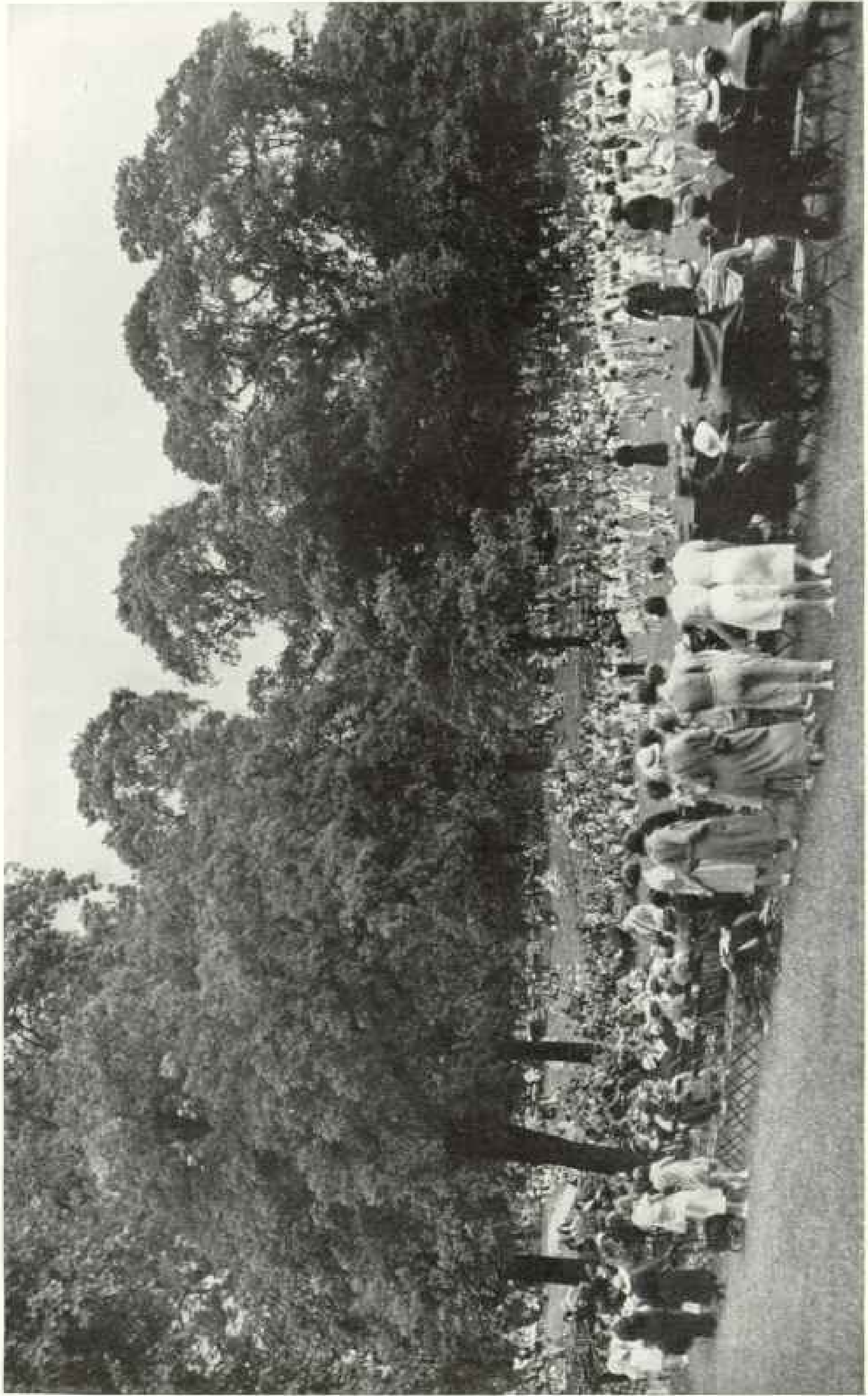
Such bunting and banners in Oxford Circus, strung up for the Jubilee, will flutter again on May 12. "GR" plaques proclaim the initials of "George Rex." Householders and shopkeepers along the route are urged to cooperate by decorating their houses with the color scheme adopted for their district.



© Donald McLoish

ONLY ROYALTY MAY RIDE BENEATH WELLINGTON ARCH

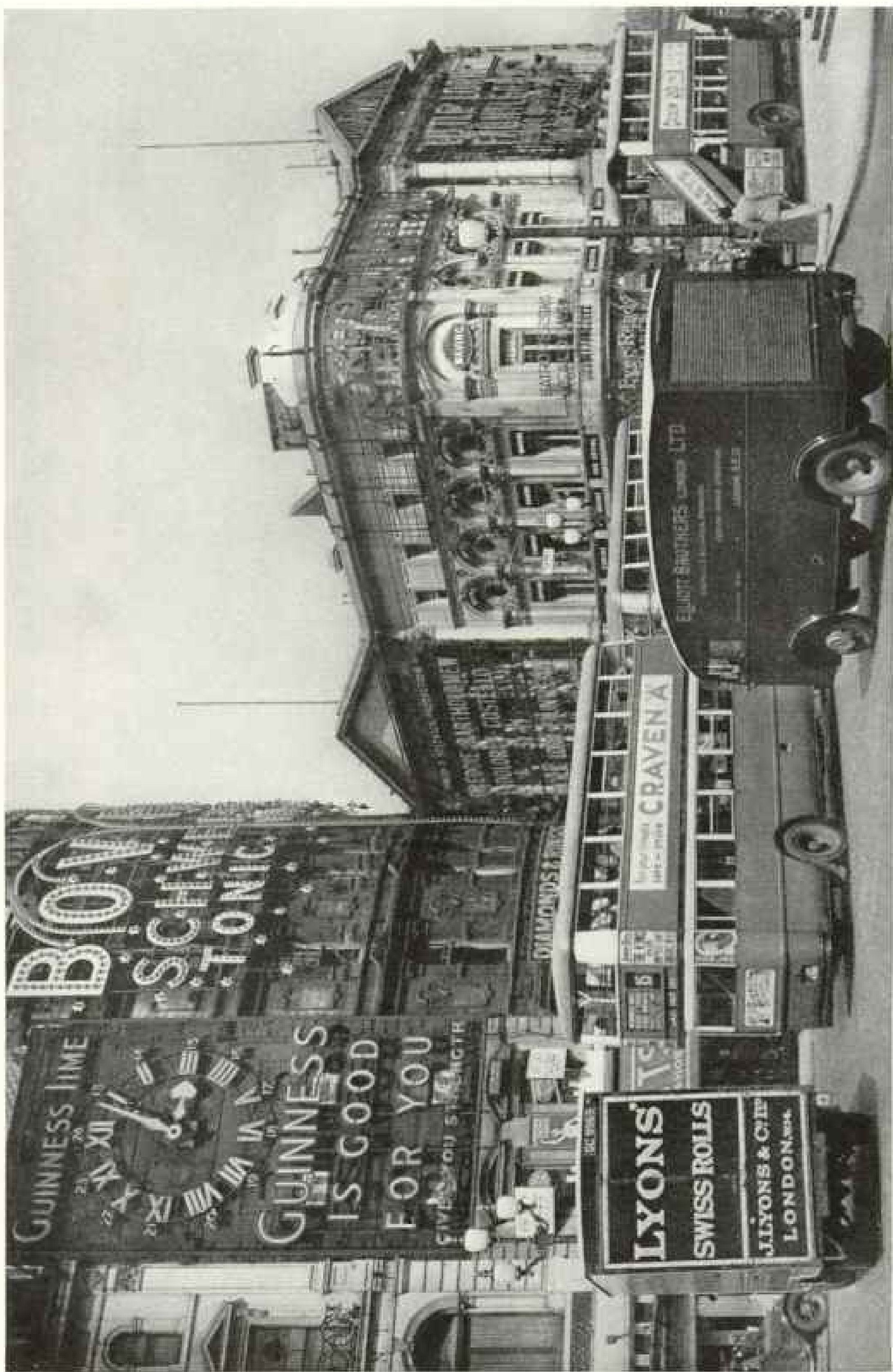
A winged figure of Peace guiding a quadriga tops this structure, which stands at the west end of Constitution Hill. To the right are the gardens of Buckingham Palace and a corner of the royal residence itself. The stone howitzer in the foreground is the Royal Regiment of Artillery War Memorial (page 629).



Photograph by B. Anthony Stewart

CHILDREN'S DANCES IN HYDE PARK ATTRACT PAYING VISITORS DESPITE A DRIEZZLE

To preserve and cultivate old-time steps, the English Folk Dance and Song Society sponsors open-air programs. As soon as one group completes its performance another enters the greensward. The park's perambulator populace forms much of the audience.



Photograph by H. Anthony Stewart

DOUBLE-DECK BUSES AND TRUCKS WILL BE CLEARED WHEN THE KING AND QUEEN SWING ACROSS PICCADILLY CIRCUS

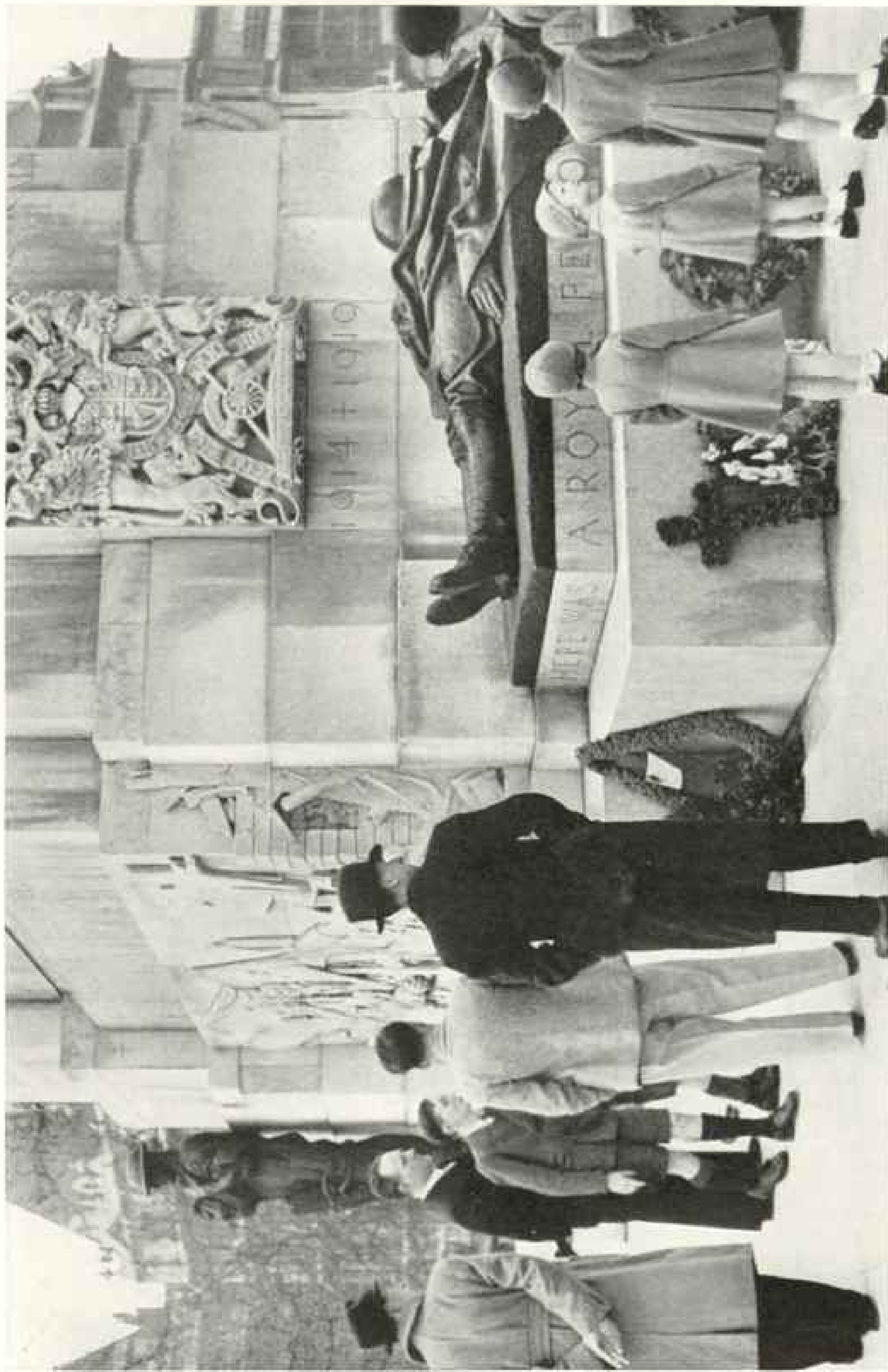
Several arteries converge to make the Circus one of the busiest spots in London. Annually, 25,000,000 persons use the underground "tubes" that radiate east, west, north, and south from its vast subway station. Freddie Bartholomew, youthful British prodigy, was showing in "Little Lord Fauntleroy" at the London Pavilion.



© Fox Photos from W. E. Meyers

EVERY MORNING, THE HOUSEHOLD CAVALRY RIDES THROUGH MARBLE ARCH TO TAKE UP DUTY AT THE HORSE GUARDS PARADE

Returning from Westminster Abbey, the coronation procession will pass under this structure. Designed to resemble the Arch of Constantine in Rome, it originally stood in front of Buckingham Palace. Later the arch was moved to its present site, where until 1908 it formed an entrance to Hyde Park.



Photograph by H. Anthony Stewart

AT HYDE PARK CORNER STANDS THE ROYAL REGIMENT OF ARTILLERY WAR MEMORIAL

"In proud remembrance of the forty-nine thousand and seventy-six of all ranks of the Royal Regiment of Artillery who gave their lives for King and Country in the Great War 1914-1919" (page 625).



Photograph by AP from Pictures

STILTS FOR THE CORONATION!

If tardy, she'll need them—and maybe a periscope too. Spectators nearly 80 deep will throng each side of the circuitous route.

of the earth should remind the King and Queen of ducal journeys to New Zealand, and Kenya, Uganda, and the Sudan.

Here, amid the haunts of American visitors, is a monument to an officer of the Blues, in wig and pigtail—our unwitting benefactor and forgiven enemy, George III. Englishman and American alike can look on the statue without rancor.

To him, in part, we owe our independence. Under him, English liberalism grew, to flower more than a century later in a Commonwealth of Nations loyal to the fifty-eighth Sovereign of this island kingdom.

A short cut to Piccadilly is Haymarket, where American is understood, popcorn is sold, and Hollywood has its temples. But the procession goes down Pall Mall (call it Pell Mell, Pal Mal, or Pie My, but never Pawl Mawl), the Main Street of clubland and fashion.

To this region come the lovers of comfort, caste, good fellowship, gin-and-bitters, and silence in the reading room. One qualification of the Travellers' Club is that the applicant must have traveled at least 500 miles from the clubhouse door.

No hotbed of provincialism is this quiet, dignified backwater. Who are its heroes? Florence Nightingale of Scutari, Sir John Franklin of the Arctic, Clyde and Lawrence of India, Captain Scott of Antarctica, Lord Curzon, who ranged the earth. Clubland, however comfortable, could not hold them.

As King George VI rides through clubland he may look up at the Duke of York's Column, surmounted by a statue of one of his ducal predecessors, like himself the second son of a King George—George III.

Down Waterloo Steps is the Mall and beyond the greenery of St. James's Park are the towers of the Abbey, scene of the crowning, and burial place of "a British Warrior, unknown by name or rank, brought from France to lie among the most illustrious of the land."

PICCADILLY NAMED FOR A COLLAR

Had Buckingham not supplanted St. James's as palace, the newly crowned rulers would now be home again. But they turn north on St. James's Street toward Piccadilly, named for the pickadils, or ruffed lace collars worn in Stuart times.

On this broad, congested highway which leads to Kensington, Richmond, Bath, and Cornwall, England's new King lived as Duke of York. On our left is Burlington House, home of art, learning, and loan exhibits of Persian or Chinese treasures; and the Albany, where Byron, Bulwer-Lytton, and Macaulay occupied a "bachelor village."

Hotels and restaurants dear to memory flank our route as we approach Piccadilly Circus, centered about Sir Alfred Gilbert's beloved statue of Eros, again back in place after important underground developments for improving this traffic hub of London night life.

Around this islanded statue an average of two thousand Austins, Rolls-Royces,



Photograph from *Typical Press*

FROM THE TOWER OF LONDON, CANNON BARK A ROYAL SALUTE TO KING GEORGE V

Rolled to the edge of the Thames on May 6, 1932, the guns are booming in celebration of the King's twenty-second year upon the throne. At the climax of the Coronation the cannon speak (page 621); also on birthdays of the King and Queen. Through smoke and fog looms the Tower Bridge.

buses, and other vehicles circulate in a clockwise direction every hour (page 627). Vehicles keep to the left. Pedestrians, if they reach the sidewalk—and even right-looking aliens usually do—keep to the right until they enter the tube, where they make for whichever escalator is going down.

Regent Street was laid out by the famous Nash, a "very great master, who finds us all brick and leaves us all plaster." Marble and reinforced concrete, curved to the designs of Sir Reginald Blomfield, have made this harmonious thoroughfare "the finest shopping street in the world." Some knowing buyers, though, prefer such lesser places as Old Bond Street, where a young blood not only can find jewels for his lady but also can have her photograph taken and provide her with a car.

West of Regent Street is Savile Row, whose shapeless sack suits and impeccable formal dress set the fashions of the masculine world and help to earn—along with near-by hatters, hosiers, and haberdashers

—London's reputation as a man's town.

Splendid though it is, Regent Street would not be an old street in Philadelphia or Boston, for Waterloo was won before this dream of George IV was realized. A suggestion of half-timbered Tudor times is preserved at Liberty's annex. On a famous clock St. George fights the dragon every quarter hour and slays him every hour, a triumph of virtue somewhat belied by the near-by Great Marlborough Police Court, which stands for constant combat with vice in somewhat the same way that Scotland Yard suggests the victory of the law.

Not far away is St. George's, where that arch-American, "Theodore Roosevelt, twenty-eight, widower, ranchman," married Edith Kermit Carow below stained-glass windows already old when Disraeli was married here, nearly a century ago.

At Oxford Circus, another busy traffic center, the coronation procession turns west toward the Marble Arch (page 628). But for us to do so would be base ingratitude,

for a bit farther on and closing the view beyond Queen's Hall is the modernistic, modern-functioned building housing the British Broadcasting Corporation, through whose magic and skillful arrangements the whole world is able to listen in on the doings and speeches of British royalty.

"B. B. C." IS ENGLAND'S MOUTHPIECE

Thanks to B. B. C., millions the world around have thrilled to the romance, pageantry, and dignity of English life. Through this great center of almost personal communication, King George V, more beloved than he had dreamed, spoke with intimate sincerity to his widespread family.

Oxford Street is an avenue of big department stores. Peter Robinson, Marshall and Snelgrove, Selfridge—who has not heard their names? Crowded bakeries serving tea, chocolate stores with prices quoted by the quarter-pound, new flats, an ant-hill hotel of fine efficiency—these lead one on from Oxford Circus, with its all-night lunchwagon, to the Marble Arch, copied from Rome and transplanted from in front of Buckingham Palace (628).

Near the northbound stream of traffic up Edgware Road there formerly stood Tyburn Gallows, often used, where Sir William Wallace, the Scottish patriot; Elizabeth Barton, the Joan of Arc of Kent; and the highwayman, Jack Sheppard, shared the democracy of the noose. For nearly six centuries the gallows, then remote from the City, served a variety of causes, but by the time the American Revolution was over this notorious gibbet had ended its eventful career.

Men have forgotten Tyburn, for the temper of the times has changed and a broader tolerance has come. Just inside the railings of Hyde Park, soap-box orators with portable stands plead and promise.

When a demonstration seems serious, resourceful bobbies stage a rival show of football. Here was born the story of the by-no-means flat-footed policeman who fought sedition with satire by announcing: "All desiring to burn Buckingham Palace, step to the left; others to the right," thus upsetting the British rule of the road in favor of righteousness.

At Marble Arch the procession enters London's largest "lung," once the property of the Abbots of Westminster. Henry VIII made it a hunting ground—for deer—and the Stuarts a race track and dueling ground.

Queen Caroline gave it the Serpentine, and Sir George Frampton, turning Barrie to bronze, gave Peter Pan to the children of Kensington Gardens, which adjoin Hyde Park on the west.

Birds and flowers, toy sailing boats and rowboats, Rotten Row cavaliers, and the church parade add life to this vast, informal expanse of greenery, dotted with Queen Victoria's comfortable "charities" on which one may sit all day for tuppence. Renting chairs in the London parks was a form of charity instituted by Victoria.

As he drives from the Marble Arch to Hyde Park Corner, King George will have almost circled Mayfair, which Sydney Smith said "enclosed more intelligence and ability, to say nothing of wealth and beauty, than the world had ever collected in such a space before."

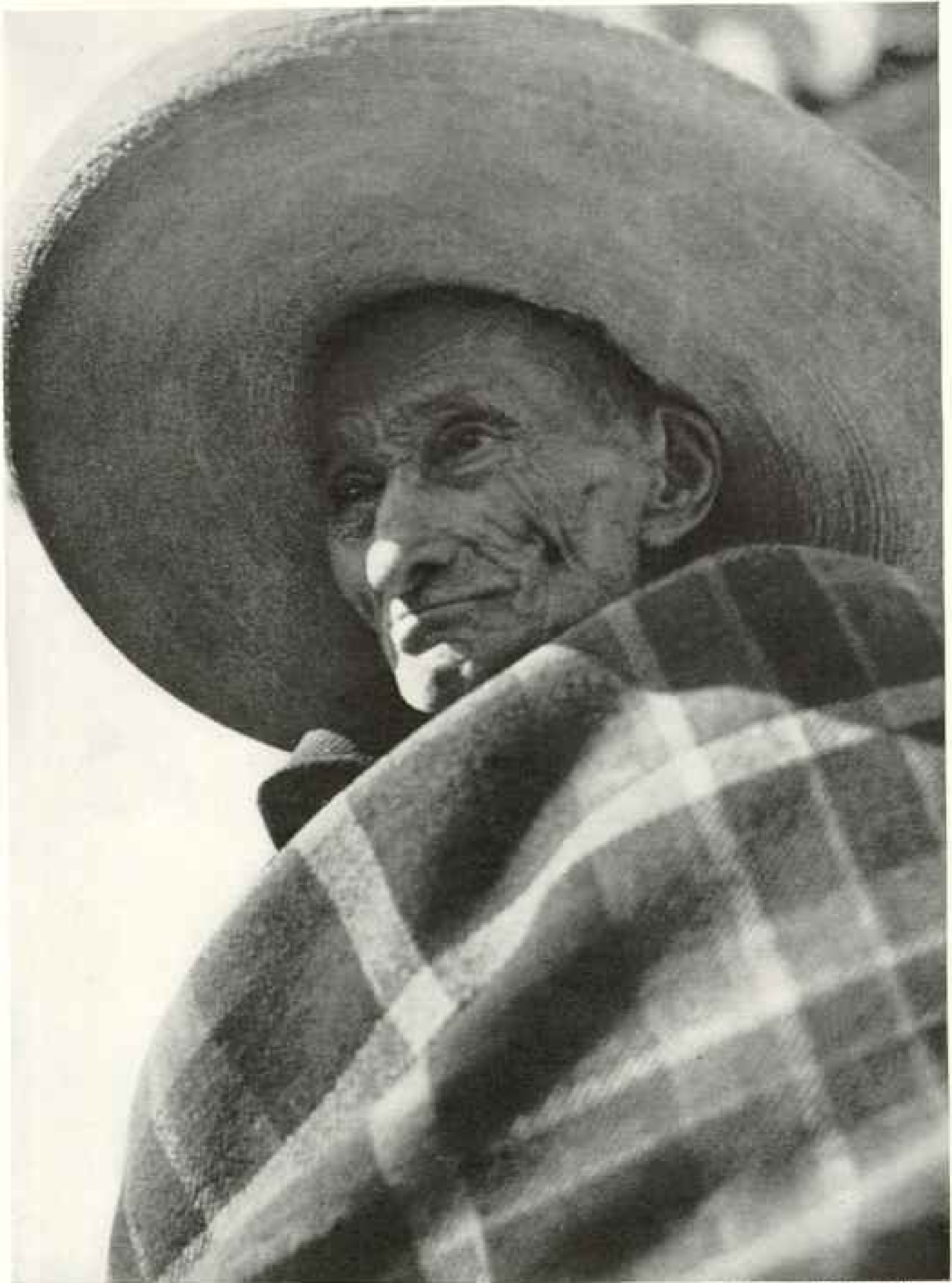
On modern Park Lane, wealth and beauty are as conspicuous as ever. Its residents and guests figure in society pictures, and Park Lane entertainers, many imported from Broadway, furnish the beauty and attract the wealth. Their Majesties will have Babylon on one side and Eden on the other as they pass through a gateway, bearing reproductions of the frieze Lord Elgin brought from the Parthenon, and reach Constitution Hill.

BACK AT BUCKINGHAM PALACE

Belgravia lies ahead, but after these long hours of pomp and glory Buckingham Palace must seem a welcome haven. Around the Victoria Memorial and far down the Mall, over toward Wellington Barracks and crowded thickly in Birdcage Walk await the loyal, enthusiastic crowds. But the last part of the homeward ride is between the comparative quiet of Green Park and Buckingham Gardens, the private retreat of the Royal Family.

Here come the King's horses and the King's men, with clattering hoofs announcing the approach of the coronation coach. Under new-leaved trees the procession advances, circles the Victoria Memorial, and wheels right between the palace gates.

There is a moment's pause while the King and Queen, with their two charming daughters, ascend to the balcony where all may see. There is no mistaking the cry of these myriad throats, no mistaking the loyal ardor of this close-packed throng. Like the shot fired at Lexington, this outburst of loyal affection will be heard around the world.



Photograph by Helene Fischer

SCION OF A TRIBE CORTÉZ NEVER CONQUERED

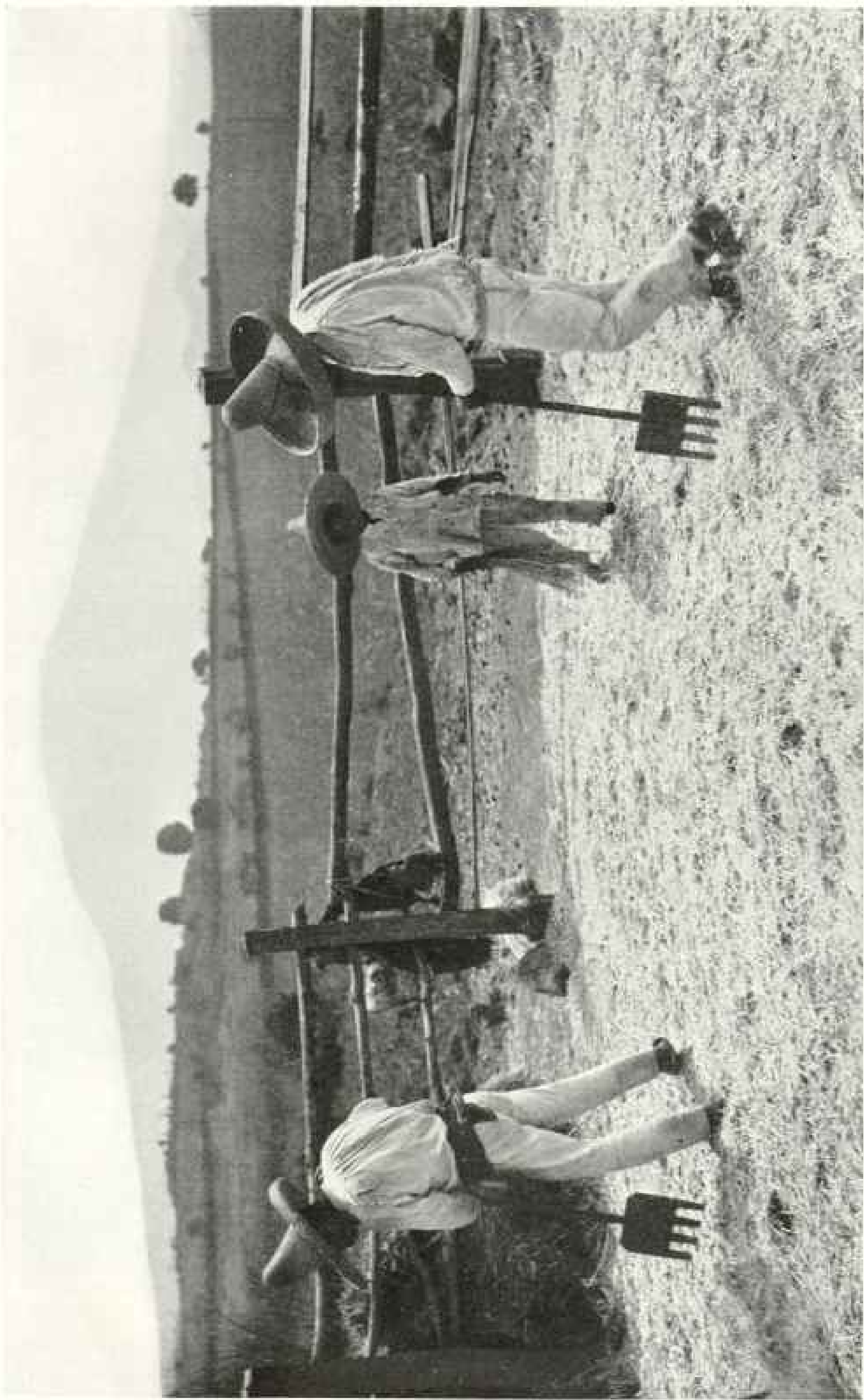
Mystery shrouds the forbears of the Tarascan Indians, who fled to the mountains rather than submit to Spanish rule. Among their native legends is the tale of a great flood, from which a Noah-like god escaped in a boat filled with birds and animals. Today their descendants live in the State of Michoacán, whose capital, Morelia, is 135 miles west of Mexico City.



Photograph by summer W. Madison

FOR THIS TUMBLING, FEATHERY CATARACT THE TABASCAN HAS A NAME MEANING "THE SIEVE."

Tzarámcua Falls, with its fern-draped gorge, is one of the reasons why the near-by city of Uruapan, famous for its lacquerware, is called the "Paradise of Michoacán."



Photograph by Edmund W. Materson

INDIANS WITH MODERNISTIC FORKS SEPARATE CHAFF FROM THE WHEAT

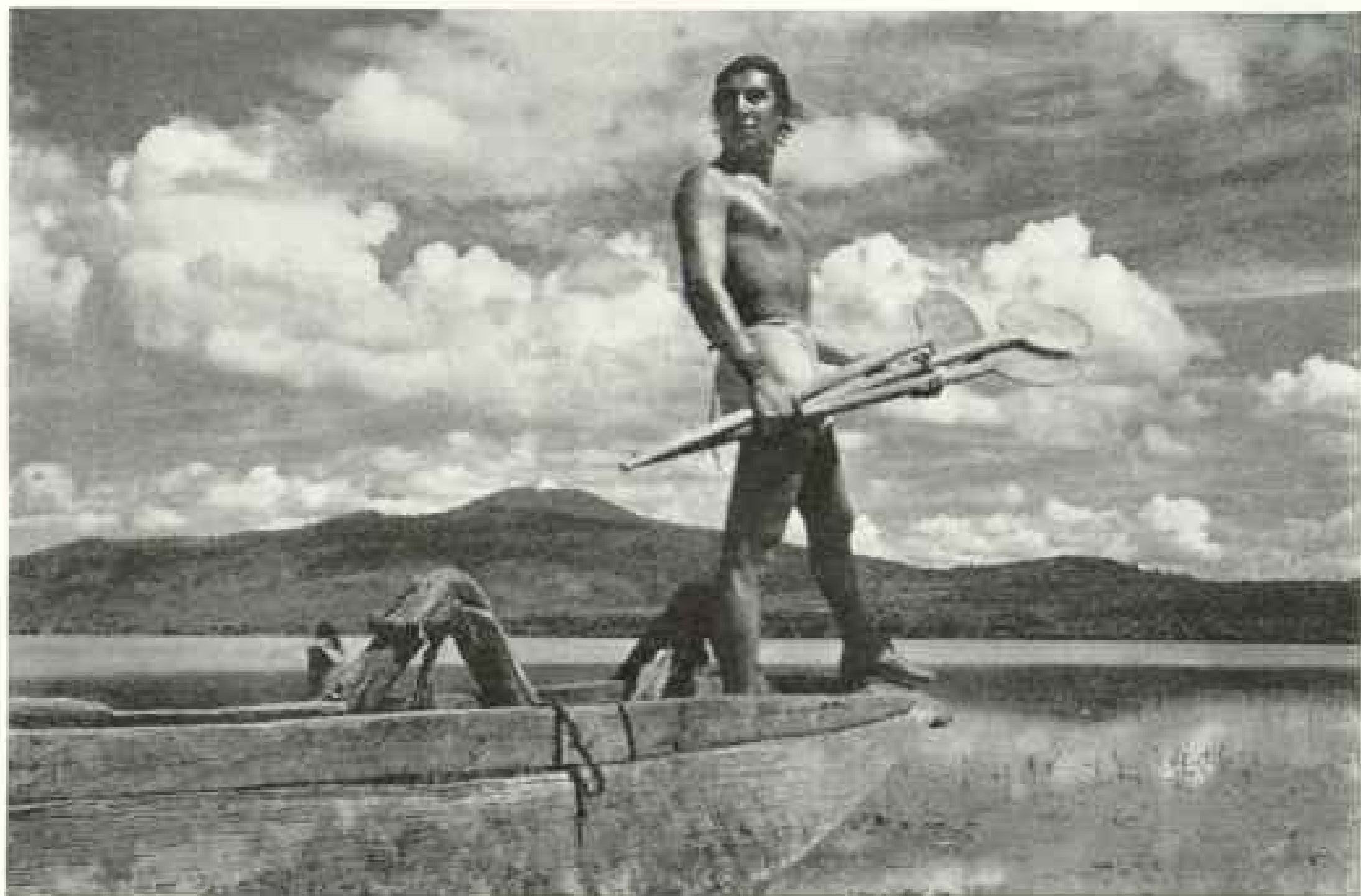
Farmers of the lake region in Michoacán use this crude tool to sweep straw away from the grain on their threshing floors. Since pre-Conquest days Tarascan Indians have been expert metalworkers. They are credited with the secret of tempering copper.



Photograph by Sumner W. Matteson

CREAKING AND GROANING, LUMBER CARTS ROLL INTO PATZCUARO

A motor highway now links the village with the outside world, but most products in its market are brought over such dusty side roads. This one points toward the unfinished church of La Colegiata, once destined to be a cathedral but never completed because the episcopal see was moved to Valladolid (Morelia).



AN ADONIS OF THE LAKES; PROUD AND VIRILE.

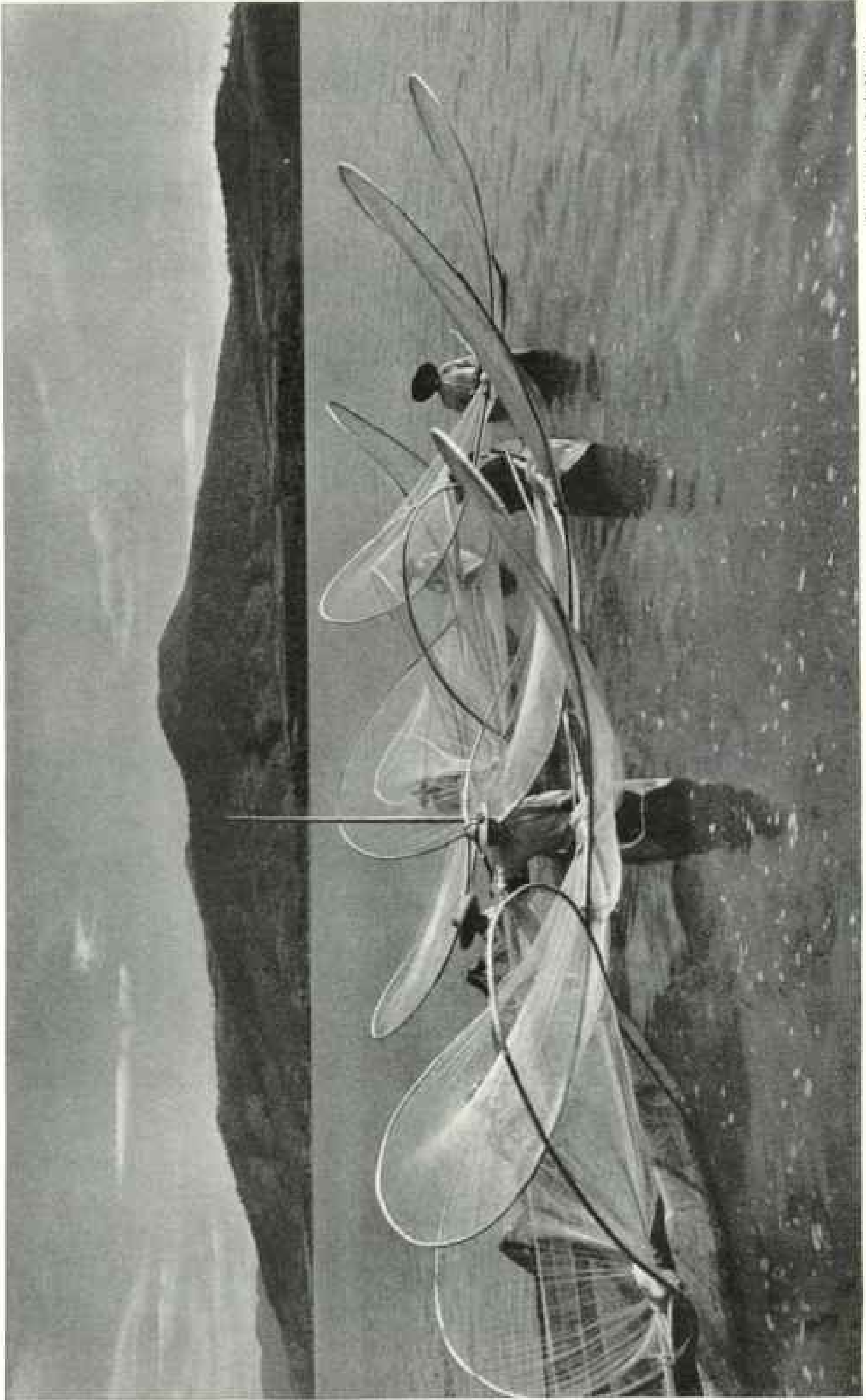
Many fishermen of the Pátzcuaro region are magnificent physical specimens. Chroniclers say that the Tarascans, when the early Spaniards arrived, were the finest looking of all Mexican aborigines.



Photographs by Luis Márquez.

UNLIKE MOST INDIANS, TARASCANS ARE OFTEN BEARDED

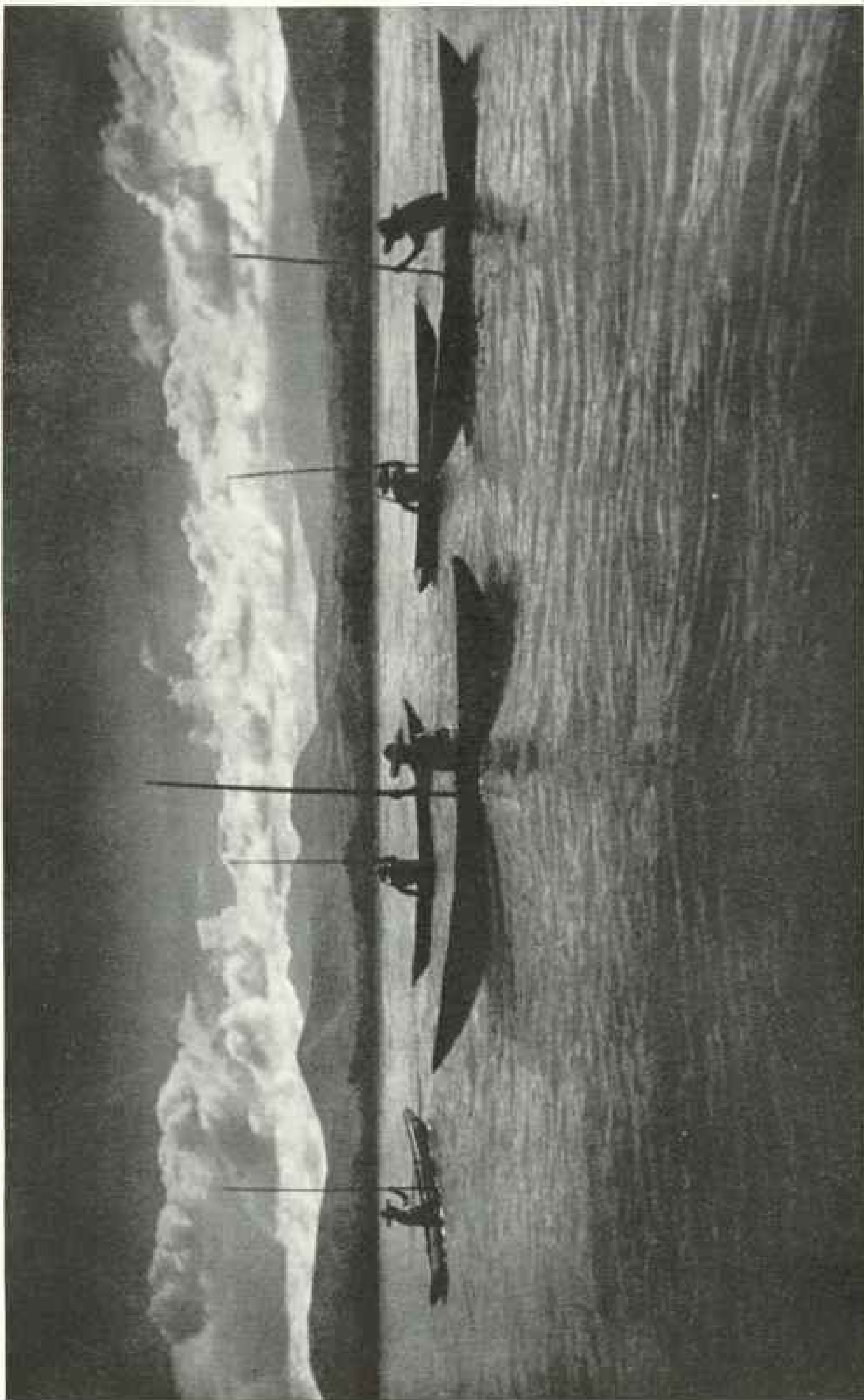
With nets over their shoulders, and spoonlike "lollypop" paddles in hand, these veterans are about to set out in dugout canoes for the day's catch of the favorite white fish.



Photograph by Lujin Merquans

NETS SPREAD LIKE WINGS, THE FISHING FLEET RESEMBLES A SWARM OF HUGE DRAGONFLIES

Between 9 and 11 o'clock in the morning the schools "run," and the Lake of Patzcuaro is dotted with durgout canoes and flapping white bows. Nets are oval shaped, with small bent poles forming the outer rim. The mesh is tied in a pouch. Long poles lower and raise the nets when the fishing grounds are reached.



Photograph by Helen Fichter.

SLOWLY CLOSING IN ON THE QUARRY, FISHERMEN STAND BY TO HOIST THEIR SUBMERGED NETS

The small white fish of the Lake of Pátacuaro are timid and swift, so Indian fishermen generally work in groups of six. Forming a circle with their dugouts, they lower the nets by long wooden handles. Drawing together, the men wait until the fish "stampede." Then they deftly raise the catch in unison. Cunning and alertness are essential in this sport-occupation.



HIS FORBEARS SENT TRIBUTES OF COOKED FISH TO MONTEZUMA

Tarascan tradition tells of Indian runners who carried the catch of the Lake of Pátzcuaro to the palace of their Aztec overlord, placing the fish, still smoking hot, on the Emperor's table. The Tarascans were also noted for their exquisite feather "paintings," made from the plumage of humming birds.



Photographs by Helene Fischer

DUGOUTS, DEEP WITH FISH, START FOR HOME

Despite the bulkiness of the canoes and glistening nets, Indians make amazing speed on the lake.



Photograph by L. Peña Parra.

URUAPAN LACQUER DESIGNS HAVE AN ORIENTAL ASPECT

Unknown is the origin of the Tarascan art of making decorative carved work, called *bateas*. Some authorities point out that the finer, pre-Spanish bowls are similar in technique to the Chinese. Designs are cut into the wood, colors are inlaid, and then the whole is carefully polished.



Photograph by Luis Marques.

WERE IT NOT FOR THE SOMBRERO THIS MIGHT BE ITALY!

Like Como and Lugano, the waters of Patzcuaro are jade green and often as iridescent as a Mexican opal.



Photograph from Wide World

MEXICO'S TRIBUTE TO ITS WARRIOR-PRIEST TOWERS ABOVE THE LAKE.

Visible for many miles is this new masonry memorial to Don José María Morelos y Pavón, designed by Guillermo Ruiz. A native of the State of Michoacán, Morelos joined the independence movement in 1810 and played a heroic rôle until he was executed by a Spanish firing squad in 1815. Rising from the crest of Janitzio Island, the statue faces President Cárdenas's summer home "Erendia," named for a Tarascan princess.



WITH MASKS AND CANES, INDIAN DANCERS BECKON THE DEAD TO RETURN

One of Mexico's most original fiestas is the Dance of the *Viejitos* (Old Men) at Patzcuaro, November 2. Bent backs, short halting steps, and an exaggerated display of guile form a lively prelude to midnight services on the "Day of the Dead," when food is placed on graves (page 648).



Photographs by Helene Fischer

CLAY MASKS SMILE BENEATH PANCAKE HATS

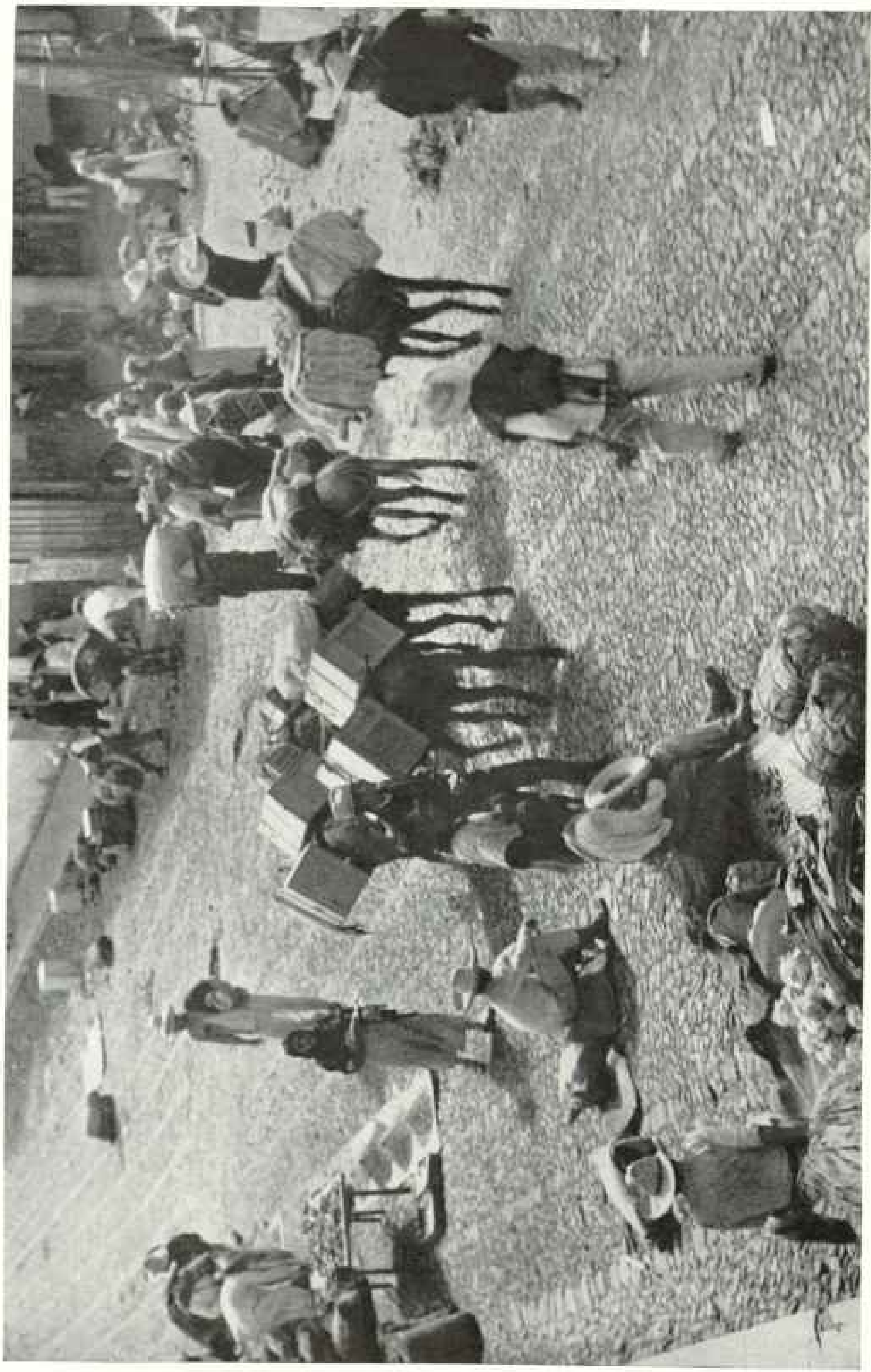
The Dance of the Old Men is an amusing spectacle, with an air of good humor usually lacking in Indian ceremonials. Serapes are worn in traditional fashion—head through a slit in the blanket.



Photograph by Heleno Fischenf

FROM FISHING VILLAGES AND TINY ISLANDS COME "DAY OF THE DEAD" CELEBRANTS

Early in the morning of November 2 scores of native dugouts are paddled to the boat landing below Pátzcuaro, where they are moored while their owners purchase bread and candles in the market place. Laboriously hewn from a single tree, the heavy craft are long and wide, with high projecting prow.



Photograph by Helen Fischer

FOOD FOR BOTH DEAD AND LIVING ARRIVES AT PATZCUARO BY BURRO AND BOAT

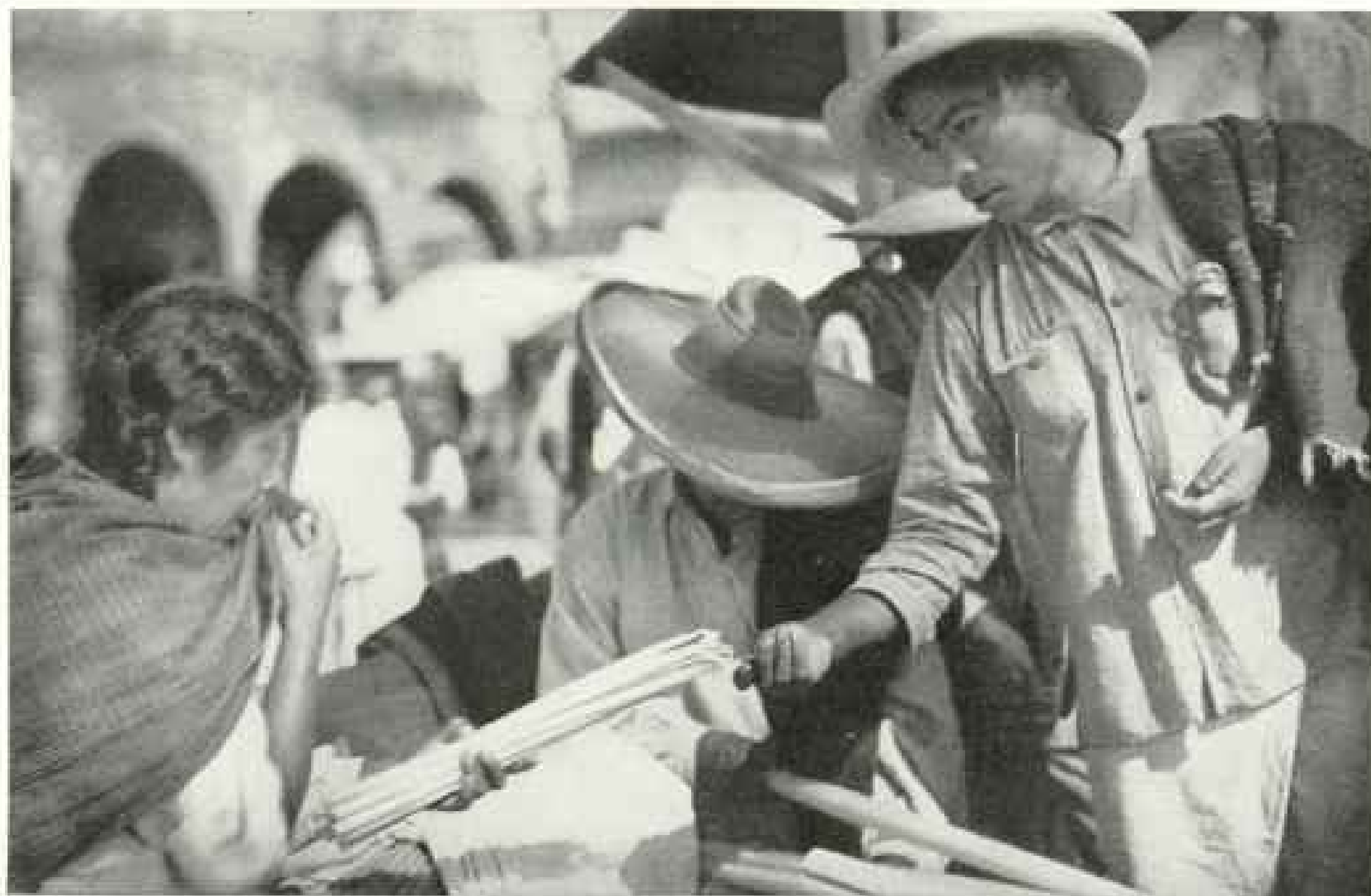
In addition to ceremonial objects (page 646), everything from peppers to gourds, or from white fish to the inevitable black beans, is spread on mats in the market place. Articles are arranged in neat piles, and the buyer usually chooses a stack as it stands. If he wants a larger or smaller pile, he must go to another vender.



Photograph by Helene Fischer

"BREAD FOR THE DEAD" IS SELECTED WITH CARE

Tempting enough for the living are the edibles displayed in the Pátzcuaro market place. Before the midnight visit to the graves, silent, often weeping groups of Indians purchase these small figures and cakes made of baked dough or highly colored candy. Flowers, bits of pottery, and even roast duck may be among the offerings.



EVEN THE VENDER MOURNS AS SHE SELLS CANDLES FOR THE DEAD

For a few cents, a handful of white tapers may be purchased. Later, the candles will be burned over the graves by the womenfolk of this Indian buyer, who will be singing raucously in a friend's home at the time.



Photographs by Helene Fischer

NEXT TO "BREAD," CANDLES ARE IN GREATEST DEMAND

On ordinary market days the tapers are generally hung by their wicks from racks, but business today is so brisk that they are tied in bundles. The little girl has wrapped her blue and white *rebozo*, or scarf, tightly around her head to ward off the chill morning air.



TARASCANS BELIEVE SHE COMMUNICATES WITH THE DEAD

With paper, an Indian woman shields a match from the night wind as she lights her row of candles. In a little pile before her are the bread, flowers, and fruit which she will offer to the spirits of her ancestors.



Photographs by Helene Fischer

"SPIRITS ARE BEGINNING TO ARRIVE!"

The graveyard glows with a thousand twisted candles during this half-pagan ceremony, while careworn women chant, "Come back and speak with us." Stark terror shows in the eyes of the little girl beside her kneeling mother as the midnight festival reaches its climax.

BEKONSCOT, ENGLAND'S TOY-SIZE TOWN

BY ANDREW H. BROWN AND B. ANTHONY STEWART

AMAZING Bekonscot is a two-acre Lilliput, artfully created in flawless miniatures of wood and stone, metal, stucco, bright paint, and glass. To the fascinated crowds that throng its narrow paths and streets each summer, it is a thousand square yards of bliss.

For six years now Mr. Roland Callingham, of Beaconsfield, has worked to build this complete model village in the charming rock garden of his Buckinghamshire home, about an hour by road from London. Originally planned simply to decorate this garden, the little town was opened to the public when its wonders brought it unexpected fame.

Here, where hip-high houses border yard-wide streets busy with the traffic of toy automobiles and people less than two fingers broad, every man and boy steps naturally into a Gulliverian role and every little girl plays Alice in a miniature Wonderland.

"What is the use of a book," thought Alice, "without pictures or conversations?" Bekonscot surpasses that young lady's ideal in fiction by providing real models, which can be handled as well as seen, to illustrate its "story" of an English village.

TRAINS AND LINERS COME AND GO

From a swelling knoll at one corner of this Utopia for youngsters of any age the visitor overlooks an ideal, thriving county town spread out below: houses, half-timbered and of brick, with tiled roofs and painted trim; three carefully designed churches; a post office; an up-to-the-minute railway system, with speeding freight and passenger trains, electrically operated signals and switches; Main Street shops with window stock displays; a flood-lighted airport with planes of many types and sizes; luxury hotels; docks, with the latest fashion in mechanized hoisting equipment; sleek ocean liners coming and going in the harbor; and (final touch of realism!) model men and women of appropriate size scattered everywhere in poses suitable to their activities.

Everything is in correct proportion, with no minutest detail neglected—but an inch in Bekonscot is equivalent to a foot outside its gates. Here is modern civilization viewed as if through the wrong end of binoculars!

Bekonscot's principal house of worship—and one of its leading attractions—dominates a little rise behind the town. A cordon of visitors usually surrounds this church, whose elegance matches that of many a "grown-up" structure (Plate II).

Forty-five such churches, piled one upon the other, would not equal the height of Westminster Abbey, yet the smaller shrine is built of just as carefully cut stone, is also enriched with stained glass, also is flanked by "massive" flying buttresses. Bells even chime out from its belfry, and muffled organ and choir music (from phonograph records) comes in just the right volume from within.

SCISSORS SERVE AS LAWN MOWERS

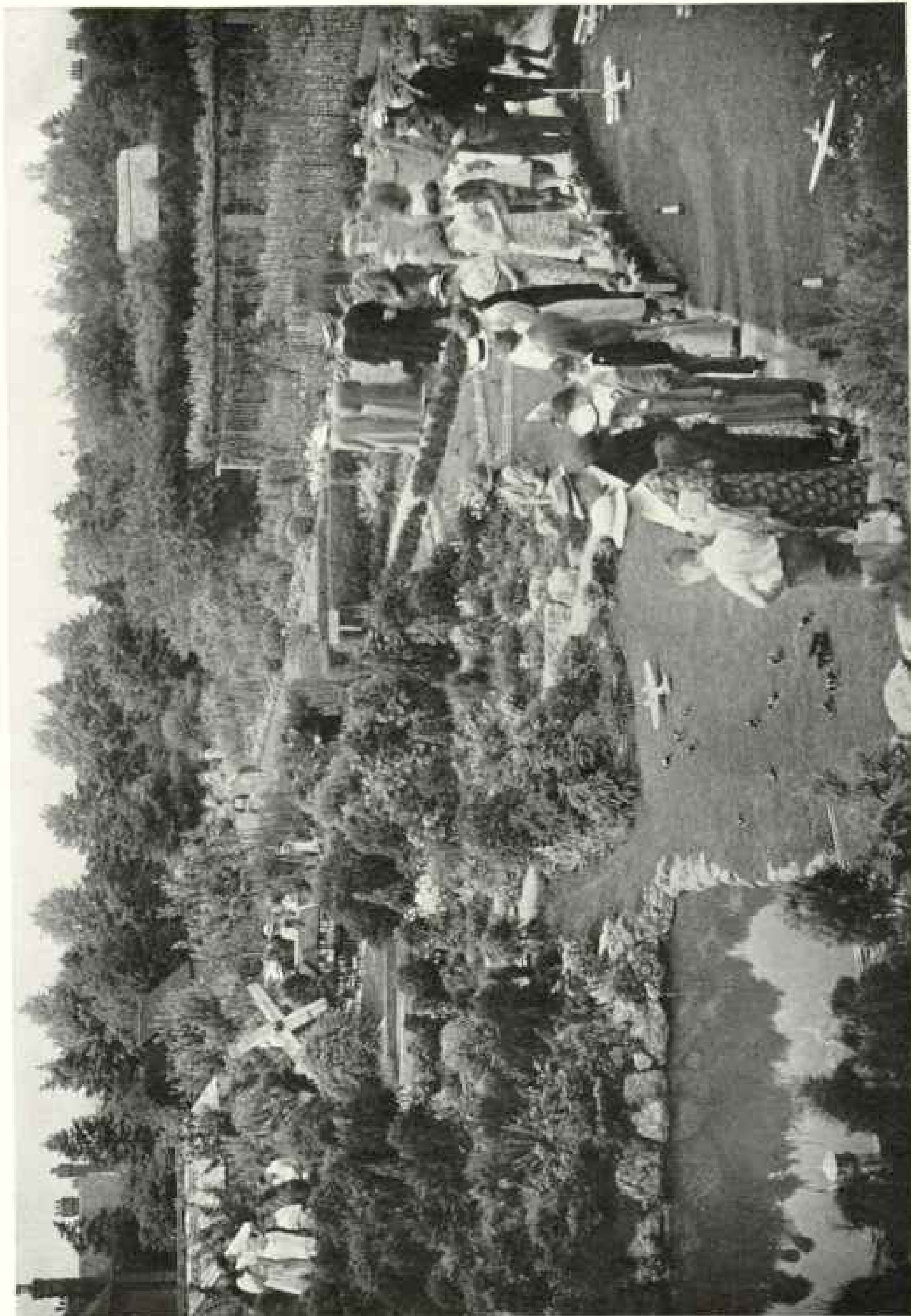
Pleasant homes of timber and stucco line fashionable Hill Crescent near North Bekonscot Station. Spotless white fences enclose smooth green lawns—carefully clipped with a pair of scissors. You almost expect to see the little people run out from their houses, jump into their parked cars, and hurry off to the picnic grounds!

Gay flowers (some of them giant blossoms bigger than a Bekonscotian house window) brighten corners of each garden. Dwarf shrubs selected for variety and shapeliness provide shade and decorative "trees" for the diminutive village.

Up the schoolhouse path loiter boys not much bigger than the snails to which Shakespeare has compared their schoolward progress. Across the street (cruel temptation to truants!), a red-roofed, red-trimmed stone building houses a brace of the village's most popular meeting places—the cinema and the tea rooms. Outdoor service is provided for tea room guests on a balcony where weary little urbanites find refreshment at neat green tables under pink umbrellas no bigger than a cookie dish (Plate IV).

Scarcely a good flea jump from the cinema, the town authorities maintain a charming park where the citizenry can relax in peaceful surroundings. Here also is a handsome war memorial—almost a foot of carefully carved stone!

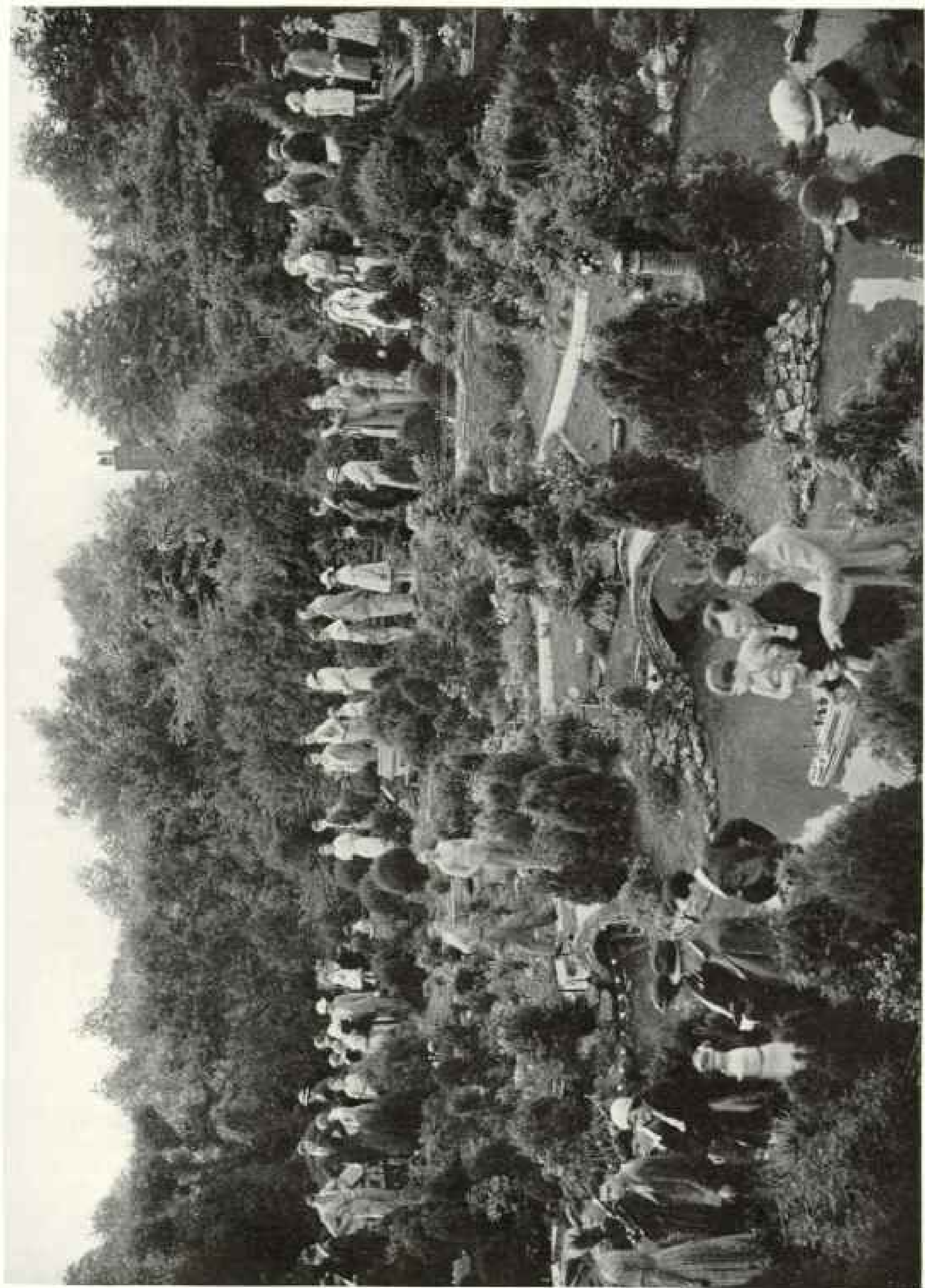
The pulse of business beats strongest in High Street, where stores of many kinds line the block extending from Church Street to East Street, which leads down to Bekonscot Station. Products for sale in each shop are



Photograph by R. Anthony Stewart.

LONG LINES OF VISITORS, MOST OF THEM "GROWN-UPS," MARVEL AT A WORLD IN MINIATURE

Age differences disappear. The owner told the photographer that one of his regular "boy" visitors did not show up last summer—"He's 94 years old now!"



Photograph by B. Anthony Stewart

NO ONE WANTS TO HURRY IN REKONSCOT—THERE'S TOO MUCH TO SEE!

skillfully displayed in the windows—electrical appliances in the electrician's, meat in the butcher's, cakes and rolls in the baker's, antiques in the antique dealer's, even deeds and wills in the attorney's!

Largely by the meticulous rendering of detail have Bekonscot's builders achieved such an excellent appearance of reality. Red mail boxes, like painted spools; tiny telephone booths; ultramodern metal paving blocks the size of dominoes; rain gutters and drain pipes no thicker than your little finger—faithful little touches "dress up" the town to look like the real thing.

TINY TRAFFIC LIGHTS BLINK

Automobiles are parked beside curbs or "keep to the left" as if in motion. For their direction, "Slow" signs have been located at intersections, speed limits are displayed at intervals, and stop lights blink atop pencil-thick posts.

Prominent in the outskirts of town is the hunt course, where small, pink-coated horse-men in realistic postures and accouterments ride to hounds. The course, with its white fences, lies in a lovely rural landscape bounded by a luxuriant shrubbery forest and rows of towering evergreens that a five-year-old can hurdle in one stride.

An 18th-century four-in-hand coach may be glimpsed occasionally hereabouts, coachman with whip, footman with upraised horn, preserving a picturesque aspect of traditional English life in shrunken proportions (Plate VII).

The comfortable Grantley Arms, with hospitable innkeeper offering hearty welcome to travelers descending from a coach, recalls the days of "Tom Jones." Its red-tiled, half-timbered elegance looms impressively (to the low-held eye) above the wheel-rutted, hoof-pitted courtyard, a place always crowded with passengers, grooms, horses, and curious idlers (Plate V).

Two windmills and a water mill commemorate old-time methods of handling grain. Carved figures of millers carrying bags supply human touches to scenes of rustic charm (Plate VII). Painted cattle, posed as if grazing, are scattered over rich pasturage. Laborers may be seen out in the fields, fertilizing plowed ground, planting, or harvesting, according to the season (Plate VIII).

Modern Bekonscotian country-lovers find rest from daily toil in bathing and boating on the lake. A swimming float, literally

"just a step" from the edge of town, is usually crowded with aquatic devotees who sun-bathe on grass or dock, or float in the cooling waters (Plate VI). Lucky it is that the tiny natators are made of wood, or else a fish of no great size might gobble half a dozen of them for breakfast!

On Bekonscot Road, at the edge of town, a roadhouse does a booming business, principally, gossip says, because it is so handy to a tiled swimming pool, with several bath-houses and a two-foot diving tower with five springboards.

Close at hand, a flag-bedecked pier pavilion juts into the lake. Here little citizens lounge against the rails, basking in sunlight reflected from scarcely rippled waters. Boating parties depart from this dock. In the evening relayed phonograph music supplies dance rhythms for Bekonscotian "night owls."

Bridges, Lilliput-size but strong enough to support human explorers, connect two islands in the rectangular pond occupying the center of the village plan and constituting the outer harbor of Bekonscot's port.

On the central island a knee-high lighthouse directs commercial shipping, cabin cruisers, and belated sailing craft, while another, on a mainland promontory, guards the entrance to the port proper. This is reached by an estuary leading back from the lake half a mile (15 feet to literalists!).

Tiny tugs assist scale-model ocean liners, freighters, and warships into this basin, where they tie up at new concrete docks. Electric pier-lights and cranes facilitate unloading. Gigantic human supervisors of four-feet-ten must pick their way cautiously among huge tar barrels as big as tumblers and great piles of "long lumber" almost as high as their shoes (Plate IV).

Behind the docks concrete steps lead up to a freight station, Southpool Docks (named after Southampton and Liverpool, two of England's leading ports).

MOST POPULAR FEATURE IS BEKONSCOT'S 400-YARD RAILWAY

This depot is on a spur of the famous Bekonscot Railway, 1,200 feet of electrified metal rails bound by three-inch wooden ties to an unsurpassed roadbed (of tarred chips). From four tracks under the spreading glass and steel dome of Maryloo Station (another combination name, from Marylebone and Waterloo, London stations) faithful reproductions of famous trains pull out

TABLEAUX IN AN ENGLISH LILLIPUT



© National Geographic Society

Finlay Photograph by B. Anthony Stewart

THE QUEEN OF A MINIATURE FAIRYLAND GUIDES SHIPPING WITH HER WAND

Reminiscent of the Lilliputians' island, so realistically described in Jonathan Swift's *Gulliver's Travels*, this model "seaport" of Bekonscot, paradise for youngsters of all ages, is open to the public from April to September. The village occupies two acres of Mr. Roland Callingham's garden at Beaconsfield, Buckinghamshire. Around the small lake shown here are laid out town, railroad, docks, airport, and rural countryside. The girl stands on a bridge connecting two islands in the "harbor." Dwarf shrubs, scissor-clipped grass, and naturally posed cattle promote the illusion of reality.



IN HERONSCOT, ONE MAN WAS ABLE TO BUILD A WHOLE CHURCH. Complete with stained glass, flying buttresses, and Celtic cross is this real stone "minister," the work of the head gardener. Organ and choir music is electrically relayed from records.



© National Geographic Society

Fairy Photographs by B. Anthony Stewart

A YOUTHFUL GULLIVER CONTROLS "TRAFFIC"

Tiny shops and offices are ranged along both sides of High Street. Many stores bear the names of Beaconsfield shopkeepers. The street surface is made of nonskid, cast-iron blocks.

TABLEAUX IN AN ENGLISH LILLIPUT



DOOR TO DOOR DELIVERY AIDED BY A GUIDING HAND

During a lull in the breeze, when the windmill's vanes stopped turning, the camera caught this rural scene. The little lady is the daughter of the builder of the minster (opposite plate).



© National Geographic Society

Finlay Photographs by B. Anthony Stewart

THE SARACEN'S HEAD HOTEL UNDERGOES A FACE LIFTING

The white sign tells that the Neverready Painters and Decorators have been hired to refurbish the village's principal inn. Brobdingnagian boys supervise the work.



SHRUBBERY "TREES" MAKE A LUSH SETTING FOR CINEMA AND TEA TERRACE

Little movie fans who buy balcony tickets must enter by the right-hand door. Conveniently located between business and residential districts, this is one of the most popular corners in town!



© National Geographic Society

Finlay Photographs by H. Anthony Stewart

MODELS BERTHED AT SOUTHPOL DOCKS TEACH FUTURE SKIPPERS THE WAY OF SHIPS
Steel-built greyhounds of the sea take on and discharge passengers and cargoes at concrete piers.
Modern freight-handling equipment simplifies transfers from ship to rail.

TABLEAUX IN AN ENGLISH LILLIPUT



TALLYHO AND GABLED INN RECAPTURE 15TH-CENTURY ENGLAND IN MINIATURE
Fresh bay horses have been hitched to the noonday coach, whose arrival in the courtyard of the Grantley Arms has attracted a boyish giant and a crowd of hikers, riders, and grooms.



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TO ITS FLEET OF PLANES HANTON AIRPORT ADDS A "FLYING WINDMILL."

At the hangar doors stand gasoline pumps. "Customs" appears in seven languages on the yellow sign, while a commodious hotel with cocktail bar assures comforts to tiny transients.



DIMINUTIVE SUN BATHERS RELAX AFTER THE DAY'S "ACTIVITIES"
Landing stage and cool green lawns attract weary little citizens on hot summer afternoons.



© National Geographic Society

Friday Photographs by D. Anthony Stewart

"ON TIME OUT OF BEKONSCOT!"

Gleaming passenger and freight trains, switches, and signals, all electrified, can be operated from one central control room in the main station, Maryloo. The railway is 400 yards long.

TABLEAUX IN AN ENGLISH LILLIPUT



COACH PASSENGERS GET IN AT THE KILL WITH HOUNDS AND HUNTSMEN
Under a foot-high clump of pinks, the fox is finally cornered and the long chase is over.



© National Geographic Society

Finlay Photographs by B. Anthony Stewart

DESPITE THE ONRUSH OF MODERNITY IN BEKONSCOT, A RUSTIC MILL SURVIVES
Almost buried among luxuriant shrubs and flowers, the old water wheel still turns. Hikers and their dog pause to watch the wheel go round and the miller carry in a bag of grain.



SHIPS UNDERGO INSPECTION IN "QUARANTINE" OUTSIDE THE PORT. A young giantess adjusts the funnel of the *Princess Patricia*. Beyond the beacon, another vessel awaits clearance papers, while a third is partly hauled out on the marine railway.



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Finlay Photographs by B. Anthony Stewart

BEKONSCOTIAN FARM HANDS MAKE HAY AS A FAST EXPRESS WHISKS BY RAILS rest on realistic wooden sleepers, or ties, laid on a roadbed ballasted with tarred chips. Children, admitted for sixpence (twelve cents), are free to handle and examine the models.

on scheduled runs over the big recurved loop of double track which circles through the town, out into the rural country beyond, then back through town again to near its starting point (Plates VI and VIII).

Four hundred yards of track on this scale are equivalent to several miles in standard gauge. Such an extensive model railway naturally draws more "obs" and "ahs" than any other single feature of this remarkable microcosm. Trains have one tremendous advantage over other models—they *move* under their own power, at a speed adjusted to their relative size.

Intelligently, the railway follows the landscape, instead of the landscape following the railway, which is the commoner way in miniature layouts. Cuts and fills, bridges and tunnels, accentuate the illusion of a man-size transportation system. Several trains, frequently changed, run at once, their course and speed regulated from central control points. "Freights" pull a little wearily into sidings while limiteds flash by on through tracks.

Arm and color-light signals, switches, and silent, efficient locomotive engines all obey surges of swift electricity.

Appropriately near the docks and Maryloo Station lies the close-cropped landing field of Hanton Airport, always busy with the fanciful arrivals and departures of commercial and private "ships" that can be picked up in one childish hand (Plate V).

Ground lights illuminate the field for night take-offs and landings. Before the spacious hangars (just as long as they need to be) stand tiny "petrol" pumps. Mechanics and pilots, real as life, busy themselves about the planes. Though the field can be crossed in half a dozen strides, you need only look along the runway from ground level to imagine yourself at Newark, Croydon, or Le Bourget.

NO "DO NOT TOUCH" WARNINGS HERE

"Do not touch" is a warning never posted in Bekonscot, where the greatest joy of youngsters is to handle and examine the models. On almost any open day, bare-legged little liberals and conservatives may be seen making the evening bath worthwhile by rubbing dirt from streets and gardens into knees, elbows, hands, and faces. As a matter of fact, it takes a lot of crawling to get really dirty here, because the little village is not only a very orderly place but also notoriously clean.

Mr. Callingham's able head gardener, W. A. Berry, who built the superb stone church which is the village's crowning glory, has been chief assistant in the design and execution of Bekonscot's wonders. Sounds of splashing paint, whining lathes, and the rhythmic "hee-haw" of busy saws issue from the paint-, machine-, and carpenter-shops where workers keep models in repair and devise new improvements.

In addition to craftsmen and gardeners, a few boys of ten or twelve regularly help out around the tiny town. So enthusiastic are they about the work that they return to putter even on their days off. But they politely excuse themselves when, daily, the stroke of four announces afternoon tea!

OPEN ALL SUMMER

Bekonscot is open to visitors every day from April to September. Weather permitting, the model trains run every Sunday, Bank Holiday, and the first Saturday in each month. The small admission fee pays for upkeep and also provides sums for charity.

Visitors are permitted to walk almost anywhere, but are guided principally along the most spacious city streets and country roads, which afford comprehensive views over chimney pots and treetops.

Bekonscot assumes an even more bewitching guise at night, when clusters of glittering lights in shops, houses, and along the streets give watchers the same thrill that a night-traveling airline passenger enjoys when his plane flashes high above the widely strewn illumination of a city.

Busier and busier grows the road from London as each summer brings new thousands to the Bekonscot gates. Last year's total of 57,500 visitors was more than double the record for any previous year. Opening of the village to the public during the last few years has led to extensive improvements. The recent addition of the airport and its planes, steamships and docks, is evidence of the owner's desire to keep Bekonscot smartly up to date in every detail.

Her Majesty Queen Mary and the Princess Elizabeth, now next in line of succession to the British throne, honored the model town with a visit on the young Princess' eighth birthday, in April, 1954. With other members of the Royal Family they came again last year to this unusual showplace of southern England.

THE NATIONAL GEOGRAPHIC SOCIETY

WITH profound sorrow and a keen sense of personal loss, the Board of Trustees of the National Geographic Society, on behalf of the members of The Society, records the passing of Dr. Frederick V. Coville, one of the most illustrious and valued members of the Board for more than forty years.

Distinguished scientist and ardent supporter of the advancement of geographic knowledge, Dr. Coville, from the early days of the National Geographic Society, assisted notably in its growth and progress with expert advice and friendly counsel.

As life trustee, and particularly as chairman of The Society's Research Committee since 1920, he guided wisely the choice of fields for exploration and supervised tirelessly the many expeditions of The Society that have been sent to all parts of the world.

Ever modest but always greeting new tasks with enthusiasm, Dr. Coville spared time from a crowded career for the service of the National Geographic Society. In his life work as botanist of the United States Department of Agriculture, he made contributions to the advancement of botanical knowledge that are unique and lasting in their usefulness.

His brilliant work in developing the wild blueberry into a cultivated crop of important commercial significance in the acid, sandy soils of our eastern coast was only one of the more outstanding achievements of a lifetime of scientific accomplishment.*

It was his keen insight and careful experi-

mentation that led to recognition of the part played by acidity of soils in the development of many plants and the importance of a period of chilling temperature for normal flowering and fruiting of plants of the Temperate Zone.

Wide interests and untiring energy led him into such broad fields as the listing of the plants of Arkansas, study of the

botany of Death Valley and of Alaska, and research into the useful plants of the North American Indians. The establishment of the Desert Botanical Laboratory of the Carnegie Institution of Washington at Tucson, Arizona, was due largely to his efforts. In the Department of Agriculture he served continuously from 1888, rising to the position of principal botanist in the Division of Plant Exploration and Introduction. He was acting director of the National Arboretum, was instrumental in the formation of the Seed Laboratory of the Department of Agriculture, and formulated the policy

for the use of national forests as grazing lands.

He was also Curator of the U. S. National Herbarium from 1893 and joint author of "Standardized Plant Names," and of many important scientific papers.

Dr. Coville's stalwart character and physique were noted no less than his mental endowments. He was a keen follower of the arts and active in civic affairs.

Dr. Coville's colleagues recognized his achievements repeatedly by electing him to high office in scientific societies. In 1931, for his work with blueberries, he received the George Robert White Medal of Honor from the Massachusetts Horticultural Society.



© Harris and Ewing

FREDERICK VERNON COVILLE
1867-1937

* See "The Wild Blueberry Tamed: The New Industry of the Pine Barrens of New Jersey," by Frederick V. Coville, NATIONAL GEOGRAPHIC MAGAZINE, June, 1916.

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ORGANIZED FOR "THE INCREASE AND DIFFUSION OF GEOGRAPHIC KNOWLEDGE"

To carry out the purposes for which it was founded forty-nine 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 which The Magazine can use, generous remuneration is made. Contributions should be accompanied by addressed return envelope and postage.

Immediately after the terrific eruption of the world's largest crater, Mt. Katmai, in Alaska, a National Geographic Society expedition was sent to make observations of this remarkable phenomenon. Four expeditions have followed and the extraordinary scientific data resulting given to the world. In this vicinity an eighth wonder of the world was discovered and explored—"The Valley of Ten Thousand Smokers," a vast area of steaming, spouting fissures. As a result of The Society's discoveries this area has been created a National Monument by proclamation of the President of the United States.

The Society cooperated with Dr. William Beebe in a deep-sea exploration of undersea life off Bermuda, during which a world record depth of 1,028 feet was attained August 15, 1934, enabling observations of hitherto unknown submarine creatures.

The Society also had the honor of subscribing a substantial sum to the expedition of Admiral Peary, who discovered the North Pole, and contributed \$100,000 to Admiral Byrd's Antarctic Expeditions.

The Society granted \$75,000, and in addition \$75,000 was given by individual members, to the Government when the congressional appropriation for the purpose was insufficient, and the finest of the giant sequoia trees in the Giant Forest of Sequoia National Park of California were thereby saved for the American people.

The Society's notable expeditions to New Mexico have pushed back the historic horizons of the southwestern United States to a period nearly eight centuries before Columbus crossed the Atlantic. By dating the ruins of the vast communal dwellings in that region, The Society's researches have solved secrets that have puzzled historians for three hundred years. The Society is sponsoring an ornithological survey of Venezuela.

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 an officially recognized altitude record of 72,395 feet. Capt. Albert W. Stevens and Capt. Orvil A. Anderson took aloft in the gondola nearly a ton of scientific instruments, and obtained results of extraordinary value.



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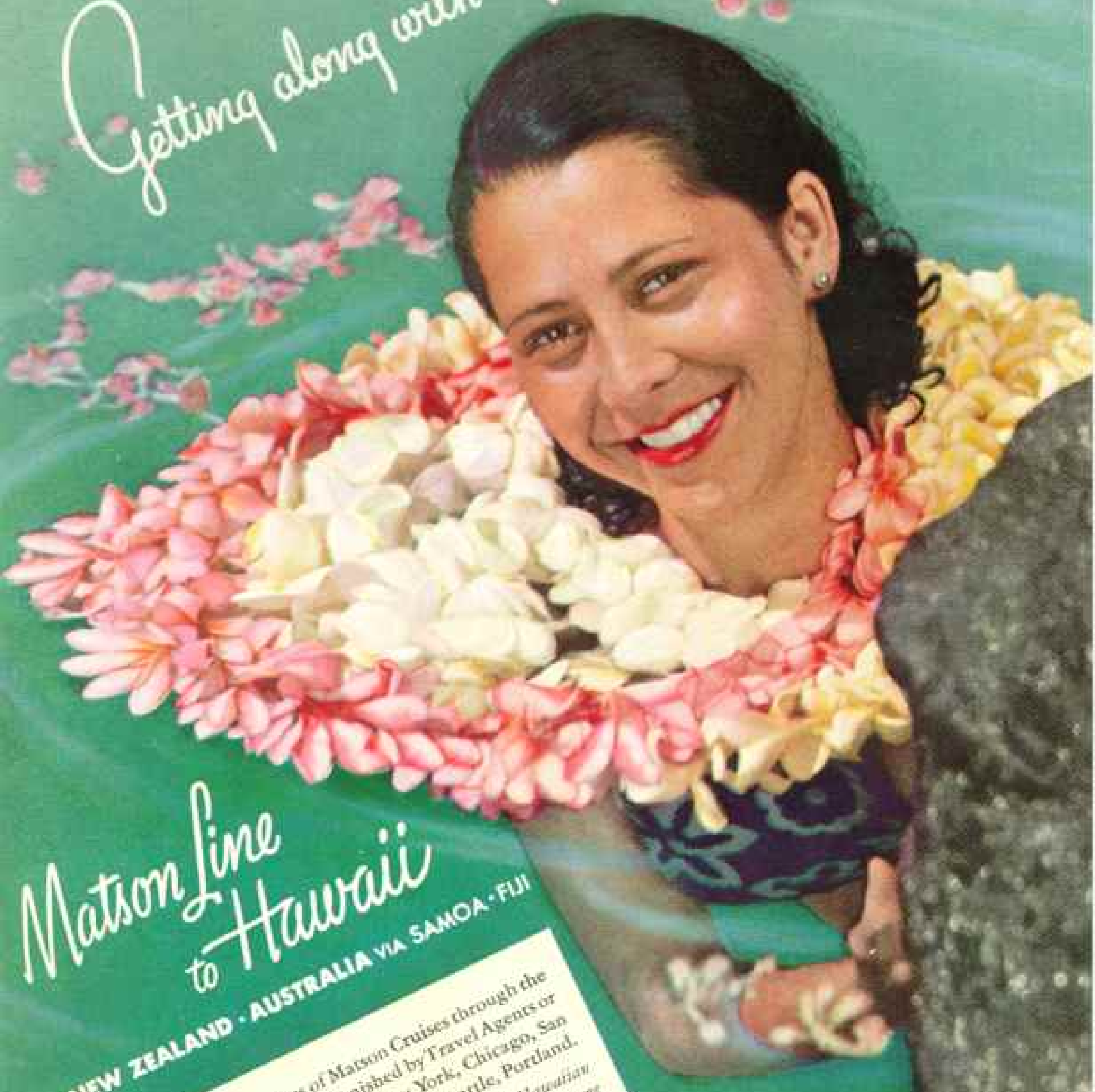
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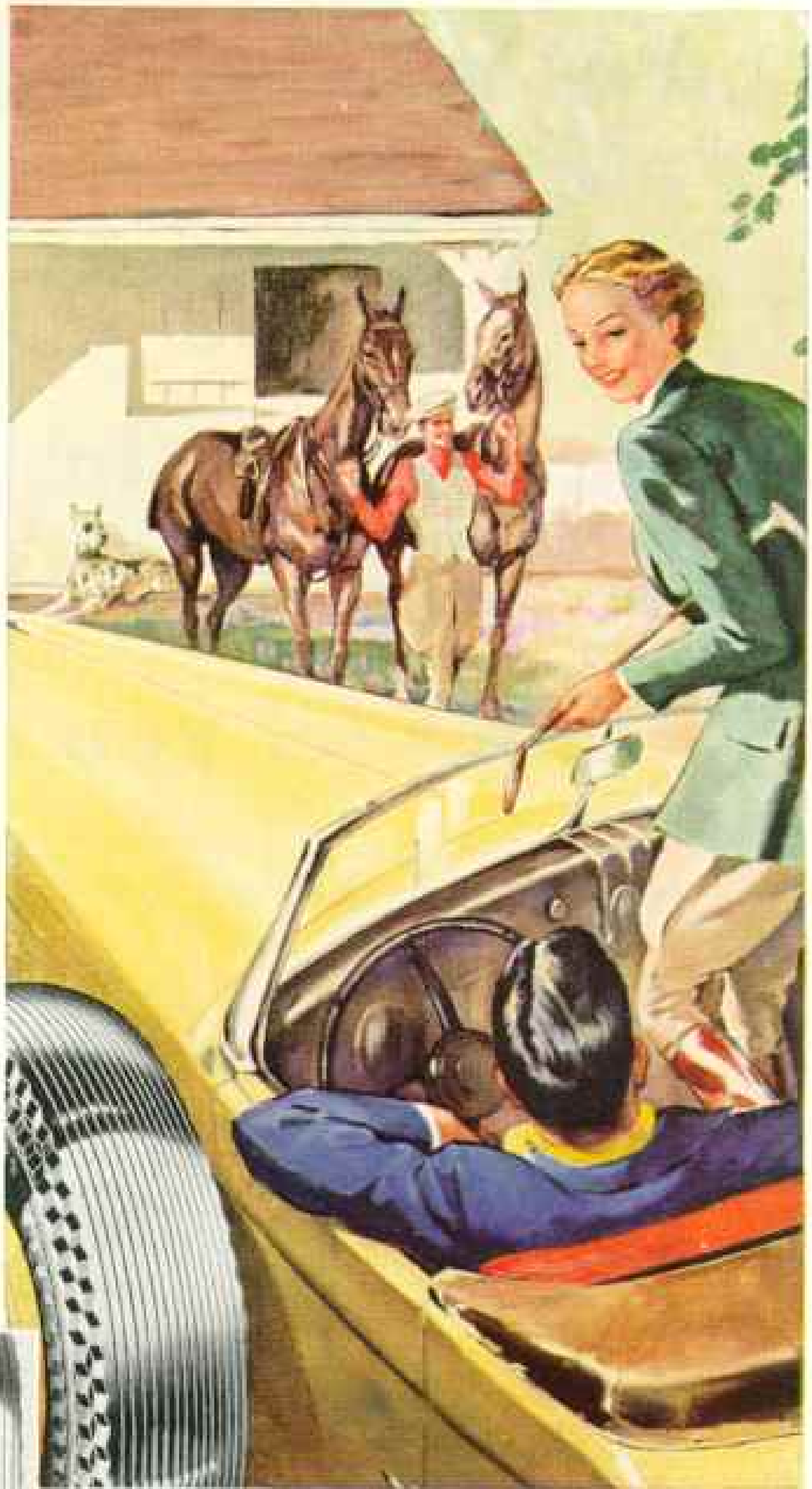
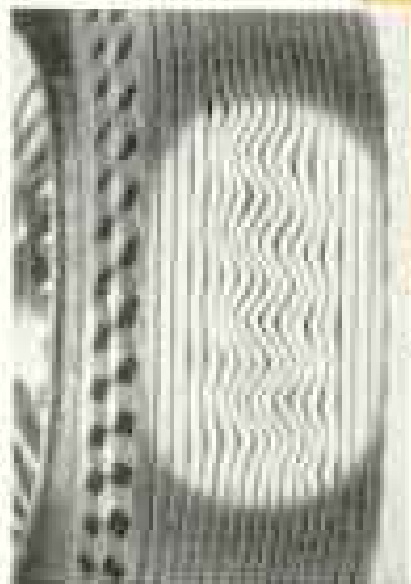
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BUICK	A	A	A	AF	AF
CADILLAC (8 Cylinder)	AF	AF	BB	BB	BB
CADILLAC (12 & 16 Cylinders)	BB	BB	BB	BB	BB
CHEVROLET	A	A	A	A	A
CHRYSLER	AF	AF	AF	AF	AF
DE SOTO	AF	AF	AF	AF	AF
DODGE	AF	AF	AF	AF	AF
FORD	AF	AF	AF	AF	AF
GRAHAM (8 Cylinder)	AF	AF	AF	—	—
GRAHAM (All Other Models)	—	—	BB	BB	BB
HUDSON	A	A	A	AF	AF
HUPMOBILE	—	AF	AF	AF	AF
LAFAYETTE (Series 3010)	—	A	A	—	—
LAFAYETTE (All Other Models)	—	—	AF	AF	—

Make and Model	1937	1936	1935	1934	1933
LA SALLE	AF	AF	AF	AF	BB
LINCOLN	AF	AF	BB	BB	BB
LINCOLN ZEPHYR	AF	AF	—	—	—
NASH (Models 11-99, 12-99)	—	—	—	BB	BB
NASH (Lafayette Series 800)	A	A	A	—	—
NASH (All Other Models)	AF	AF	AF	AF	AF
OLDSMOBILE	AF	AF	AF	AF	AF
PACKARD	A	A	A	AF	AF
PIERCE-ARROW	AF	AF	AF	AF	AF
PLYMOUTH	AF	AF	AF	AF	AF
PONTIAC	A	A	A	AF	AF
REO	—	A	A	A	A
STUDEBAKER	A	A	A	AF	AF
TERRAPLANE	A	A	A	AF	AF
WILLYS	AF	AF	AF	AF	AF

For all of the cars listed here, Mobilil Arctic is recommended for temperatures below 32°F.

MOBILLOIL AND MOBILGAS

SOCONY-VACUUM OIL COMPANY, INC.





Stop Washing Dishes!
 All your dishes can be washed electrically in less time—and cleaner—than by hand for less than 1¢ per day!



• New complete G-E Electric Sink includes the G-E Dishwasher, and the G-E Disposal which disposes of kitchen waste through the drain. Both the G-E Dishwasher and G-E Disposal are available as separate units.

General Electric Co.,
 Nela Park, Cleveland, Ohio
 Please send full information regarding G-E
 Dishwasher Disposal Complete
 Electric Sink.

Name _____
 Address _____
 City _____ State _____

HERE'S an open invitation to end the most distasteful task in your home—dishwashing! Let a G-E Dishwasher take over the job—wash *all* your dishes faster and more thoroughly than by hand—at a cost of less than a penny a day! "Cleaning up" after any meal now becomes a joy instead of a chore. Into the capacious trays of the G-E Dishwasher goes every dinner dish and soiled utensil—chinaware, glassware, silverware, pots and pans. At the turn of a switch, scalding hot water sprays every nook and corner. Dishes emerge spotlessly, *hygienically* clean! No

wiping is necessary—dishes are dried by their own heat. Hands never touch dishwater.

You can trust your finest china or fragile glassware to the General Electric Dishwasher. They are held firmly in place and protected from the hazard of soapy, slippery fingers. No danger of chipping or breaking.

Make a General Electric Dishwasher your next investment in better living. See a free demonstration of this modern electrical servant at your nearest General Electric dealer's or send coupon at left for complete descriptive literature.

GENERAL  ELECTRIC
Dishwasher



PLAN FOR
Sunny Days THROUGH SYSTEMATIC SAVINGS

United States Savings Bonds are Government Bonds issued in convenient form for systematic savings. A Regular Purchase Plan, offered by the United States Treasury, makes it easy to save at regular intervals. The safety surrounding these bonds, their freedom from price fluctuation, and their other important features, have attracted

more than 800,000 investors. Savings Bonds turn today's investment of \$75 into \$100 in ten years, and permit setting aside as little as \$18.75 or as much as \$7,500 in each calendar year. If desired the owner may obtain ready cash through their redemption at any time after sixty days from issue date.

UNITED STATES SAVINGS BONDS

DIRECT OBLIGATIONS OF THE UNITED STATES GOVERNMENT

HOW TO SAVE SYSTEMATICALLY

To provide funds for the future, select the program best suited to your needs, then buy a bond each month.

If you invest each month for 120 consecutive months any specific amount shown below:

Beginning in 10 years you will receive each month for 10 years thereafter:

\$18.75	\$25.00
\$37.50	\$50.00
\$75.00	\$100.00
\$93.75	\$125.00
\$187.50	\$250.00
\$375.00	\$500.00

— For Sale at Post Offices and Direct by Mail —
TO ORDER BY MAIL

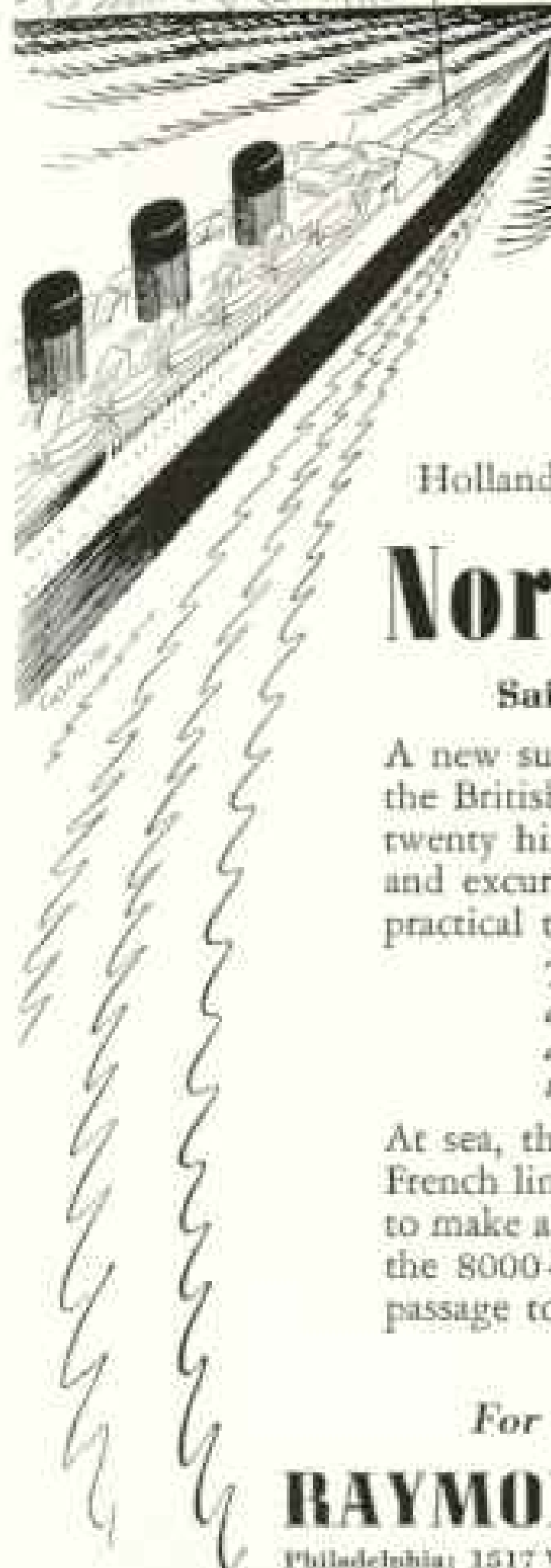
TREASURER OF THE UNITED STATES, 405, Washington, D. C.

- Please send me without obligation your Regular Purchase Plan and forms for my consideration and optional use.
- Send me the following bonds for which I enclose check, draft or money order.

NUMBER			
.....	\$25 U. S. Savings Bonds at	\$18.75 \$
.....	\$50 U. S. Savings Bonds at	\$37.50 \$
.....	\$100 U. S. Savings Bonds at	\$75.00 \$
.....	\$500 U. S. Savings Bonds at	\$375.00 \$
.....	\$1000 U. S. Savings Bonds at	\$750.00 \$
		Total \$

Register in the name of and send to { Name { Mrs. } _____
 { Mr. } _____
 Street address _____
 City _____ State _____

Make all remittances payable to Treasurer of the United States.



BRITTANY — renowned for quaint towns and picturesque costumes.
NORWEGIAN FJORDS — with their magnificent mountain scenery.
IRELAND — a charming country that few travelers know.
SCOTLAND — with historic Edinburgh and the romantic Highlands.

All these and other interesting countries, including Germany, Holland and Denmark, are on the program of the Raymond-Whitcomb

Northwest Europe Cruise

Sailing June 26 in the French Line S. S. "Paris"

A new summer cruise along the shores of Northwestern Europe and the British Isles, from France to the Fjords of Norway. With stops at twenty historic, picturesque and important ports in eleven countries, and excursions to many other notable places that ordinarily it is impractical to visit.

This is an exceptional opportunity to visit, with all the traditional comfort of Raymond-Whitcomb cruises, a famous and fascinating section of Europe much of which is not on the usual travel routes or on the programs of other cruises.

At sea, the luxuries and the delightful holiday atmosphere of a great French liner that is an authentic bit of France . . . and the largest ship to make a cruise to Europe this summer. 32 days from New York over the 8000-mile cruise route to Southampton and Havre, with return passage to America by French Line steamships through the year.

Rates, including return, \$565 up

For particulars see your local travel agent . . . or

RAYMOND-WHITCOMB

Philadelphia: 1517 Walnut St.

Cleveland: 641 Union Trust Bldg.

New York: 670 Fifth Ave. (at 53rd Street)
 Boston: 145 Tremont St. & 122 Newbury St.

Chicago: 320 No. Michigan Ave.



AC and DC



\$15

*"And my beard's
plenty tough!"*

MEN who are exposed to all kinds of weather, who have tough skins and wiry beards, shave quickly and easily with the Schick. Yet a boy, just starting to clean the down from his tender cheeks, finds the Schick as gentle in action as if he rubbed his face with his finger tips.

A totally blind man can shave in perfect safety and comfort with not the slightest danger of cutting or hurting himself.

Why Schick above all

For a working lifetime Schick studied hair, faces and mechanical ways to shave. He experimented with cutters of many constructions and shapes. He found that a *flat* cutter with an extremely thin slotted plate, nestled closely into the skin, depressed the tiny mounds and enabled the inner cutter to shave off the hairs more efficiently and closer than any other shape of cutter shaved them.

All our past and present research con-

vinces us that this patented construction is still the most efficient of all.

Shaving at its lowest cost

The life of a Schick Shaver is not known. Shavers we made five years ago are still performing satisfactorily. (We have made many mechanical improvements since then.)

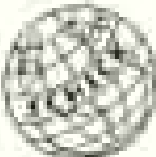
There are no blades to buy, no parts to sharpen—and none to renew for an indefinite time. You need no soap, cream, brush nor lotions. The cost of electricity for a year's shaving is so small that a dime would cover it easily.

How, then, could you shave at a lower cost per shave?

See a dealer

Ask any Schick dealer to show you the shaver and demonstrate how simply and quickly you could learn the new way of shaving which is revolutionizing the shaving habits of the world.

SCHICK DRY SHAVER, INC., STAMFORD, CONN. Western Distributor: Edison, Inc., San Francisco
In Canada: Henry Hicks & Sons, Ltd., and other leading stores. (Canadian price, \$16.50)

SCHICK  **SHAVER**

"Please pass the

**SAFETY FIRST—
friendliness too!**

DO YOU KNOW

—that the railroads employ more men than the steel industry and the automobile industry combined?

—that railroads are the nation's largest industry other than agriculture?

—that more than 100,000 men have been added to railroad payrolls within the past year?

—that the "shopping list" of the American railroads contains over 70,000 different items?

—that during the last ten years the railroads have spent nearly one billion dollars annually for materials and supplies for use in their everyday operation, thus providing employment to hundreds of thousands of men and women?

—that more than half of every dollar spent by the railroads goes for the wages of railroad men?

—that the railroads pay approximately one million dollars a day in taxes — taxes which send 1,600,000 children to school, and contribute substantial support to public institutions, highway construction, and general government expense?

RAILWAY EXPRESS

—serves America's shippers: big industries, growers of berries and other perishable products, and individuals through 23,000 offices located along 213,000 miles of railroads from coast to coast... 57,000 Railway Express employees pick up, forward and deliver America's perishable goods and general merchandise... Every day 10,009 trains carry these goods to great centers and remote

villages in all parts of America... A fleet of over 10,000 Railway Express motor vehicles delivers shipments to and from these trains in all cities and principal towns, without extra charge... Shipments of perishables and merchandise by Railway Express travel with the same safety, directness and economy that have made American Railroads the envy of the world.

berries-1200 miles”

WHAT does it mean to you and yours when you read that “the speed of freight trains has been stepped up 43 % in recent years”?

—or that “the railroads haul a ton of freight a mile at rates averaging less than a penny”?

Right on your breakfast table you’ll find a part of the answer—in things you take for granted in this day of modern miracles.

Fresh berries, for example, travel by rail an average of 1,200 miles before they’re served.

The butter for your toast averages 927 miles by rail.

The rail mileage of cereals is 627 on the way to the breakfast table—and of eggs it’s 1,353.

Or if you want some really big figures, you can take oranges or grapefruit—they average 2,125 miles by rail.

And the amazing fact is that many of the advancements in railroading which make these comforts

possible were developed during hard times.

Steadily, in tough years as well as good, the railroads have pushed forward—laying heavier rails, developing better brakes and more powerful engines, speeding up the sorting of cars and doing many other things that the public seldom sees, in order to give better service.

No wonder a railroad man is proud of his job—and proud of the enterprise which keeps American railroads in the forefront as *the finest transportation system in the world.*



Cotton bolls travel 1,000 miles by rail on the average from the grower to your grocer's counter.



Your share of the total freight hauled each year, if you have an average family, is two tons of agricultural products, one-half ton of live stock and animal products.



Flood defied to bring in food! Over the rails came train-loads of food for stricken communities—and homeless refugees by the hundred thousand rode by train to safety.

ASSOCIATION OF
AMERICAN RAILROADS

How to see twice as much

on your trip to California

Naturally you'll want to see San Francisco's tremendous bridges and the beaches of Southern California. But wouldn't you like to add romantic New Orleans and the cool, green playground of Oregon and Washington? You can if you use Southern Pacific's Four Scenic Routes to go one way and return another.

Come west, for example, on Southern Pacific's famous *Sunset Limited* (Sunset Route) through New Orleans, the deep South and Southern Arizona to



Los Angeles. Speed up the Coast to San Francisco on Southern Pacific's new streamlined *Daylight*. Then board our *Cascade* (Shasta Route) for the Pacific Northwest and return home on any northern U. S. or Canadian line. Or go or return on our Overland or Golden State routes. Thus you see a different part of the United States each way. You see *twice as much* as you would by going and returning on the same route . . . for no extra rail fare (from most eastern and mid-western points).

MILLIONS FOR YOUR COMFORT! This is Southern Pacific's year. Almost every month we are adding new trains to our great fleet of western limiteds. In January, the fast *Californian* (Chicago-Los Angeles) for coach and tourist passengers, with stewardess-nurse service, 25¢-30¢-35¢ meals, free pillows, etc. . . . an instant success. March saw our new streamlined *Daylight* (Los Angeles-San Francisco), the most beautiful train in the West. More new trains are on the way. We are spending millions for your comfort, yet fares were never lower!



GO ONE WAY

Explore the quaint courtyards and storied streets of New Orleans. See Texas, Southern Arizona, Los Angeles. SUNSET ROUTE.



RETURN ANOTHER

See the wild Cascade Mountains, Mt. Shasta, San Francisco and the snow-capped peaks of Oregon and Washington. SHASTA ROUTE.



FREE TRAVEL GUIDE. *How to See the Whole Pacific Coast* is the most comprehensive booklet we have ever published, crammed with pictures of the Pacific Coast and our Four Scenic Routes. For your free copy, write O. P. Bartlett, Dept. NT-5, Southern Pacific, 310 So. Michigan Avenue, Chicago. (If student, give grade in school.)

Southern Pacific

FOUR SCENIC ROUTES TO CALIFORNIA

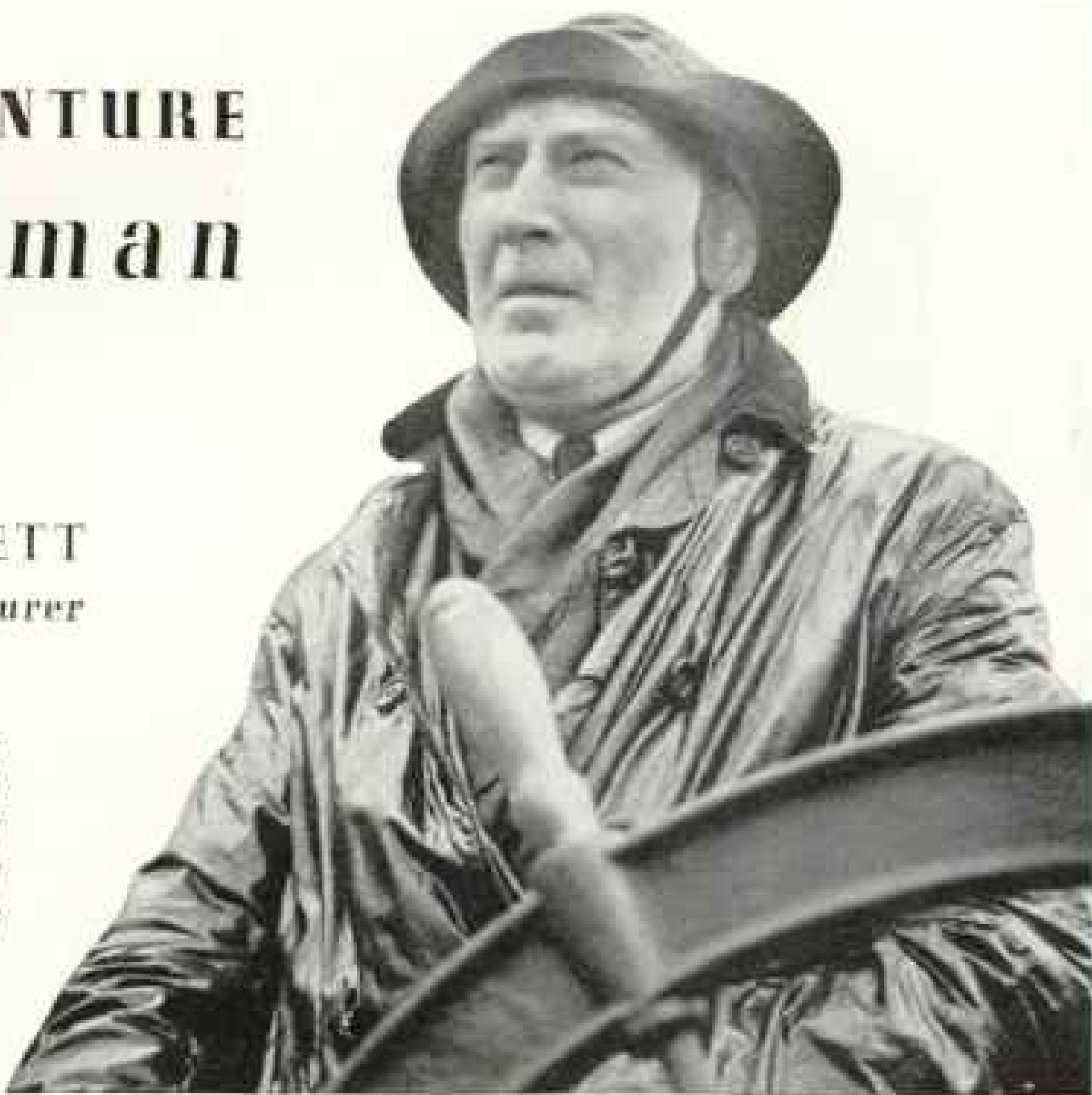
FOR SAFE ADVENTURE GIVE ME Pullman

ANY TIME says

CAPTAIN BOB BARTLETT
Noted Explorer, Author, Lecturer

"For quick service and safe adventure . . . give me the Pullman any time. Securely and comfortably you may reach your destination at a definite time in all kinds of weather. As a world traveler . . . this to me is most impressive!"

Captain Bob Bartlett.



Unusual Type of Genius

Mr. Otto K. Eitel, Managing Director, Stevens Hotel, Chicago, writes: "Here in Chicago, at the world's largest hotel, we know something about the problems of making thousands really comfortable. I have always thought that it must take unusual genius to provide the same unflinching service I always find on Pullman cars."



"Royal" Treatment. Joan Marsh, dashing star of stage, screen and radio, writes: "I'd just like you to know how grateful I am for all the kindness and courtesy I receive on a Pullman. It doesn't matter who the traveler is — he's treated as handsomely as visiting royalty!"

AFTER years of polar exploration — notably as skipper of Peary's successful expedition — no wonder Bob Bartlett seeks the security and comfort of Pullman. He's taken ice floes, arctic storms, and bitter cold in his stride, but when he can travel by Pullman, he chooses it above all other ways.

Thousands of other folks from less adventurous and exciting walks of life also choose Pullman. For it is the clean, comfortable, *safe* way to go. You rest in roomy, inviting seats by day — relax in soft, restful beds at night. Pullman travel isn't a luxury, it's a necessity, providing the means of restful sleep while you travel at night, and the comforts America's way of life demands.

Don't be timid about taking a Pullman. Every sensible traveler goes that way. You'll find it's worth much more than its modest cost. Pullman service extends throughout the nation and on various lines in Canada and Mexico. Your ticket agent will be glad to give you complete information. Or write

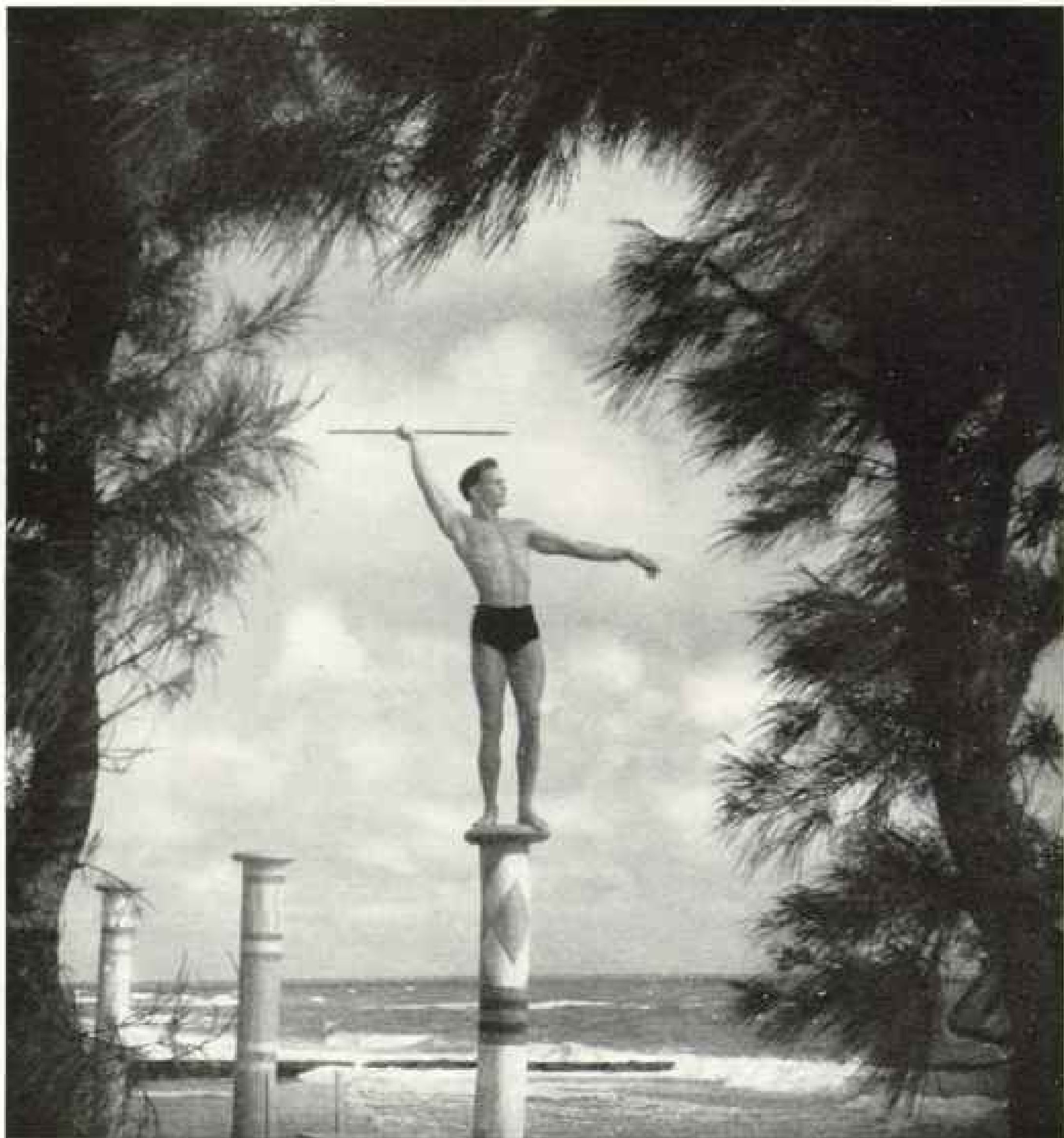
THE PULLMAN COMPANY, CHICAGO

Pullman Progress

The cars for the first successful lightweight high-speed streamlined train in America were designed by Pullman engineers and built at Pullman Car Works. The famous "City" series of Streamliners to Denver and the West Coast were Pullman-built and were first to feature complete sleeping car service.

Pullman and Rail — The safe way to go and the sure way to get there





THIS PICTURE WAS MADE ON AGFA FILM

**AGFA
FILM**



TRAVELERS demand a film they can *depend on* to produce best possible results under *any* weather and lighting conditions.

Agfa Plenachrome Film fully meets this requirement. So widespread is its reputation for dependability that we are able to offer you every roll with the guarantee of "Pictures that satisfy or a new roll free." *Made by Agfa Ansco Corporation in Binghamton, N. Y.*

In the Land of the Rising Sun . . .



. . . or in other words—

“It’s Buick again!”

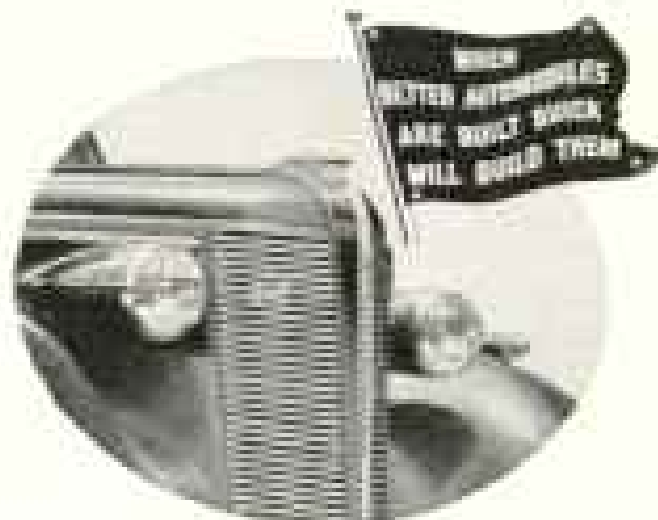
The newsreels may make it a land of rickshas and rice fields—but you’ll find if you ever visit Japan that the modern Nipponese knows his way about motor car row!

Long a favorite with Japanese of most exalted degree, Buick provides personal transportation for many of Nippon’s leaders, including members of the royal household itself.

Many branches of the government, including the army, navy, home department and foreign department; a score and more of prefectural

offices; municipalities; schools; provinces—these as well as private citizens show by repeated purchases the high esteem in which Buick is held the whole world over.

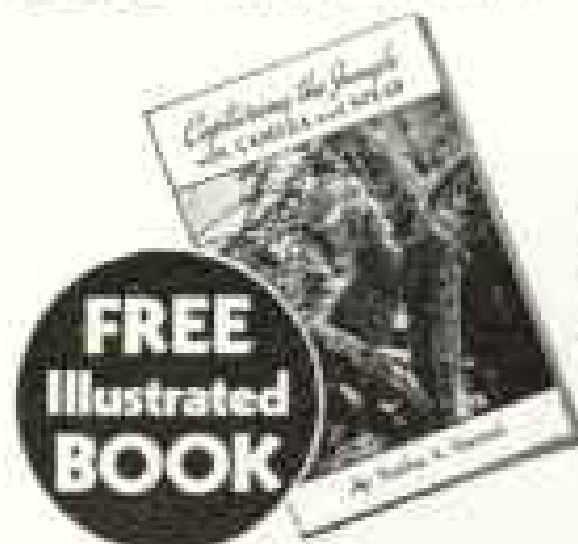
What with transportation and import duties, the cost of a Buick is high in the land of the rising sun. But *you* can enjoy its stirring pace, its matchless valve-in-head straight-eight power, its gorgeous styling and generous room for the lowest price Buick ever carried.



See your dealer and learn first hand why the whole world subscribes to Buick’s famous slogan.

YOUR MONEY GOES FARTHER IN A GENERAL MOTORS CAR

Capturing the Jungle with CAMERA and SPEAR



A THRILLING STORY by Sasha A. Siemel

You will thoroughly enjoy this absorbing book on the jungle. Written by Sasha A. Siemel, world-famed South American hunter and explorer, it will thrill you with its adventures and delight you with its many striking photographs. All were taken with a National Graflex, America's finest reflex miniature camera. It's just a handful.

More and more travelers, hunters and explorers are choosing Graflex and Graphic American-made cameras to make pictorial records. Ask your Graflex dealer to explain their ruggedness, efficiency and ability to get pictures under all conditions, anywhere, anytime.

You'll find "Capturing the Jungle with Camera and Spear" one of the most interesting books you ever read. We will gladly send it to you free upon request without obligating you.

Send for YOUR Copy Today!

Paste the coupon below on penny post card if you wish, and mail to Folmer Graflex Corporation, Dept. G-13, Rochester, N. Y., U. S. A. Your free copy of Sasha A. Siemel's new book will be mailed you promptly.

SPEED GRAPHIC



Excellent for action shots and photoflash work. Its many features include 24 shutter speeds, focal plane shutter and eye-level view finder. 1 size: 3 1/4 x 4 1/4, 4 x 5 and 5 x 7.

Series D GRAFLEX



Has revolving back, removable lens-board, full vision focusing and 25 shutter speeds. Sizes: 3 1/4 x 4 1/4 and 4 x 5.

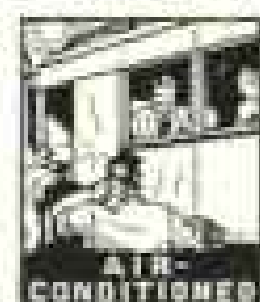
FOLMER GRAFLEX CORPORATION
DEPT. G-13, ROCHESTER, N. Y., U. S. A.

Please send me a free copy of your new book "Capturing the Jungle with Camera and Spear" by Sasha A. Siemel. No obligation whatsoever.

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CITY _____ STATE _____

GRAFLEX
PRIZE-WINNING CAMERAS

★ Enchanting ALASKA



THERE'S no getting around it, Alaska has that phenomenal quality of completely enthralling adventure-loving hearts.

You will find this enchantment in the magic of the north, with its snow-capped mountains and great forested wilderness . . . in glorious cruising on smooth, sun-lit mountain-sheltered seas. Alaska's enchantment lies in wait for you in every mysterious fjord . . . in the thunder of mighty moving glaciers . . . in the glamour of Totemland . . . under the Midnight Sun.

The charm of Alaska lingers again in the vast Interior . . . as you visit Mt. McKinley National Park, the Matanuska Valley, and the gold-famed Yukon.

Speed, luxuriously, over scenic rail routes to the Evergreen Playground in one of America's fine, modern, air-conditioned trains. In Seattle, your cruise begins immediately, aboard your friendly All-American steamer. Rail and all-inclusive Alaska steamer fares are low, with cruises ranging from 9 to 36 days round trip from Seattle. Vacation sailings two, three, and four times weekly, from now through September.

THE MILWAUKEE ROAD
UNION PACIFIC
SOUTHERN PACIFIC
BURLINGTON ROUTE
GREAT NORTHERN
THE ALASKA RAILROAD
NORTHERN PACIFIC
NORTH WESTERN LINE
ALASKA STEAMSHIP CO.



FOR ALASKA LITERATURE, just jot your name and address on the margin below and mail to Alaska Steamship Company, Room 720, Pier Two, Seattle—or see any of the companies listed above.

For The Alaska Line's Good-Natured Map, check here and enclose 10c.

It's Spring!

CHANGE TO DISTILLED OIL



For distilled oil is clean, pure oil. Every drop of it is first turned into vapor. This eliminates dangerous impurities, present in all crudes, which *cannot* distill.

So, this spring, change to Havoline, the distilled oil. Havoline cannot form the hard carbon so injurious to motors, so deadening to power. It is waxfree and tarfree.

Havoline is the oil for modern motors. It is designed to give perfect lubrication regardless of constantly narrowing clearances and ever-increasing engine speeds.

Let the nearest Texaco dealer change your oil now to Havoline. He has a Havoline Lubrication Chart showing the *correct* grade for your particular car. Indian Refining Company, Indianapolis. Affiliated with The Texas Company.

**KEEPS YOUR
ENGINE CLEAN**



Every Reason for a NEW ENGLAND VACATION



1. SEASHORE



2. MOUNTAINS



3. LAKES



4. HISTORIC HOUSES

5. A COOL CLIMATE

Enjoy the charm of a New England vacation this summer: White-spired colonial churches, old village greens, summer theatres, shore dinners, winding country roads bordered by stone walls. Meet interesting people: Weather-beaten old salts, farmers with the twang of the hills in their voices, famous authors, actors, playwrights. Come to New England, where the climate is cool all summer. But first clip the coupon for authentic vacation information.

BEAUTIFUL 40-PAGE BOOKLET—FREE

NEW ENGLAND COUNCIL
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Please send me my copy of your Vacation Booklet G-47.

Name _____

Address _____



Excellent meals on the
Empire Builder
... at low cost



LOW SUMMER FARES
to **Pacific Northwest**
SPOKANE • SEATTLE • TACOMA
PORTLAND • VANCOUVER • VICTORIA
CALIFORNIA • ALASKA

with 1, 2 and 3 day bargain Stop-Off Tours
in **Glacier Park**

● Passengers on the Empire Builder can take advantage of the biggest bargain in national park tours—a 1 day Stop-Off tour through the heart of Glacier Park for only \$16.00, 2 day tour \$28.25, 3 day tour \$42.50. These prices include complete cost within the park. From open-top observation buses ride through the heart of the park and over the Continental Divide at Logan Pass—see glaciers, lakes, waterfalls, alpine meadows ablaze with flowers next to snow banks on the peaks. Stay at park hotels. Be sure your local ticket agent routes you via Great Northern Railway.

—MAIL COUPON TODAY—

A. J. Dickinson, Passenger Traffic Manager
Great Northern Railway, Dept. WG-4, St. Paul, Minn.

Please send me information about your service to
Glacier Park Pacific Northwest Alaska California
All-Expense Tours

Name _____

Address _____

City _____

State _____

NEW "SUPER-DUTY" FRIGIDAIRE WITH THE METER-MISER

CHOICE OF SMART BUYERS BECAUSE IT PROVES COMPLETENESS
IN ALL 5 BASIC SERVICES FOR HOME REFRIGERATION



PROOF 1
GREATER ICE-ABILITY

Says "Cube-Struggle" and "Ice-Family!" At last, the refrigerator that instantly releases all ice trays — and all trays from every tray, with the New INSTANT CUBE-RELEASE! Also freezes 20% more ice — faster . . . stores 100% more ice-cubes ready for use! Most complete ICE SERVICE ever known.



PROOF 2
GREATER STORAGE-ABILITY

New 9-Way Adjustable Interior! Good-bye to old-fashioned crowding and dish-juggling. Now you get maximum shelf space *up in front*. And Full-Width Sliding Shelves, Cold-Storage Tray, new Super-Duty Hydrators, ALL adjust like magic to suit any size or shape of food! Most complete STORAGE SERVICE ever known.



PROOF 3
GREATER PROTECT-ABILITY

Keeps Food Safer, Fresher, Longer! Safety-Zone Cold in food compartments — *proved* by new Food-Safety Indicator with Dial on the Door, always in sight. Plus MOIST Cold for vegetables . . . EXTRA Cold for meats . . . FREEZING Cold for ice cream and frozen desserts. Most complete PROTECTION SERVICE ever known.

It's a landslide for the "Super-Duty" Frigidaire! Because women have seen PROOF that it's more than just a new refrigerator — it's Complete New Service in Home Refrigeration!

Take the New 9-Way Adjustable Interior. It's not just a place to jam full the old helter-skelter way, but an amazing invention for properly storing all foods — making room for odd shapes and sizes as never before. It brings the most complete STORAGE-ABILITY ever known!

And so on through ALL 5 BASIC SERVICES, the "Super-Duty" Frigidaire with the Meter-Miser brings completeness never known before. Don't be satisfied with less. And don't buy on mere claims. Demand PROOF. You'll get it at your nearest Frigidaire dealer's PROOF-DEMONSTRATION. See this before you buy any refrigerator . . . and save money, avoid disappointment.

FRIGIDAIRE DIVISION
General Motors Sales Corporation
Dayton, Ohio



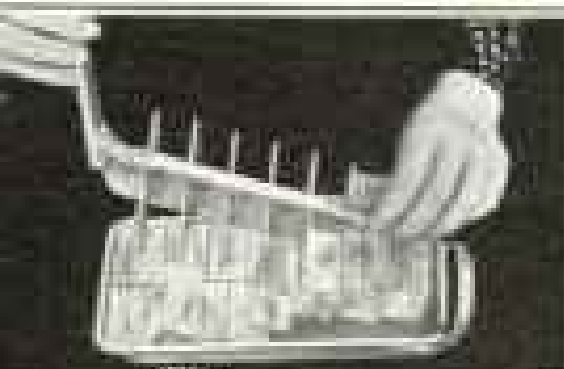
*Buy only on Proof
of Super-Duty*



PROOF 4
GREATER DEPEND-ABILITY

Five-Year Protection Plan, backed by General Motors, on Frigidaire's sealed-in mechanical unit. This, together with Frigidaire's Sealed Steel Cabinet, Special Sealed Insulation and Lifetime Porcelain or Durable Dulux exterior, all adds up to the most complete DEPEND-ABILITY ever known.

PROOF 5
GREATER SAVE-ABILITY
ONLY FRIGIDAIRE HAS THE *Meter-Miser*
LOTS LESS COST TO THE BONE



New Instant Cube-Release in Every Ice Tray
See it in action!

Only Frigidaire has it! Instantly releases ice-cubes from tray, two or a dozen, as you need them. Yields 20% more ice by ending faucet meltage waste. See PROOF of its quick, easy action at your Frigidaire dealer's.



You see its lower operating cost *proved* by an electric meter *before you buy!* The Meter-Miser does Super-Duty at amazing saving because it's the *simplest refrigerating mechanism ever built . . .*

Only 3 moving parts, including the motor . . . permanently oiled, completely sealed against moisture and dirt. Frigidaire with the Meter-Miser saves enough on food and operating cost to pay for itself, and pay you a profit besides!

All America is talking about it!



The Sensational New
WILLIAMS OIL BURNER

MADE BY

WILLIAMS
OIL-O-MATIC
HEATING

selling for less than \$200

GOOD news travels *fast!* Already, people throughout America are talking about this amazing new Williams Oil Burner which is priced—believe us!—below \$200!

This low price includes an inside storage tank, a combustion chamber built to fit your heating requirements, *plus* all installation costs! Only local permits are extra!

Amazing? We'll tell the world! Orders are simply pouring in! Production is limited! So—act at once! See your Oil-O-Matic dealer *today!*

BUILDERS ATTENTION! *Investigate this new Williams Oil Burner! It is what you have been looking for!*

STUDY THESE FEATURES!

- ★ Fully Automatic
- ★ High Pressure continuous spark—no radio interference
- ★ 1/10 h.p. motor—very low current consumption
- ★ Burns low cost No. 3 fuel oil
- ★ Silent as a whisper
- ★ Two-stage pump with automatic safety shut-off—uniform pressure—constant flame
- ★ Williams engineered throughout
- ★ Easy payments—12-36 months to pay

WILLIAMS OIL-O-MATIC HEATING CORP.
Dept. 385, Bloomington, Ill.

Please give me full particulars about your new low priced Williams Oil Burner.

Name.....
Address.....
City..... State.....



This Year of all Years
Great Britain & Ireland

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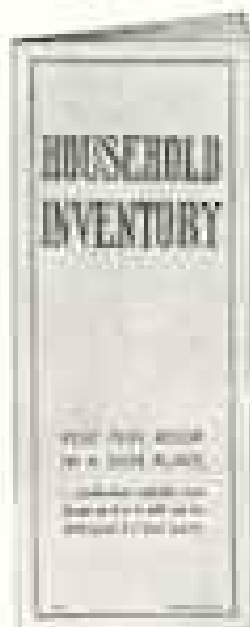
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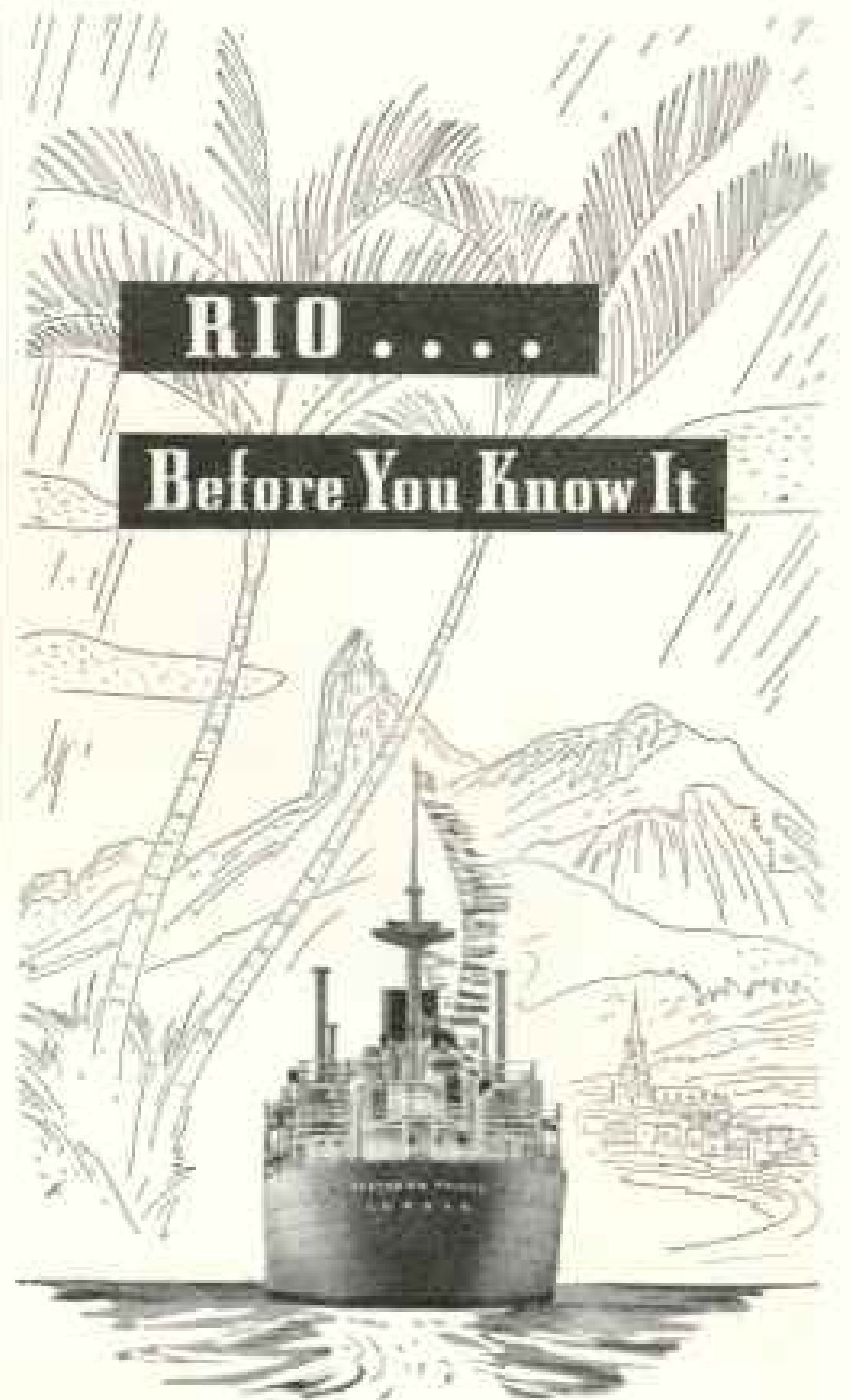
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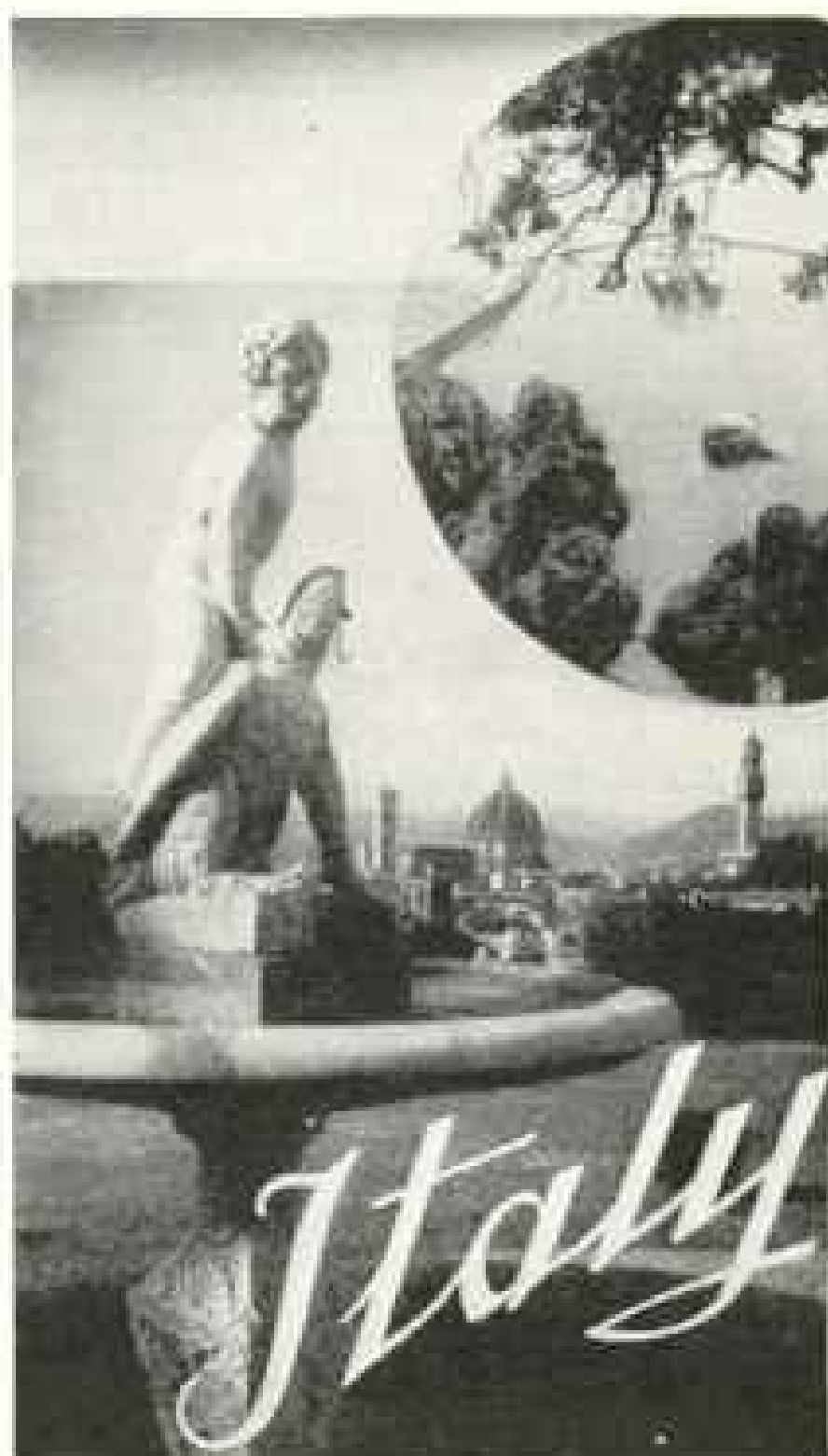
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spur of root caught my pants-leg, pulled me into the black void with it.

"For an instant I seemed suspended. Then something hit me, knocked the wind out of me, but I grabbed just the same, found myself swinging like a pendulum from a branch of a gnarled old cedar that somehow had found a foothold in the cliff about thirty feet below the rim. Beneath my dangling soles was 300 feet of *nothing!*

"When I could get my breath, I called to my companion to cut the well-rope and lower an end to me. Quickly, he returned to the edge of the cliff, but it was none too soon. My hands were beginning to ache from the strain. Soon they would be numb from lack of blood. Then there would be a nauseating drop, and my troubles would be over.

"'Where are you?' my friend was calling. 'I can't see a thing down

there.' I answered him again and again. He cast the rope vainly into the dark... and then, in the most desperate, hopeless situation I ever hope to see... I thought of the flashlight in my hip pocket.

"There was nothing for it but to trust my life to my good right hand, fish for the flashlight with my left, and pray there was still life in those batteries. The light worked, enabling my companion to reach me

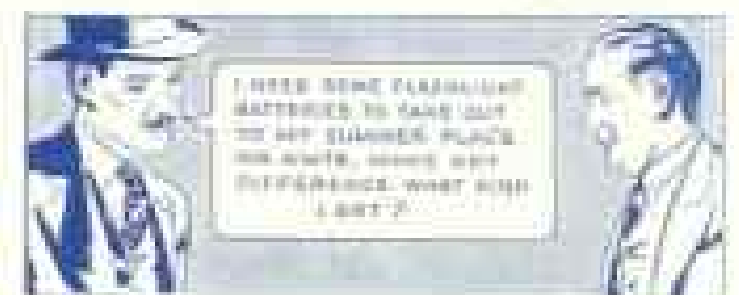


with the rope. Otherwise there would have been one more of those 'otuit flowers' notices in the paper. Once more *fresh* DATED 'Eveready' batteries proved their dependability.

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Even when present for a long period of years overweight often may be reduced with safety, but each case requires individual treatment. No effort to bring about a marked weight reduction should be attempted except on the advice and under the supervision of a physician.

People who adopt an unbalanced "fad" diet, or treat themselves with reducing medicines, often suffer serious consequences. Some of these medicines contain dangerous drugs; others are practically useless for weight reduction. It may also be dangerous to begin suddenly a strenuous system of exercises in an effort to reduce. Such measures may throw too great a strain on vital organs already impaired by the excess fat and cause a sudden breakdown.

Aside from overeating, lack of exercise and hereditary factors, overweight may be caused by disease or improper secretion of certain glands. Even if caused by abnormal glandular condition, medical treatment can often effect a complete cure or relief.

Do you know what you should weigh? Send for the Metropolitan's booklet "Overweight and Underweight" which tells the proper weight for your age and height. In it you will find a complete program of diet and exercise which may help you to keep your weight down, or—under your physician's guidance—to reduce safely. Address Booklet Department 537-N.



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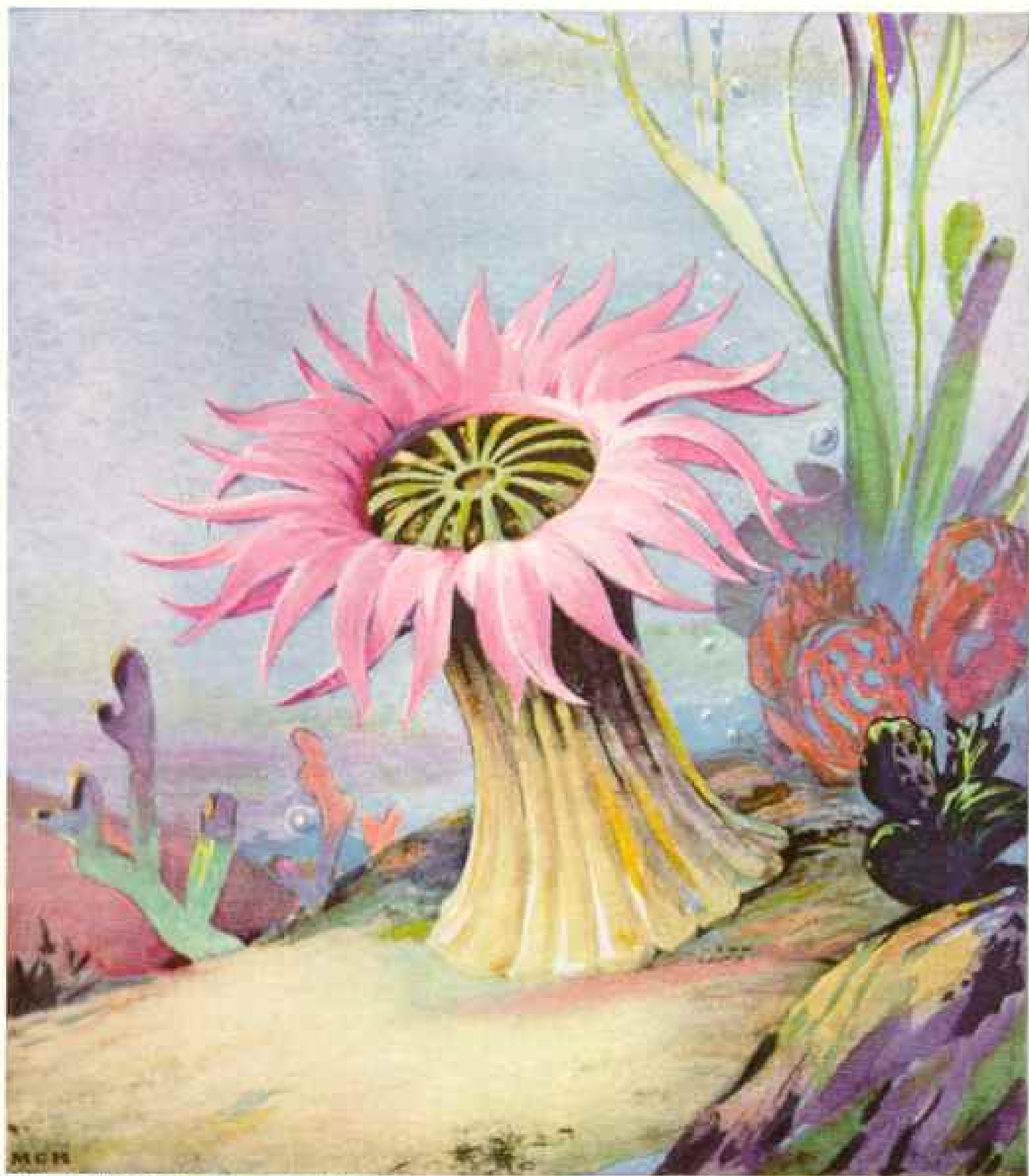
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SEA ANEMONE (*Actinaria Anthozoa*)

UNLIKE the wild flower which it resembles in name and rivals in beauty, the sea anemone is neither a plant nor a harmless decoration.

It belongs to the animal kingdom and preys upon small sea animals, which are attracted to its petal-like, poison-laden tentacles. So alluring are some anemones and so quickly acting their poisons that certain species of crabs use the anemones to catch and kill marine animals for food.

Like the sea anemone, some of the automobiles you meet in traffic or on the road are not what they seem. To the eye, they are beautiful mechanisms designed for pleasure and utility. But sometimes they prove to be juggernauts, crowding you off the road

or crashing into you. And then, even though you are not at fault, you may have claims for damages, even lawsuits, inflicted upon you.

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"A blow-out!" snarled the driver. "We're lucky to be alive." In the distance the faint tail-light of the criminals' car could be discerned, rapidly disappearing into the now unbroken blackness.

A Blow-out Plays No Favorites

"No chance now," the Sergeant complained sullenly. "They've escaped. Beaten by a blow-out."

The criminals did escape that time. But, thanks to the persistence of Sergeant McCabe and his men, they were later captured.

It's bad enough to have a man-hunt frustrated by a bursting tire. Think of how terrible it must be,



though, to have a carefree motorist start off on a pleasure trip only to have a blow-out catapult his car crazily into anything that blocks the way.

The solution to all this havoc on the highways has seemed to me to depend on the manufacture of a *safer* tire. That's why the invention of the Life-

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Sergeant McCabe found out how serious a blow-out can be. And so have thousands of others. That's why you now find thousands of motorists all over the country changing to Goodrich Golden Ply Silvertowns. They know that Silvertowns *below* mean *safety above*. Here's hoping that all my readers feel the same about staying off the "accident list." Remember, these life-saving Silvertowns can be purchased at Goodrich Silvertown Stores and Goodrich dealers everywhere.

S. S. VanDine



**Names and localities are fictitious, but the episode is suggested by an actual occurrence.*



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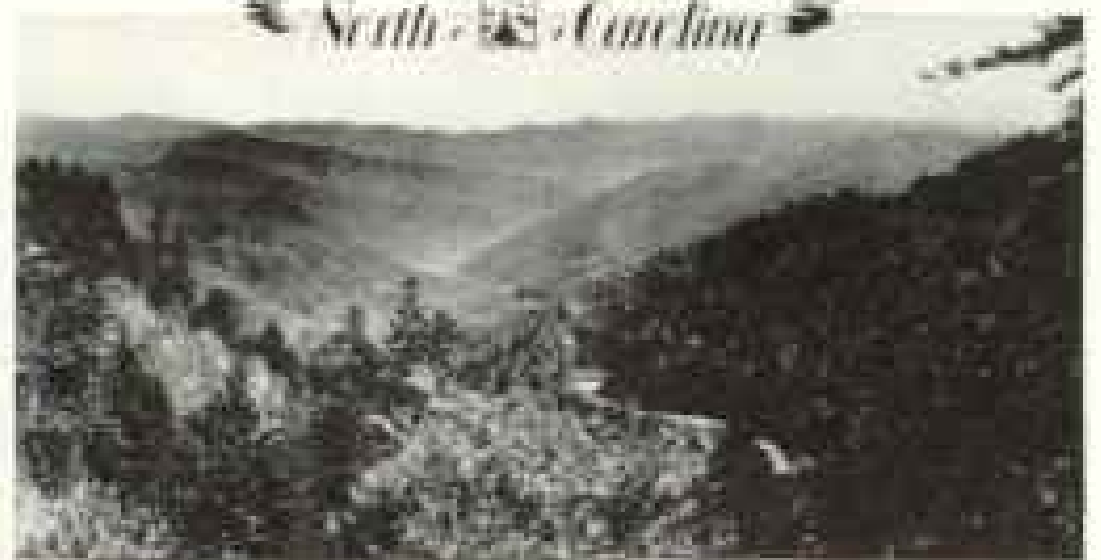


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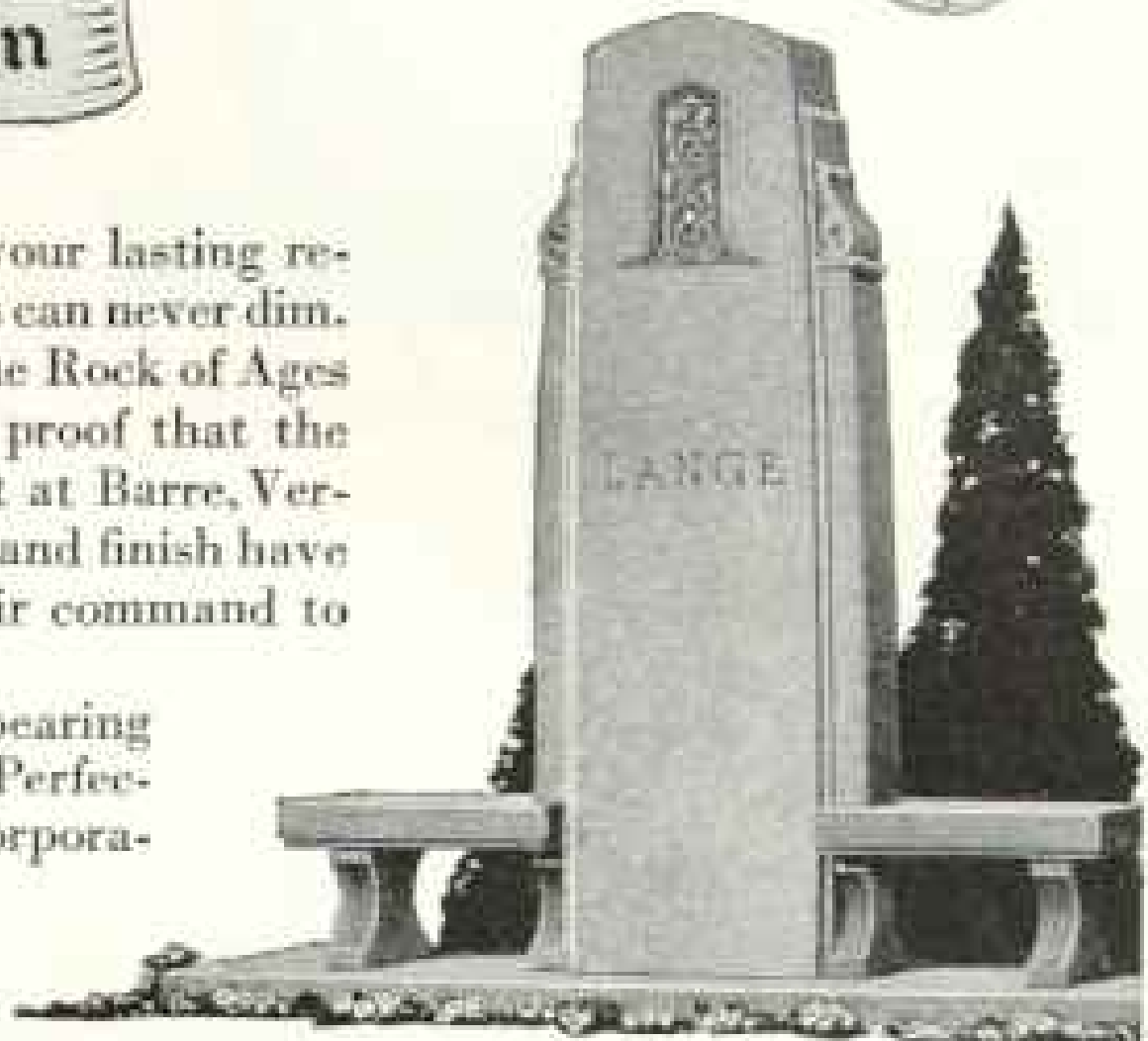
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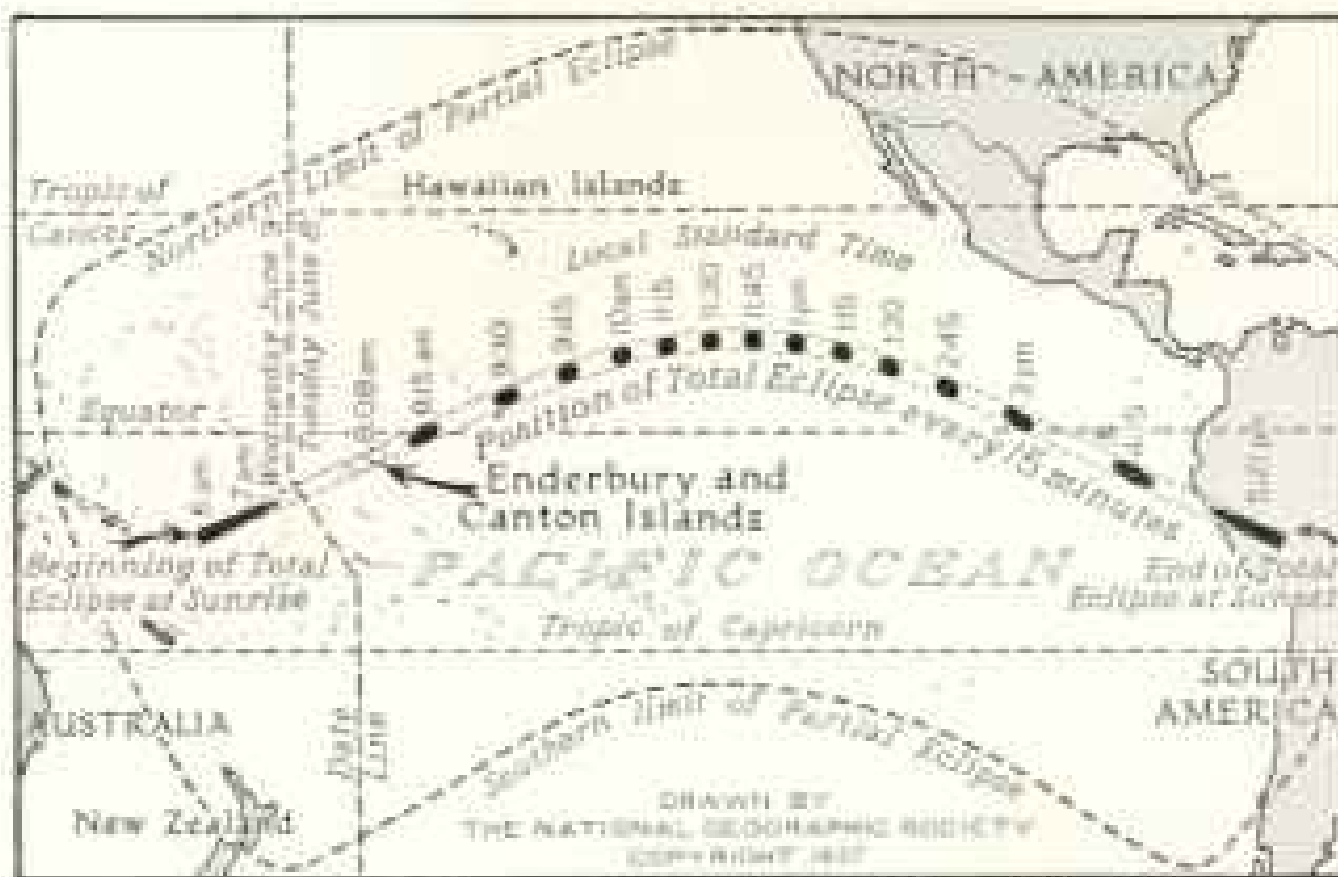
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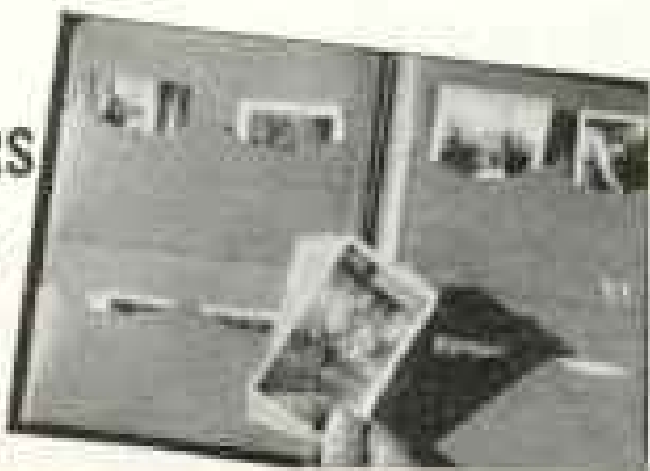
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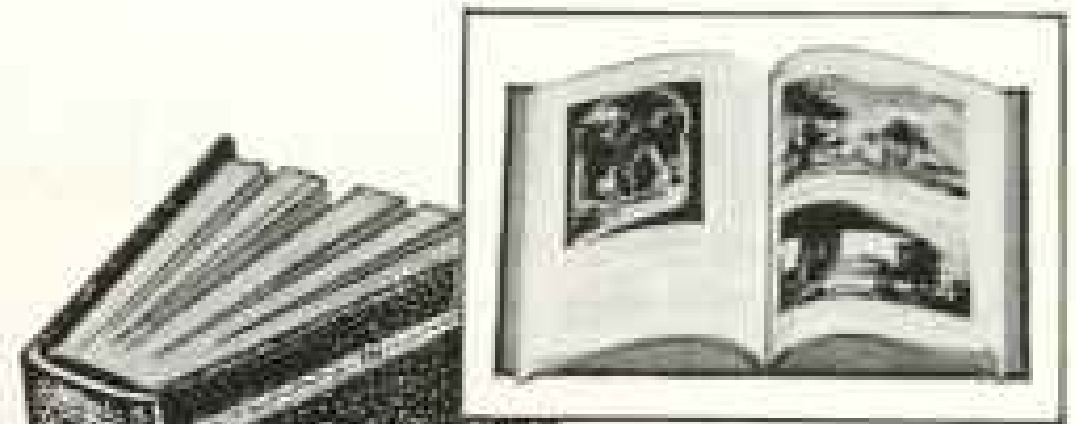
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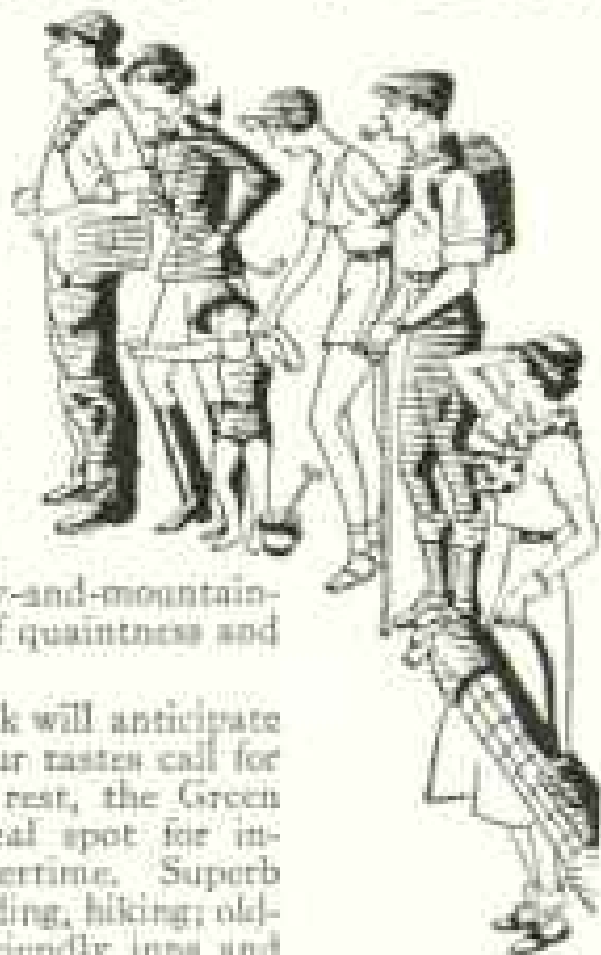
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1927

1937

TEN YEARS AGO THIS OCTOBER

It is interesting to turn back the pages of the years and read the record of a business. For time has a way of testing purposes and policies. Good years and lean reveal the character of men and organizations. The fundamental policy of the Bell System is not of recent birth—it has been the corner-stone of the institution for many years. On October 20, 1927, it was reaffirmed in these words by Walter S. Gifford, President, American Telephone and Telegraph Company.

"The business of the American Telephone and Telegraph Company and its Associated Bell Telephone Companies is to furnish telephone service to the nation.

"The fact that the responsibility for such a large part of the telephone service of the country rests solely upon this Company and its Associated Companies also imposes on the management an unusual obligation to the public to see to it that the service shall at all times be adequate, dependable and satisfactory.

"Obviously, the only sound policy that will meet these obligations is to continue to furnish the best possible telephone service at the lowest cost consistent with financial safety. This policy is bound to succeed in the long run and there is no reason for acting otherwise than for the long run.



"Earnings must be sufficient to assure the best possible telephone service at all times and to assure the continued financial integrity of the business. Earnings that are less than adequate must result in telephone service that is something less than the best possible.

"Earnings in excess of these requirements must either be spent for the enlargement and improvement of the service furnished or the rates charged for the service must be reduced. This is fundamental in the policy of the management.

"With your sympathetic understanding we shall continue to go forward, providing a telephone service for the nation more and more free from imperfections, errors or delays, and always at a cost as low as is consistent with financial safety."



**BELL
TELEPHONE
SYSTEM**



P r o d u c t s w i t h o u t w h e e l s

n e e d P R O V I N G G R O U N D S t o o

Just a little less than fifty years ago the founders of this business started to produce virgin aluminum in ingot form, which they expected to sell to manufacturers in many lines for use in their products.

It did not take these pioneers long to discover that if they were going to build a broad market for this newcomer among the common metals they would have to offer aluminum to industry in many finished and semi-finished forms.



That is the reason we are today engaged in several branches of the aluminum industry.

For example, we make cooking utensils. More than forty other companies also make aluminum cooking utensils. Many of them buy from us the necessary aluminum ingot or the aluminum sheet. Others use aluminum imported from abroad. The flourishing condition of the aluminum cooking utensil industry proves that there is room enough for all of us who are thus engaged in providing better cooking accessories for American homes.

The first few aluminum cooking utensils were made in a corner of our mill, back in the 90's, to demonstrate to one of the successful manufacturers of iron utensils that this "new" metal could be wrought into a lighter and better product. Women liked the new, light, silvery metal; the seeds of a new industry were sown.

Today many thousands of people gain their livelihood in the forty odd companies which compose the alumi-

num cooking utensil industry. Millions of American homes use the excellent utensils made by these other companies and benefit three times a day from the fact that aluminum is friendly to food.

Similarly and unavoidably we began the manufacture of other forms of aluminum, such as sheet, tubes, and wire; electrical conductors, bottle caps, chairs, and many others. Of necessity we undertook risks which we could not expect others to take, in order to find new fields of usefulness for the aluminum we were producing.



Often when the rightness of aluminum had thus been demonstrated, other manufacturers entered these fields, attracted to a new market in which the education had been begun and demand had been stimulated. Their constructive competition has in turn greatly contributed to the broadening of aluminum markets.

Our fabricating plants are a permanent and necessary part of the company's operations.

They are the practical proving ground for the whole research program of this company.

They are the breeding ground for a multitude of improvements in shop practices which are helping all manufacturers who make things of aluminum.

They are the clinics into which come many of the difficult cases which most fabricators consider unprofitable but which are unavoidable in any new and important development.

Products without wheels need proving grounds, too.



L U M I N U M C O M P A N Y O F A M E R I C A

