MAP SUPPLEMENT: BATTLEFIELDS OF THE CIVIL WAR

VOL. 119, NO. 4 APRIL, 1961

NATIONAL GEOGRAPHIC

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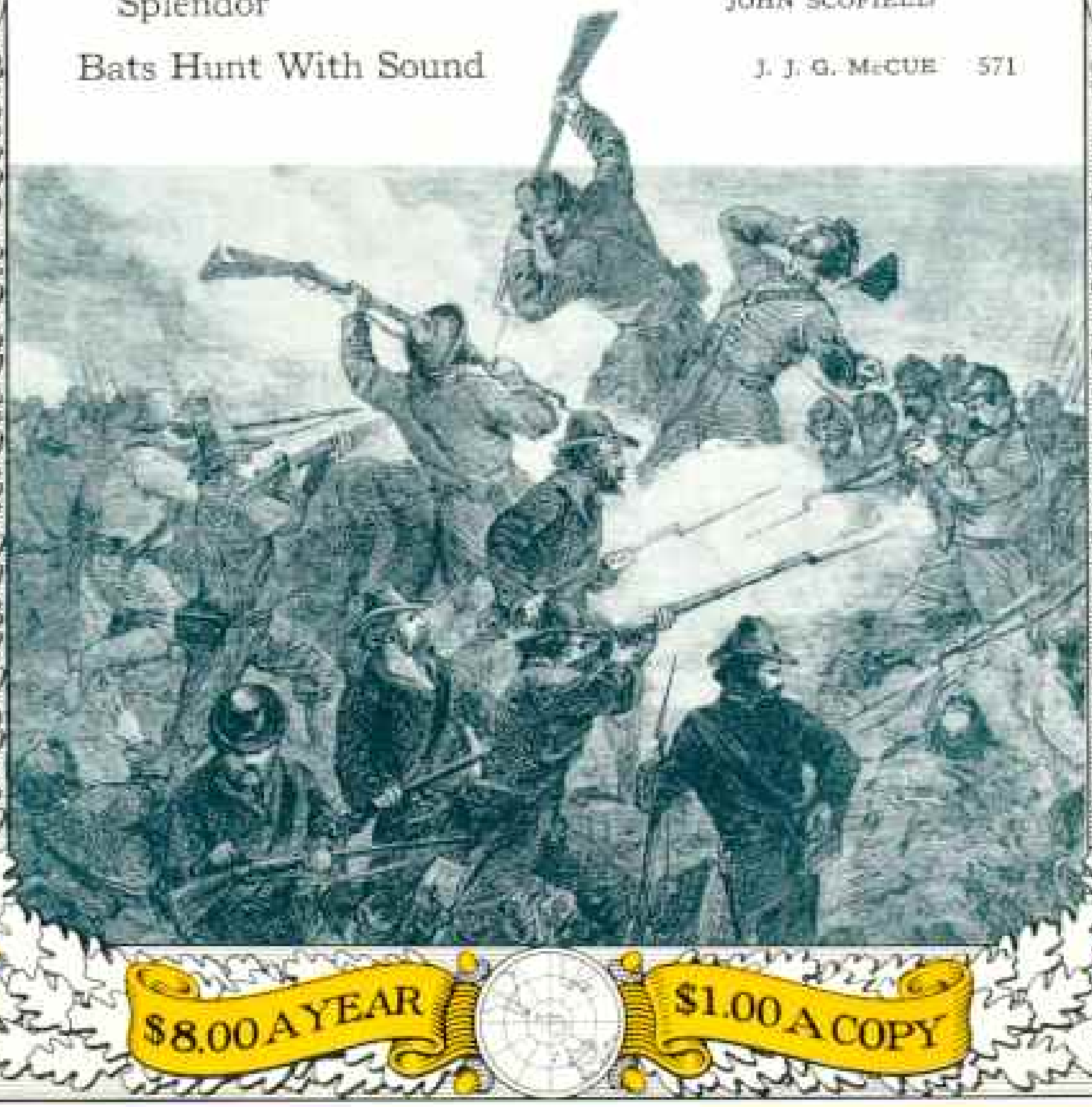

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THE JOURNAL OF THE NATIONAL GEOGRAPHIC SOCIETY WASHINGTON, D. C.

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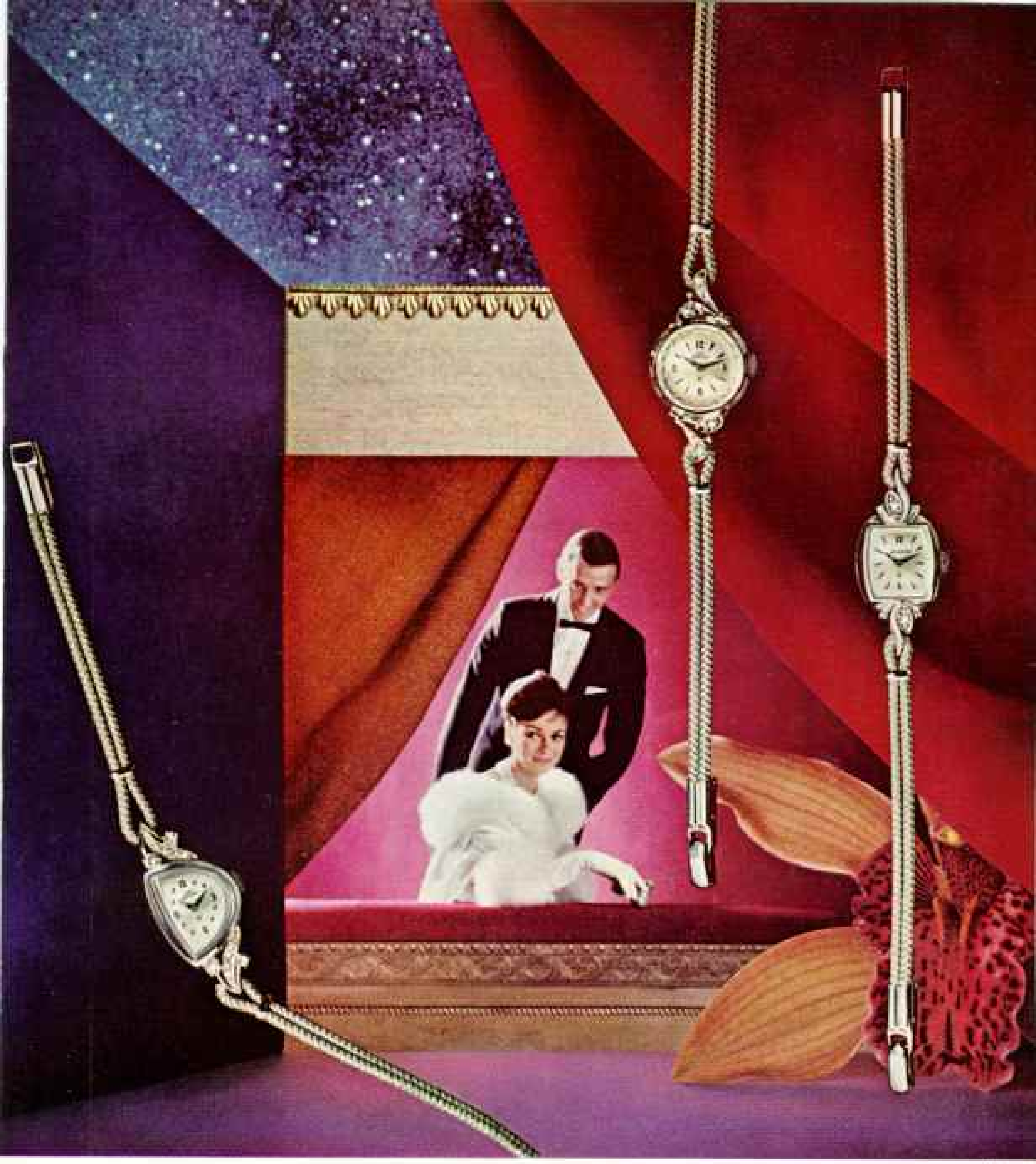
The Society has conducted more than 160 major expeditions and scientific projects. It disseminates knowledge to millions through its world-famous National Geographic Magazine, its 19 million color maps a year, its books, monographs, bulletins for schools, its information service for press, radio, and television.

COVER: *Federal troops in 1863 storm Charleston's Battery Wagner with rifles, bayonets, and fists (page 452).*



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THAT'S MR. MOORE OF THE GEOGRAPHIC, ON HIS EIGHTH VISIT TO CAMBODIA

"These 800-year-old sandstone carvings, the young dancing girls—nothing has changed here in the courtyard of the great temple of Angkor," says W. Robert Moore, Chief of NATIONAL GEOGRAPHIC's Foreign Editorial Staff. "But elsewhere in Cambodia, in a hundred ways, the past few years have brought practically a new world."

Bob Moore helps the GEOGRAPHIC put old and new into perspective. Through his eyes and through the lenses of his cameras, members have traveled to nearly every country on every continent—a total of three-quarters of a million miles. And when he visits, he stays for a long look—to observe nature and customs, to get to know the people. In 30 years Bob has contributed 60-odd fascinating articles and nearly 1,700 published photographs—among them the only color pictures of the coronation of Emperor Haile Selassie of Ethiopia, and the first color pictures of the hill tribes of Thailand and Burma.

Raised on a Michigan farm, Bob picked up his first foreign language, Thai, while teaching chemistry in Bangkok. His formula for colorful word-and-picture reporting: "strong legs, a cast-iron stomach, a large vocabulary, and lots of luck." Bob's luck has been good—he survived a riot in Uganda and, in British Guiana, a 30-foot fall into a chasm when a log bridge gave way.

When Bob had a few weeks of vacation recently, what did he do? Took his wife on a trip around the world—her second, his eighth!

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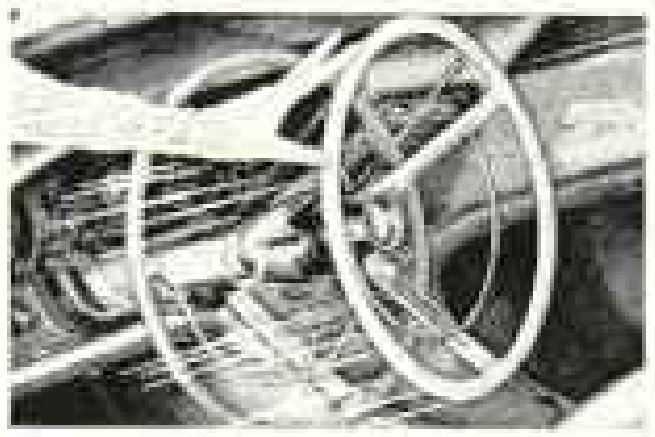

as the optional Swing-Away Steering Wheel that moves over to welcome you in . . . as new as the Thunderbird 390 Special V-8 engine. New, too, is a distinguished power team, consisting of automatic transmission, power steering and power brakes. They are all standard—of course. ¶ The finest pleasure car of our time is pure Thunderbird in its sports car performance, its 4-passenger size, its distinctive appointments. Interiors are uniquely elegant, supremely comfortable. Engineering is in the tradition of timelessness that has won for Thunderbird the finest resale record of any luxury car. ¶ Explore the most significant new line in car design at your Ford Dealer's —discover elegance in action.

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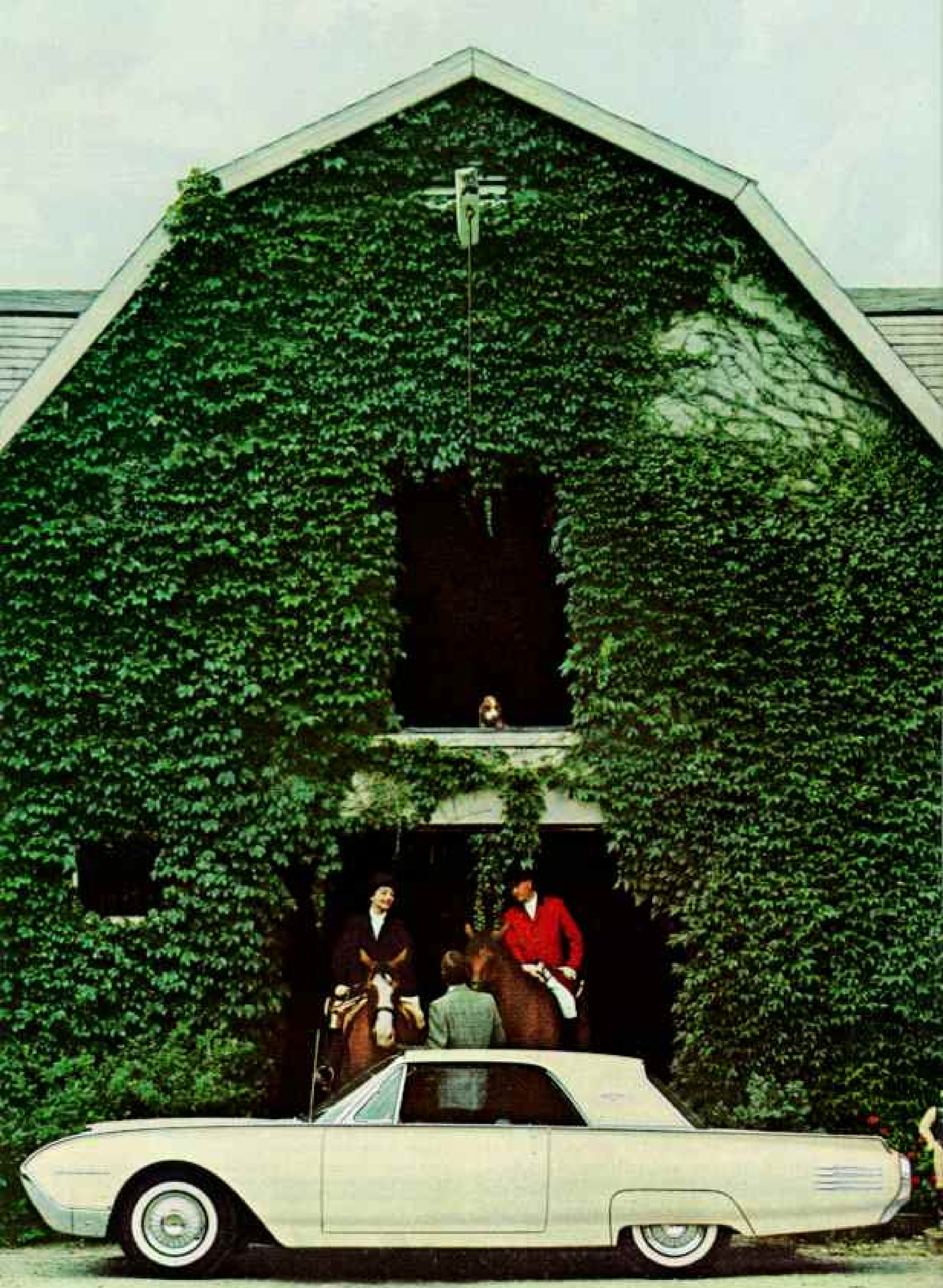

"The American Civil War...was a demonstration of heroism and sacrifice by men and women on both sides. That America could produce men so valiant and enduring is a matter for deep and abiding pride!"

Dwight D. Eisenhower

CIVIL WAR CENTENNIAL PROCLAMATION

LEXINGTON MISSOURI

Come watch the "Battle of the Hemp Bales" re-enacted May 18th

In 1861, townspeople of Lexington, Missouri, stood on river bluffs and watched 3,000 men of Mulligan's "Irish Brigade" fight off a superior force of yelling Confederates for three heroic days before surrendering. This May 18th, you can stand on those same bluffs and see an authentic re-enactment of that famous battle.

Make your plans to be there, for it will be well worth seeing. Proud of staging the Centennial's first land battle re-enactment, U.S. soldiers, militiamen and 560 well-drilled cadets of Wentworth Military Academy have collected real Civil War uniforms, battleflags, rifles and artillery. They have practiced, and learned their lines well, including the legendary "Rebel yell" and the answering banshee-howls of the Irish defenders. Their stage will be the original trenches, dug 100 years ago, and they will act for you a living historical drama you will never forget.

Lexington, where casualties were low because men pushed wet bales of hemp ahead of them for protection, was a small battle compared to Antietam or Gettysburg, but you will find it exciting to see, and absorbing to study as one of the events which decided our nation's destiny. Be there on May 18th; you'll learn a lot you never knew about American history, and a lot you should know about the price of freedom.

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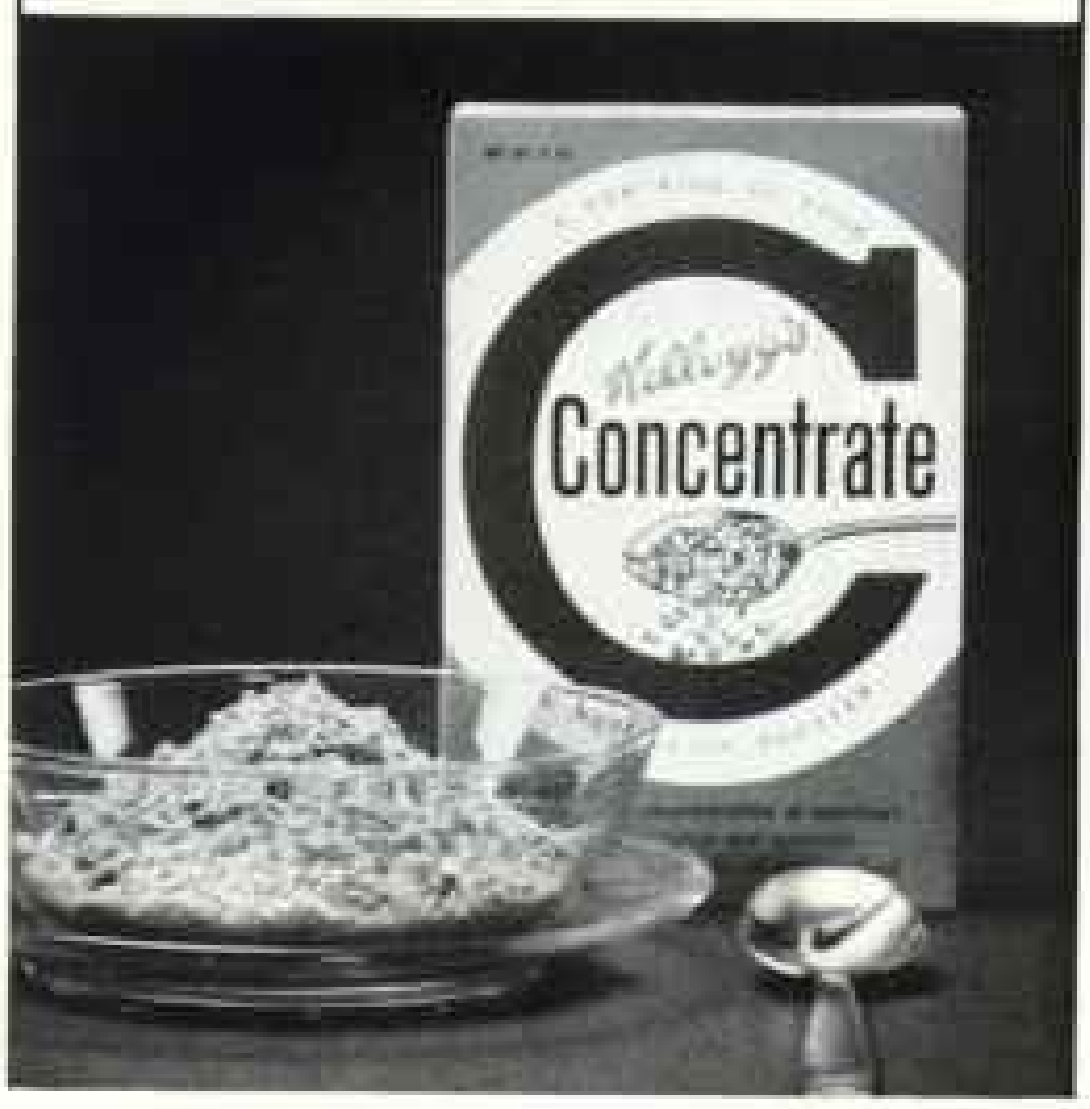

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One ounce of Kellogg's Concentrate (about ⅓ cup) gives you more *protein* than an egg and two strips of bacon; as much *iron* as two ounces of beef liver; as much vitamin B_1 (thiamine) as three ounces of ham; more *riboflavin* than four ounces of Cheddar cheese; more *niacin* than three ounces of beefsteak; about as much *vitamin C* as four ounces of tomato juice; more *vitamin* B_6 than five carrots; as much *vitamin* B_{12} as one ounce of meat or fish; and as much *vitamin D* as two glasses of vitamin D milk.

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You can enjoy Concentrate many other ways, too. Sprinkle it on casseroles, soups, salads, fruits, vegetables and even desserts. Or use it as an ingredient in meat loaves or patties, stuffings and many other favorite dishes.

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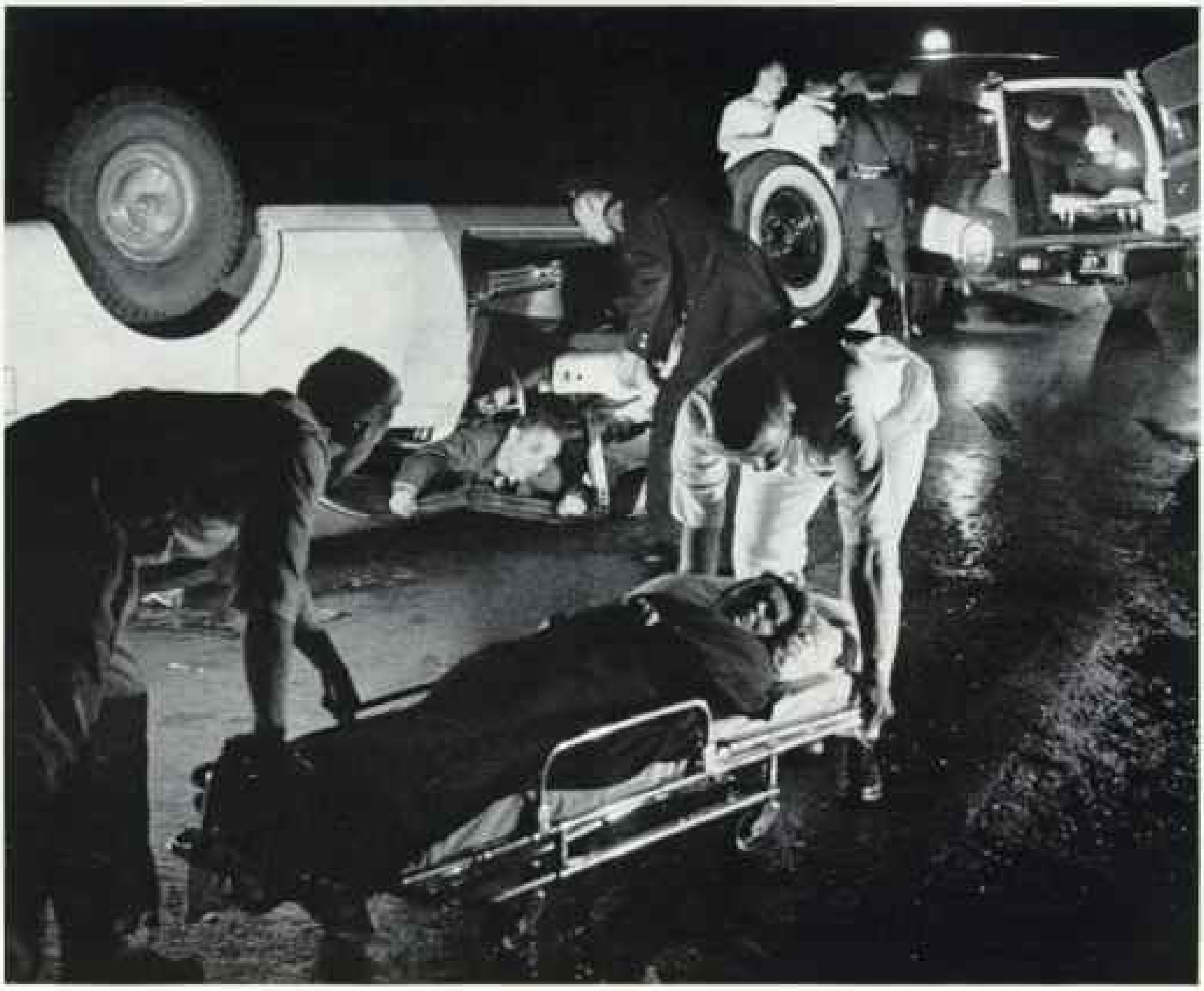

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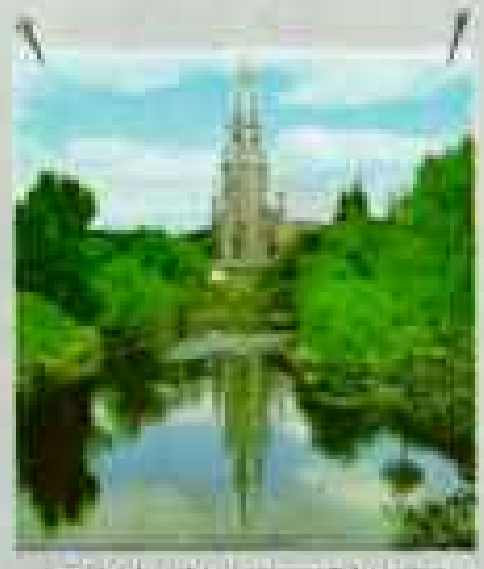

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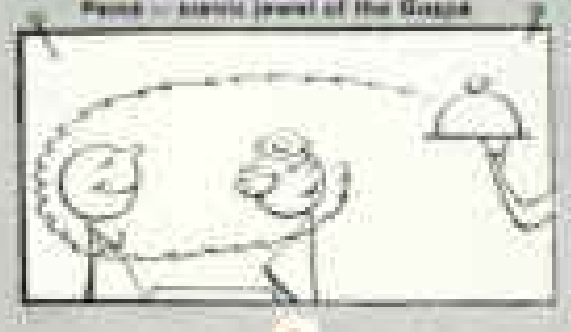

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Montréal — vibrant, exciting, gay

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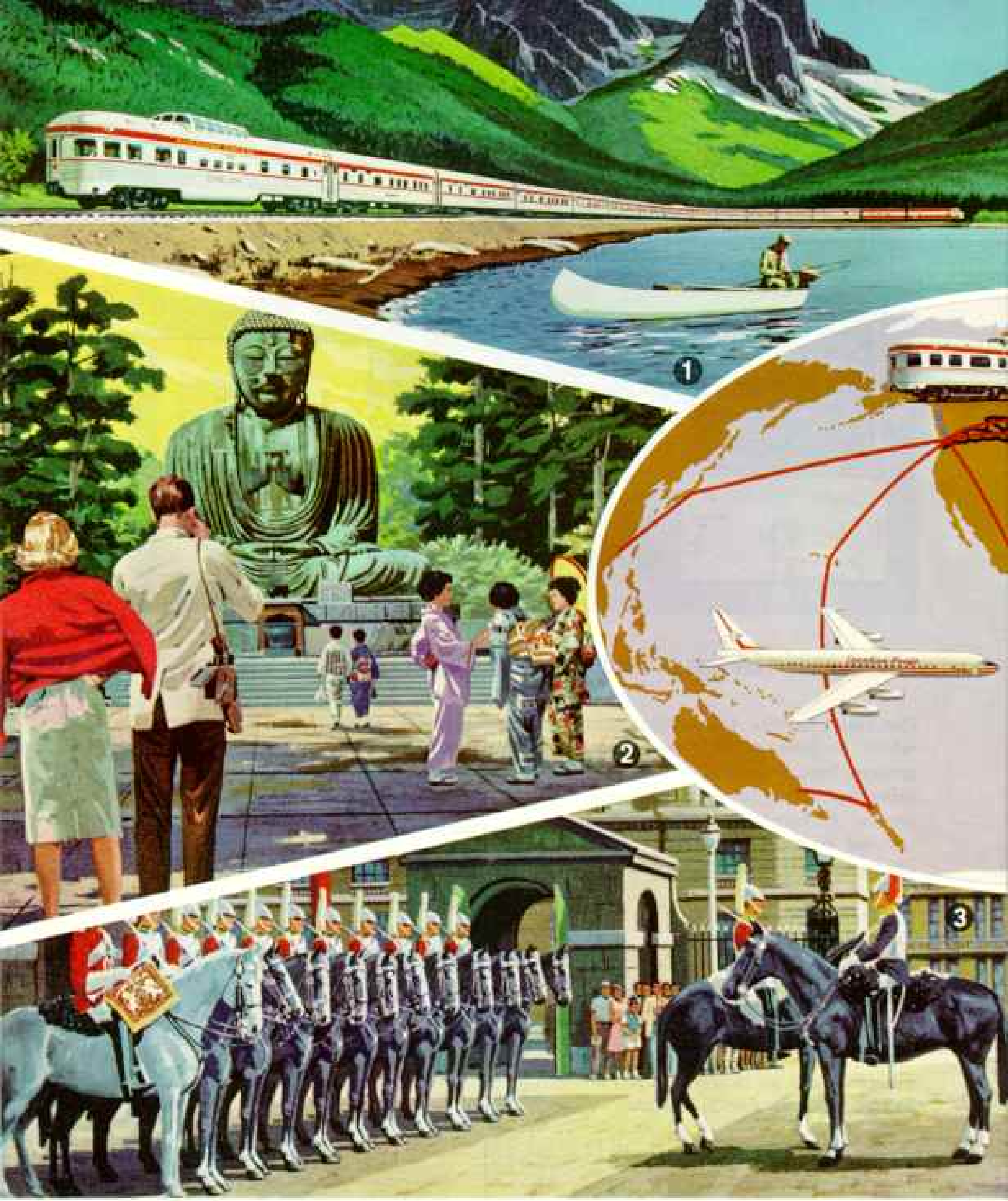

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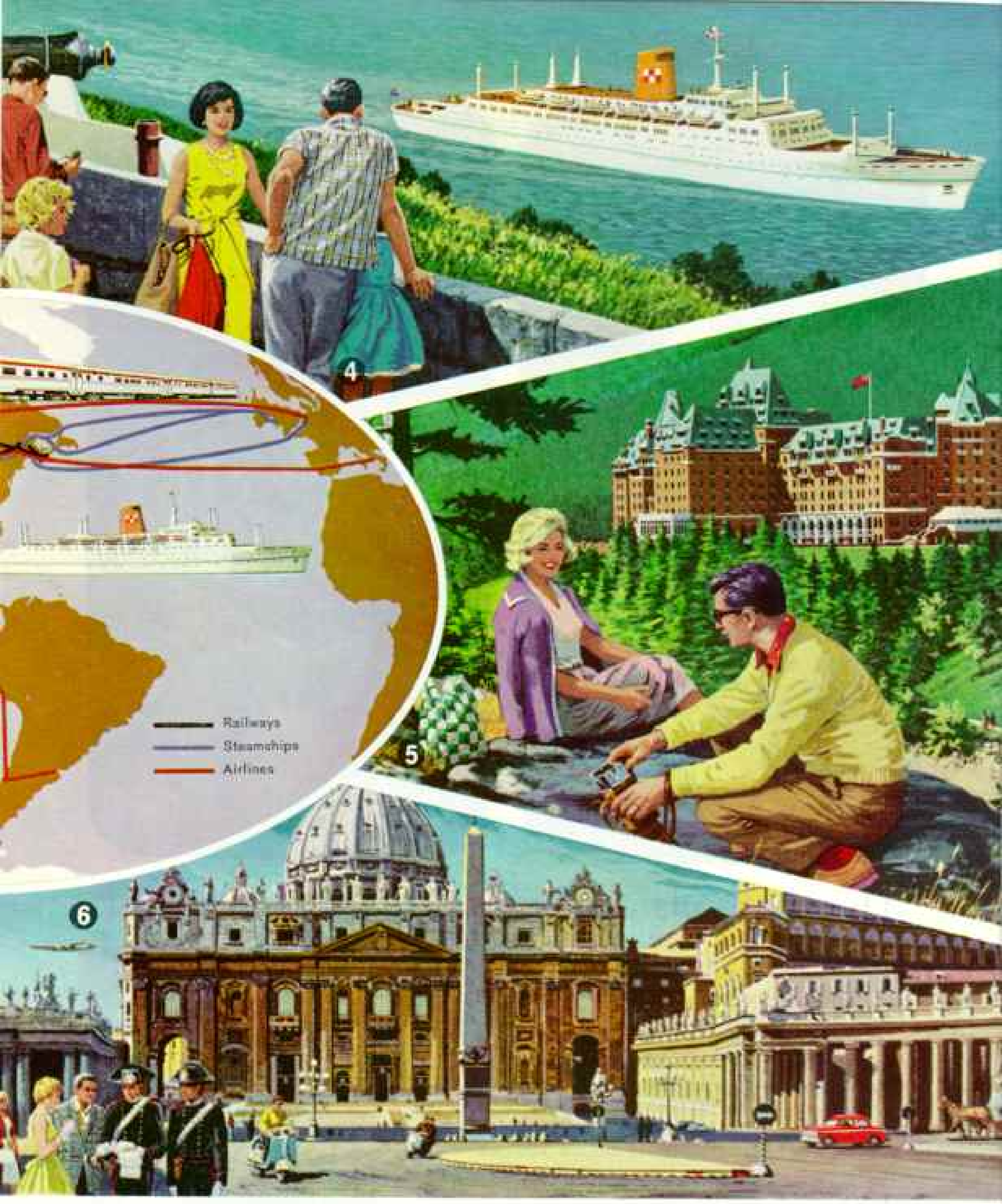

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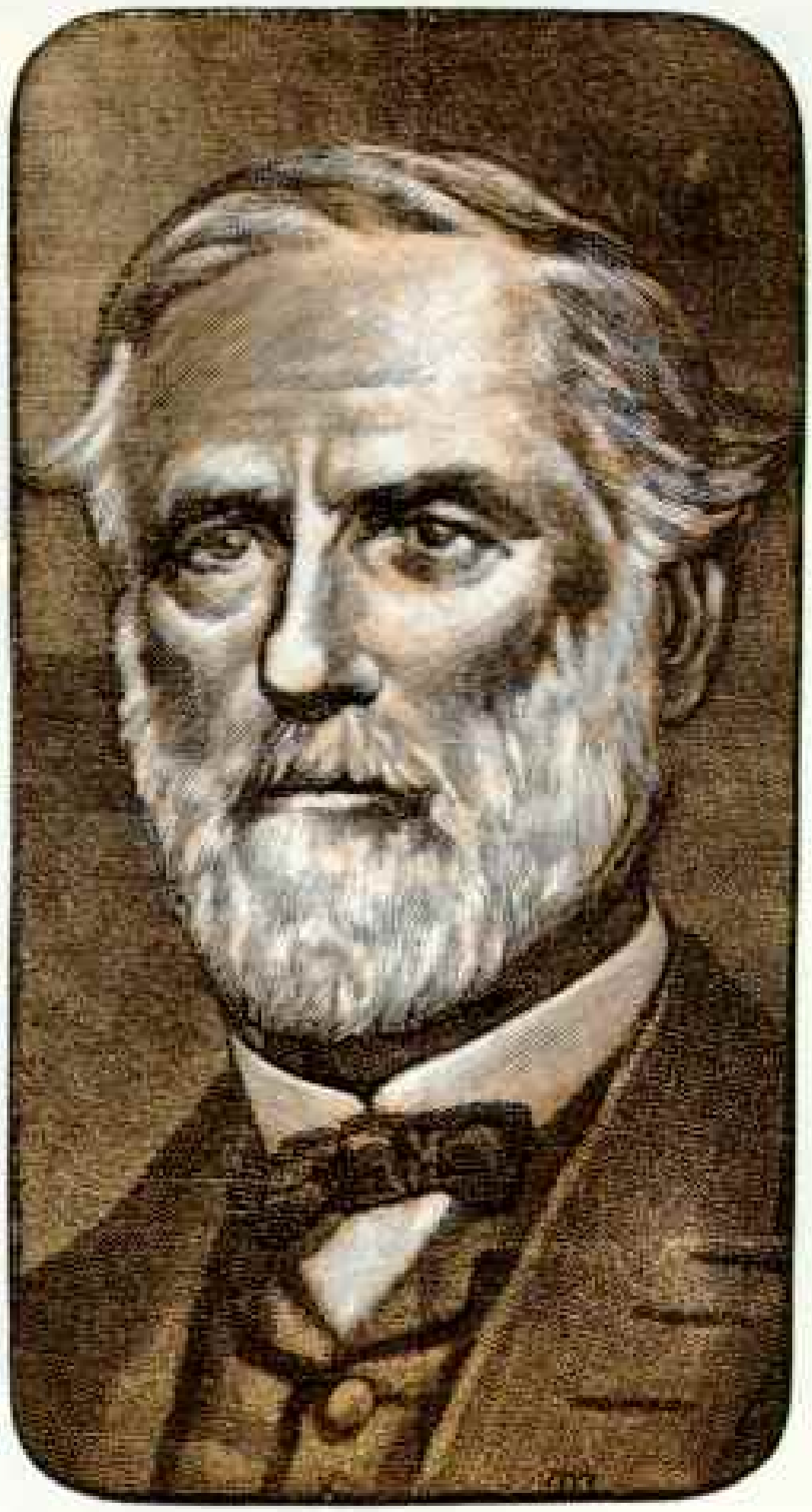

They both placed their faith in The Hartford

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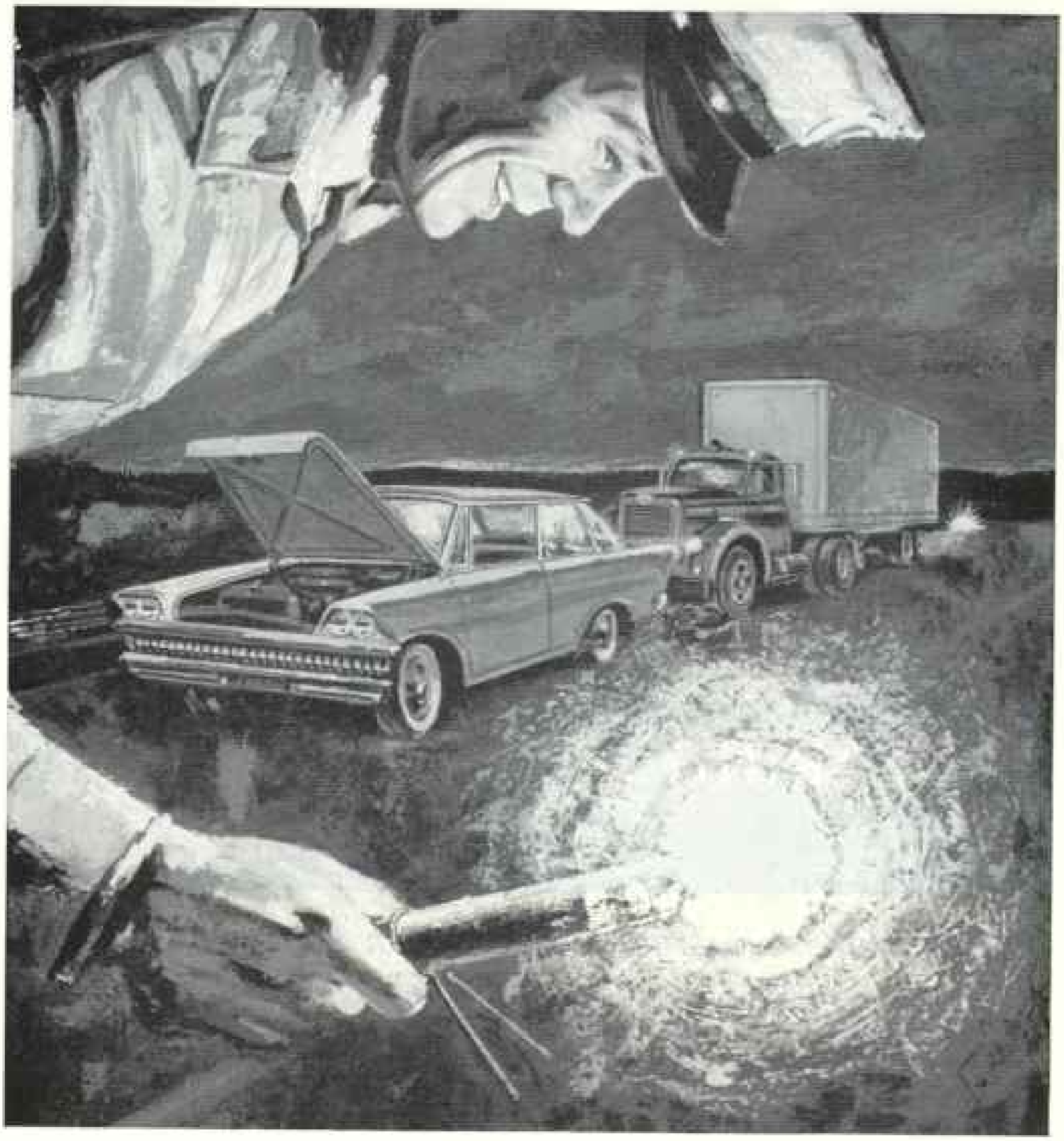

Truckers Have a Flare for Safety

When they see a motorist stalled on the highway at night, truck drivers have instructions to stop and set out safety flares. It's part of the trucking industry's official "Highway Help" program. The reason behind it is both public-spirited and practical. Truckers are dedicated to helping make the roads safer for all motorists, and in maintaining and improving the trucking industry's already impressive record of highway safety rolled up by its professional drivers.

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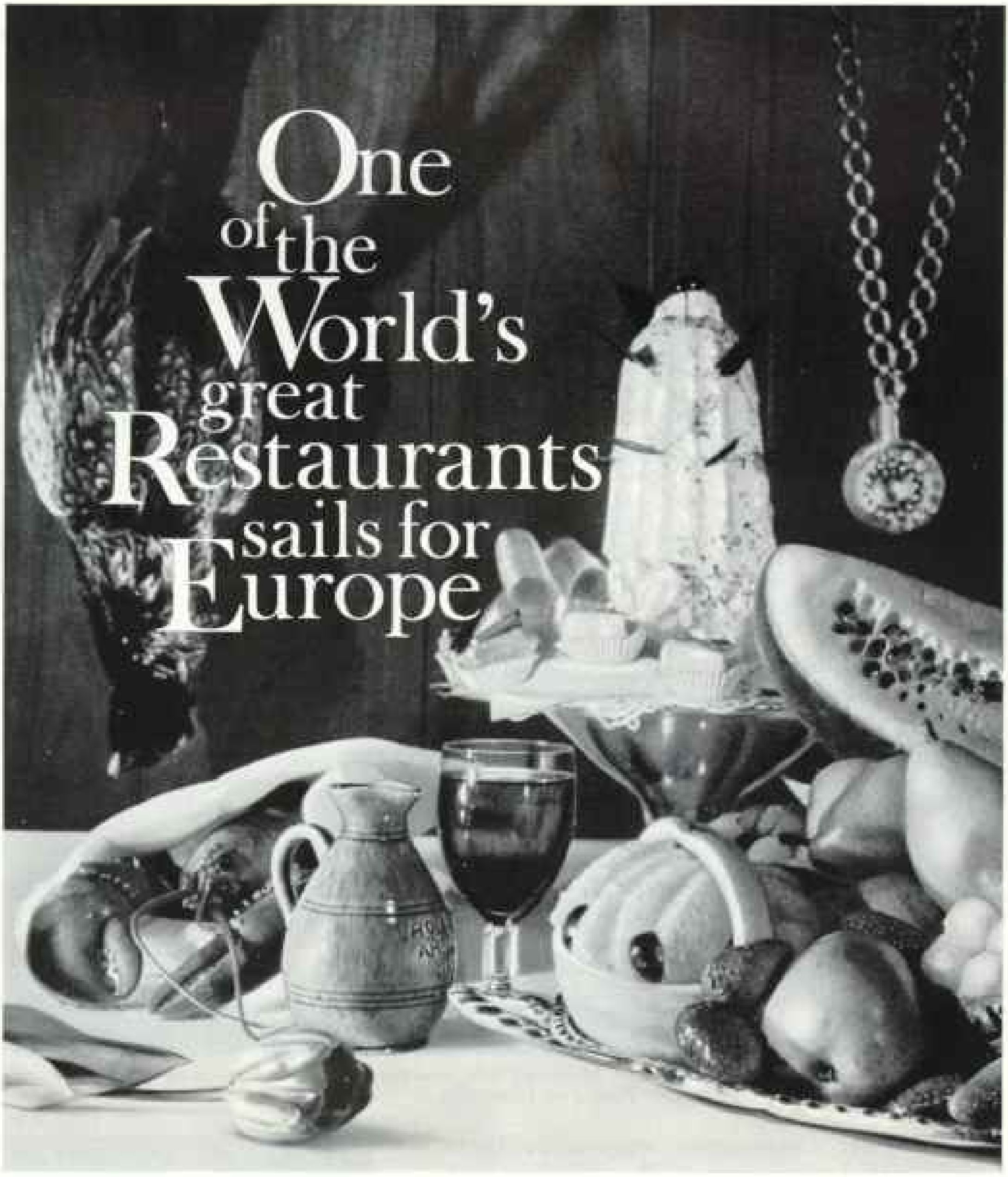

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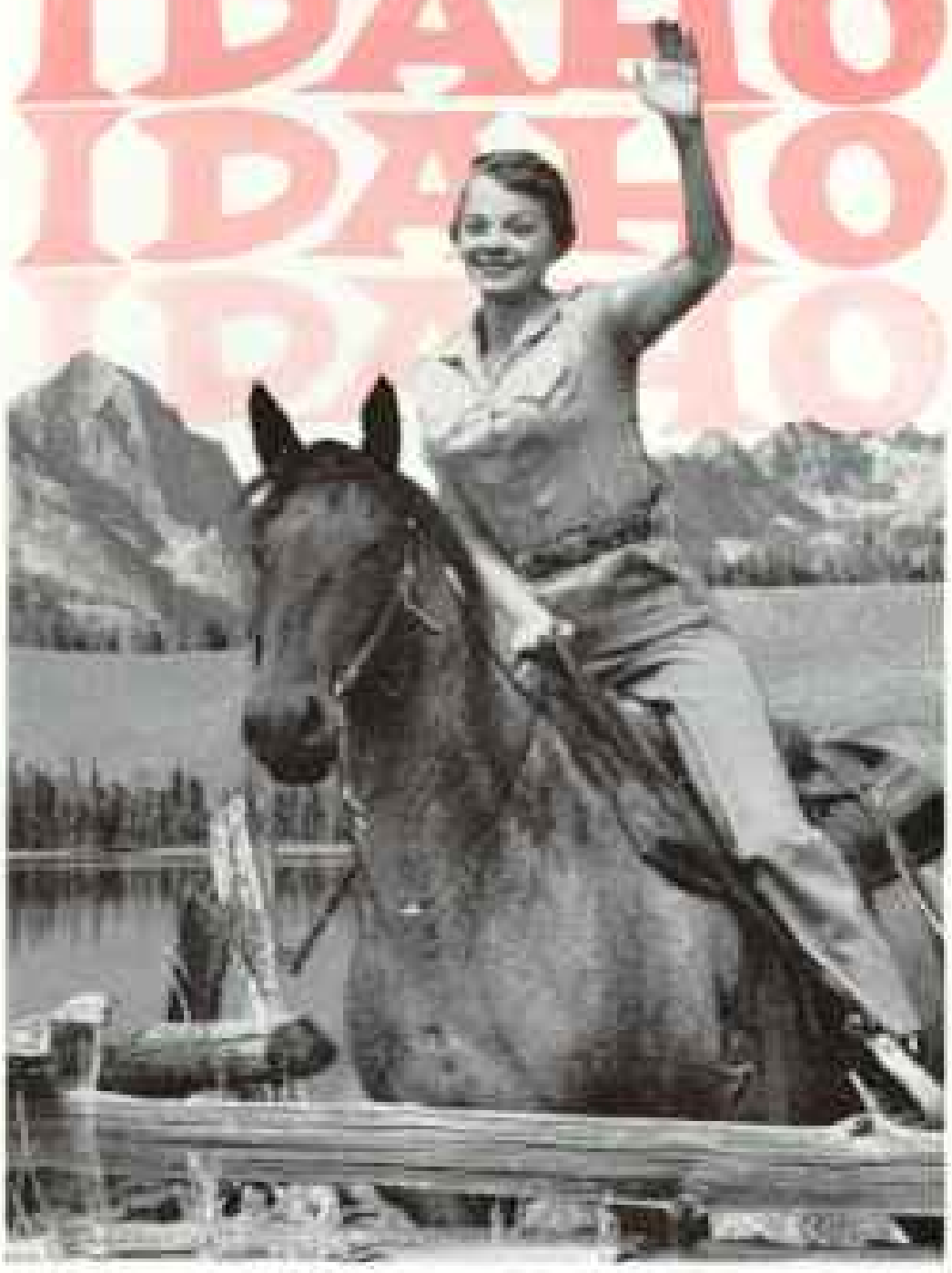

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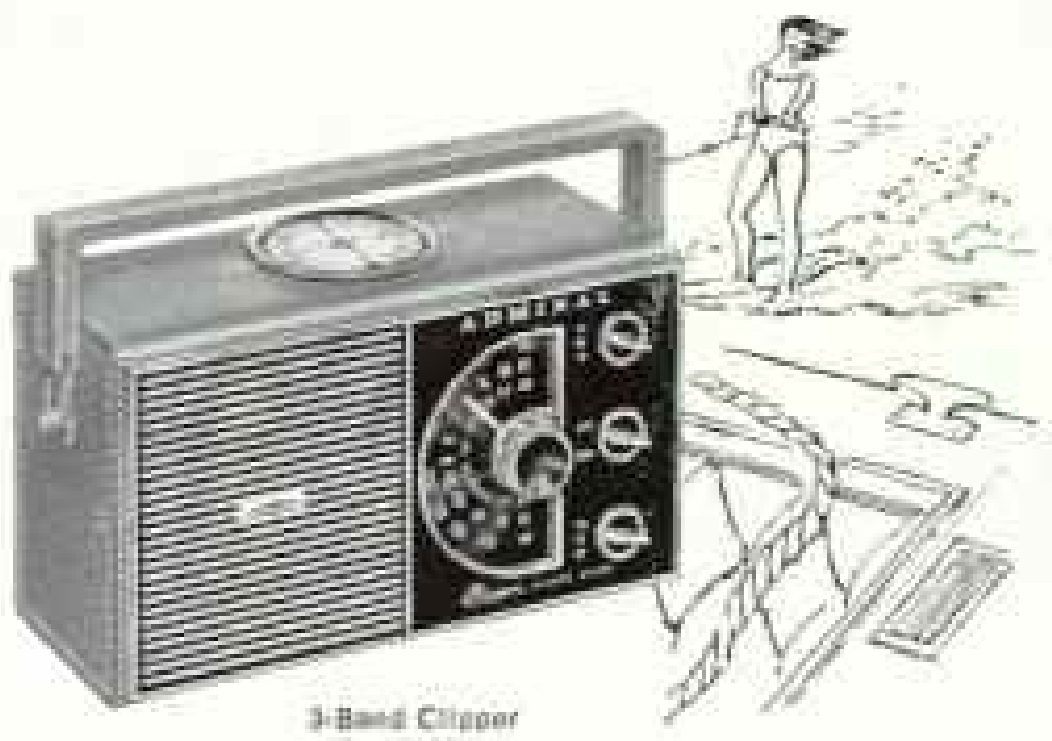

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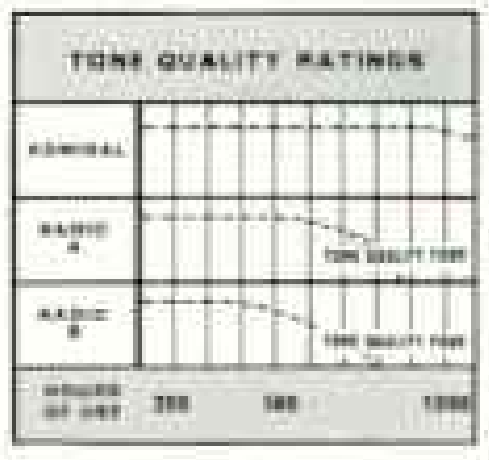

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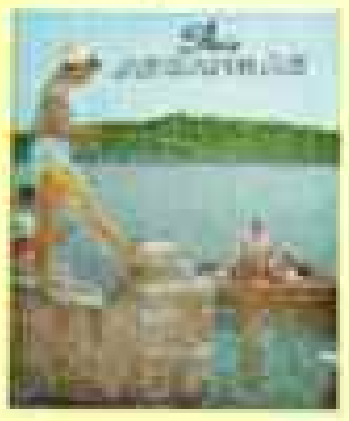

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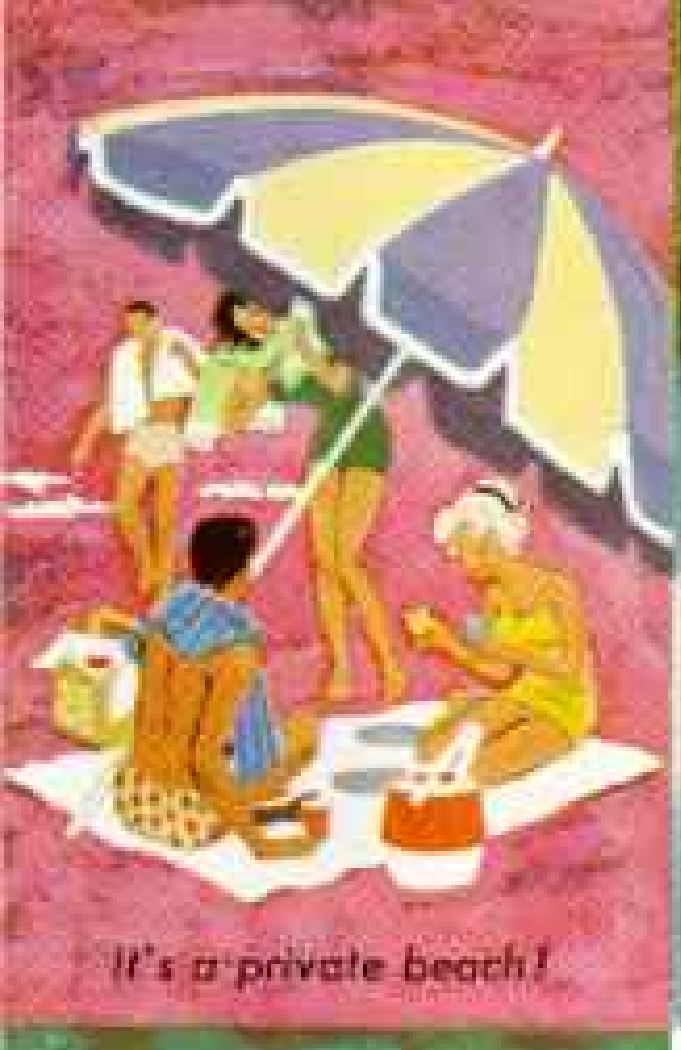

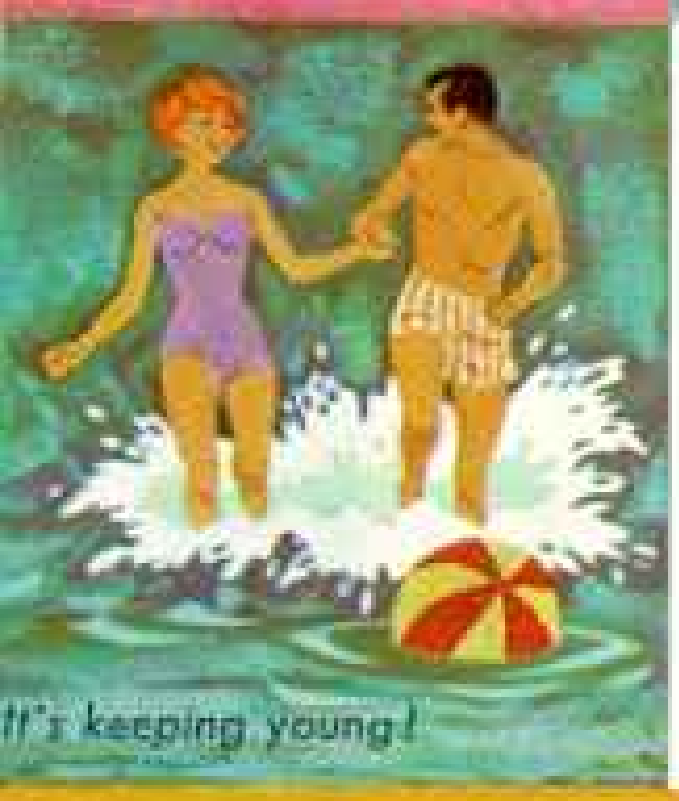

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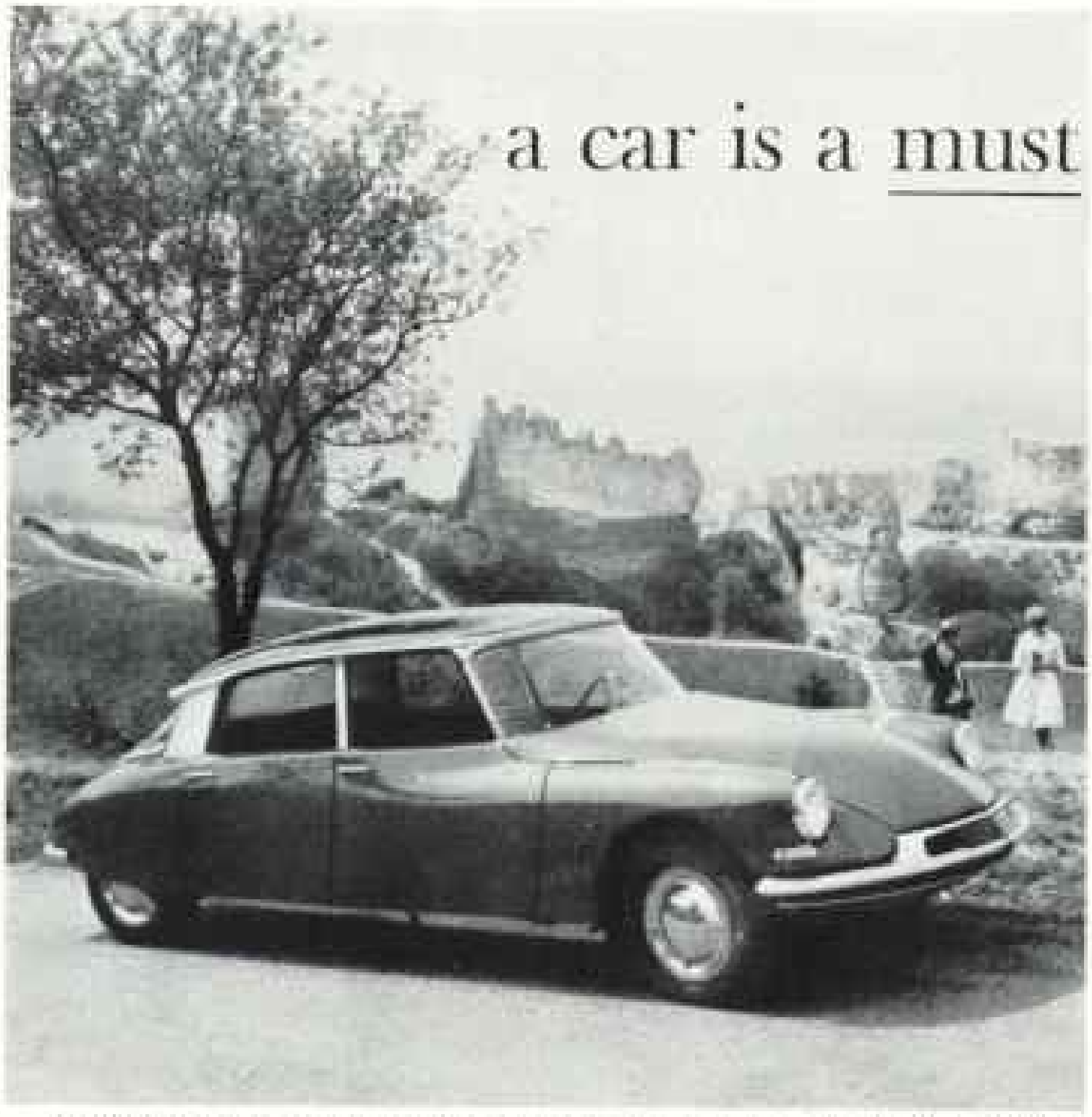

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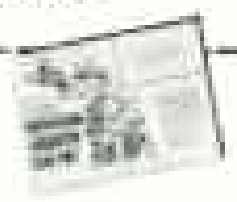

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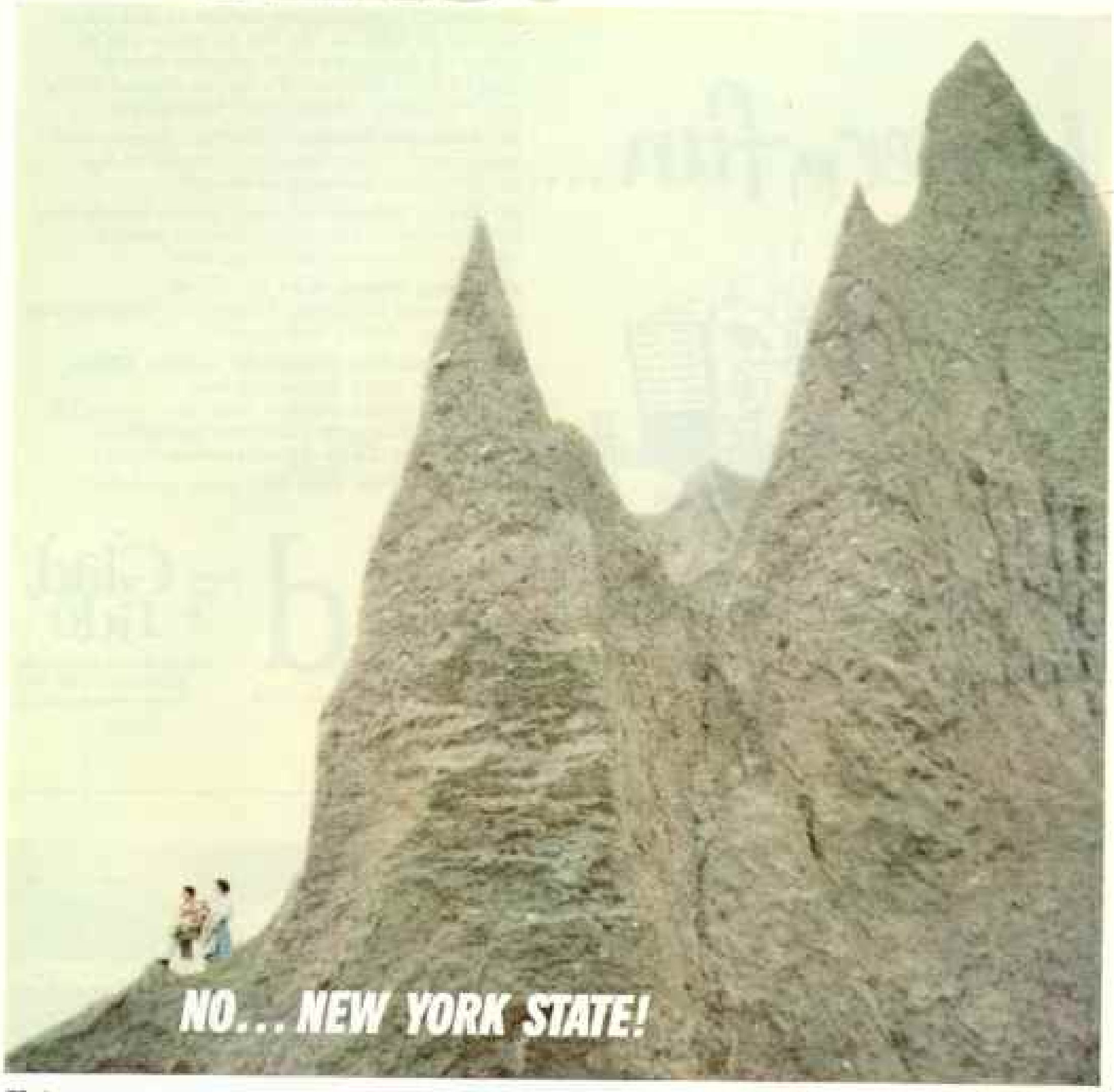

Unless you're planning to look for the lost cities of the ancient Incas this summer, you're unlikely to find a fantastic skyline like this one. Unless, that is, you vacation in New York State. Fashioned by nature in one of her most imaginative moods, these peaks are called the Chimney Bluffs... towering high above the shore of Lake Ontario, 40 miles northeast of Rochester. Wherever you travel in New York State, you'll find places that will live long in your memory: the Finger Lakes (all six of them), the Thousand Islands (all 1,800 of them), the shadowy grottos of Watkins Glen, the winding depths of Genesee Gorge, the Old Dutch atmosphere that haunts the Hudson Valley. And those two world-famous attractions at opposite ends of the State—Niagara Falls and New York City. The roads are among the finest in the country . . . and the motels, hotels, lodges and inns are pleasant, plentiful and reasonably priced. **YOU'LL FIND A WORLD OF FUN IN NEW YORK STATE THIS SUMMER.**

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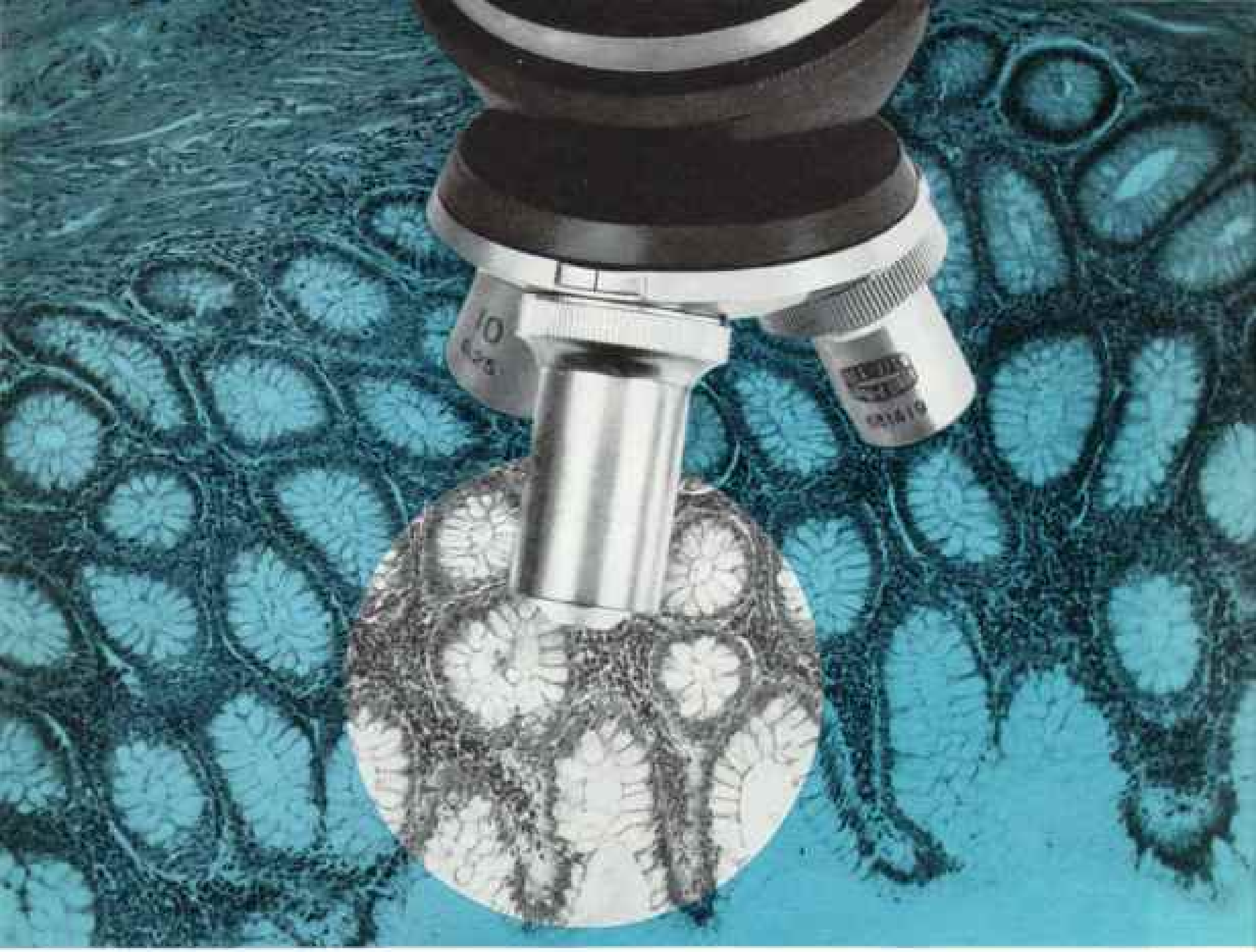

Probing the Secrets of Cells . . . to advance the fight on CANCER

Discoveries in cytology—the science of cells—have revealed some of the innermost secrets of cells. When scientists finally learn why healthy cells become malignant and how to halt their disorderly growth, they will have the key to cancer.

Already, the study of cells has given us new weapons against some forms of cancer. In fact, one of the most important advances in recent years is the discovery that one of the leading types of cancer in women can be diagnosed in its very earliest stages.

This is done by the simple and painless removal of cells for study under the microscope. If cells which may become cancer are present, the test can spot them as much as five to ten years before they become dangerous—or long before they begin their destructive invasion of normal body tissues.

Thanks to this test—known as "the Pap smear" or the Papanicolaou test—the type of cancer that it reveals is about 100 percent curable if detected early enough. Every woman past 25 should have this test every year as a part of her regular physical examination. Most physicians can now make the test.

Though the outlook for the control of some types of cancer is steadily improving, you are still the first line of defense against this disease. What should you know about cancer? What are its seven danger signals? What are the chances of cure or control when cancer is diagnosed early and treated promptly and properly?

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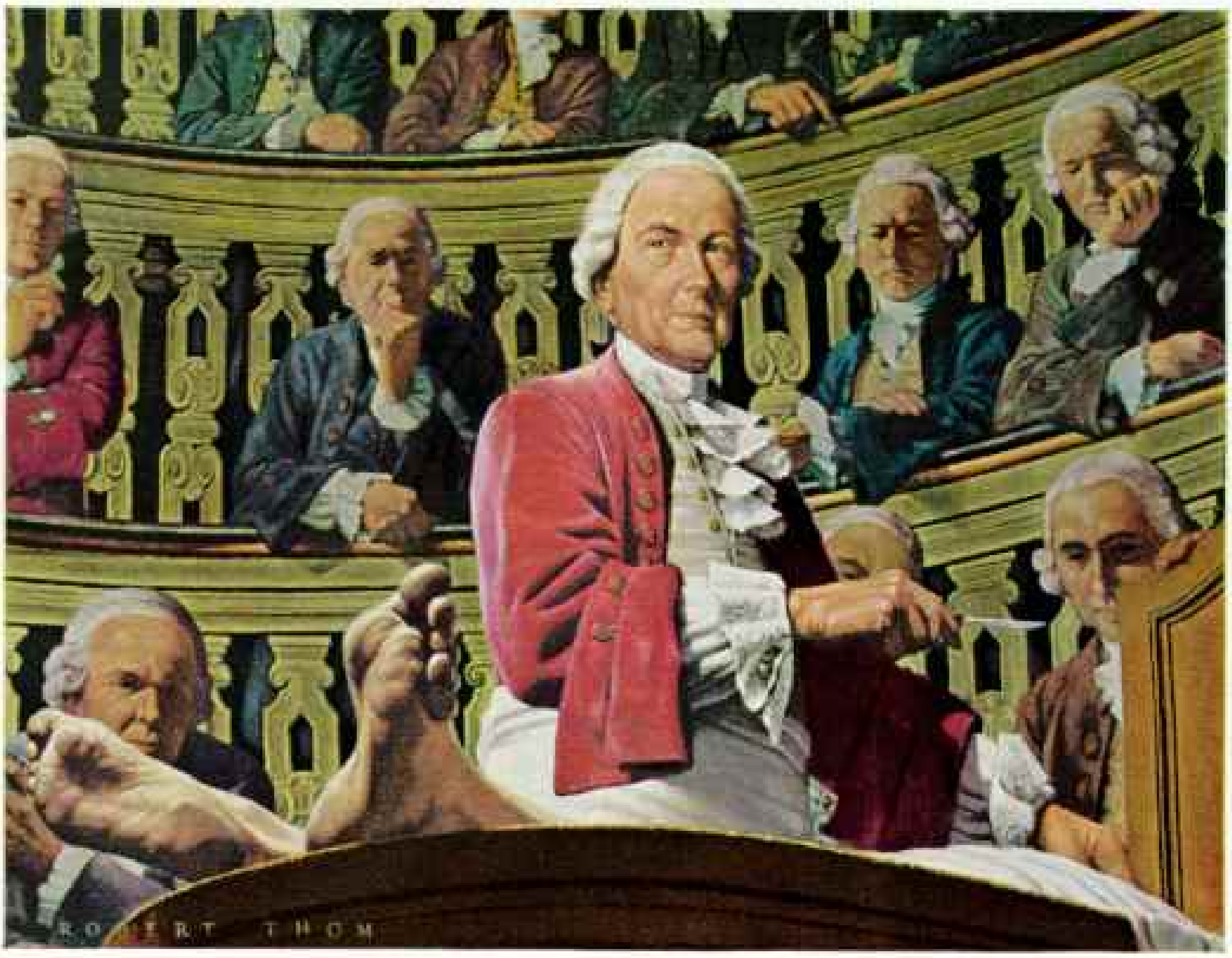

MORGAGNI and Pathologic Anatomy—one of a series of original oil paintings commissioned by Parke-Davis.

Great Moments in Medicine

For centuries medical practitioners attributed illness to such vague causes as disturbance of "the humours" or "upset of atoms." During the eighteenth century, a professor of Anatomy in Padua, Giovanni Battista Morgagni, was largely responsible for universal acceptance of the idea that diseases originate in localized areas of the body. In 1761, he published a book entitled "On the Seats and Causes of Disease," based on almost 50 years of teaching, dissection, and painstaking observation. This detailed work gave impetus to the never-ending quest for knowledge that shaped the pattern of modern medical research.

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THE NATIONAL GEOGRAPHIC MAGAZINE

VOL. 119, NO. 4 APRIL, 1961

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THE CIVIL WAR

By ULYSSES S. GRANT 3rd, Major General, U. S. A. (Ret.)
Chairman, National Civil War Centennial Commission

ONE SPRING NIGHT a century ago, a rowboat splashed toward a fortified island in Charleston Harbor, South Carolina. Three men stepped ashore. The flaring torches on the wharf illumined their gray uniforms and caught the silvery glint of the swords swinging at their sides.

The men talked with Maj. Robert Anderson, commander of the fort. After three tense hours, one of them drew himself to attention and handed Major Anderson a slip of paper that read, in the formal manner of the day:

"Sir . . . we have the honor to notify you that [General Beauregard] will open the fire of his batteries on Fort Sumter in one hour from this time."

Then they climbed back into their boat and rowed away into the darkness.

The time was 3:30 a.m. Major Anderson had just refused for the last time to surrender Fort Sumter to the Confederate forces that surrounded him. Undermanned, lacking supplies, he had an hour to prepare for battle —one hour to prepare for a clash that had been long, bitter years in the making. The issues of slavery and secession had corroded the framework of the Union, and now only the hot crucible of war could mend it.

RIDGE+POWR (ABOVE) BY BATES LITTLEHALES. HIS EXPEDITION BY THOMAS J. ABERCROMBIE, NATIONAL GEOGRAPHIC STAFF. (C) N.G.S.

Opening Shot of the Civil War Bursts Above Fort Sumter

After South Carolina seceded in December, 1860, Federal troops withdrew from indefensible Fort Moultrie and occupied Fort Sumter.

This National Park Service diorama at Fort Sumter National Monument re-creates the start of hostilities. At 4:30 a.m. April 12, 1861, a 10-inch mortar, fired by Confederates at Fort Johnson, started a 34-hour bombardment. Sumter was evacuated April 14; next day Lincoln called for 75,000 volunteers.

Flares stab the sky as Fort Sumter relives the cannonade. Photographer Abercrombie set up his camera on James Island near the spot where the first shot was fired.

Major Anderson and the garrison of some 120 men took their stations on the ramparts of Fort Sumter. Promptly on schedule, a muzzle flashed on the shore, and the first shell arched through the starry sky. It was April 12, 1861; the Civil War had begun.

Hardly had the echoes of the Fort Sumter bombardment died away before both sides mustered their forces. Both the Union and the Confederacy expected an early victory. Jefferson Davis had already, on March 6, 1861, called for 100,000 volunteers to serve one year; President Abraham Lincoln's first appeal, on April 15, for 75,000 militiamen provided for only three months' service.

Yank and Rebel Go Blithely to War

For almost 50 years no major conflict had clouded the American horizon—the Mexican War had been a remote, quickly won engagement—and at first the Civil War seemed a gay and chivalrous adventure. North and South, the young men stormed the recruiting centers. Off on this bright new lark, they followed fife and drum down the springtime streets. Girls, lining the sidewalks like crinolined flowers, waved handkerchiefs and cheered.

The 7th New York reported for action in trim, tailor-made uniforms—and, thoughtfully, they brought their own chefs. Louisiana bolstered the Confederacy with a regiment of Zouaves, clad in baggy pants and fezzes. Pennsylvania provided the Union with a cavalry unit armed with lances.

Fine and brave in their new uniforms, the opposing forces first clashed head on along a creek called Bull Run, which winds through the rolling green hills of northern Virginia. Both armies used clumsy tactics, and the resulting blunders shocked the country.

But maturity comes fast in war. The four sad and terrible years that followed not only faded the gay uniforms but bred a vicious skill. At Gettysburg, withering Union fire cut down 708 men of the 800-strong 26th North Carolina Regiment; during the same battle Confederate guns inflicted a grisly 82 percent casualty rate on the 1st Minnesota.

Before the surrender at Appomattox Court House spelled an end to the Civil War, more than half a million men—North and South—had left their lives on that last barricade where springtimes cease and no girls wave.

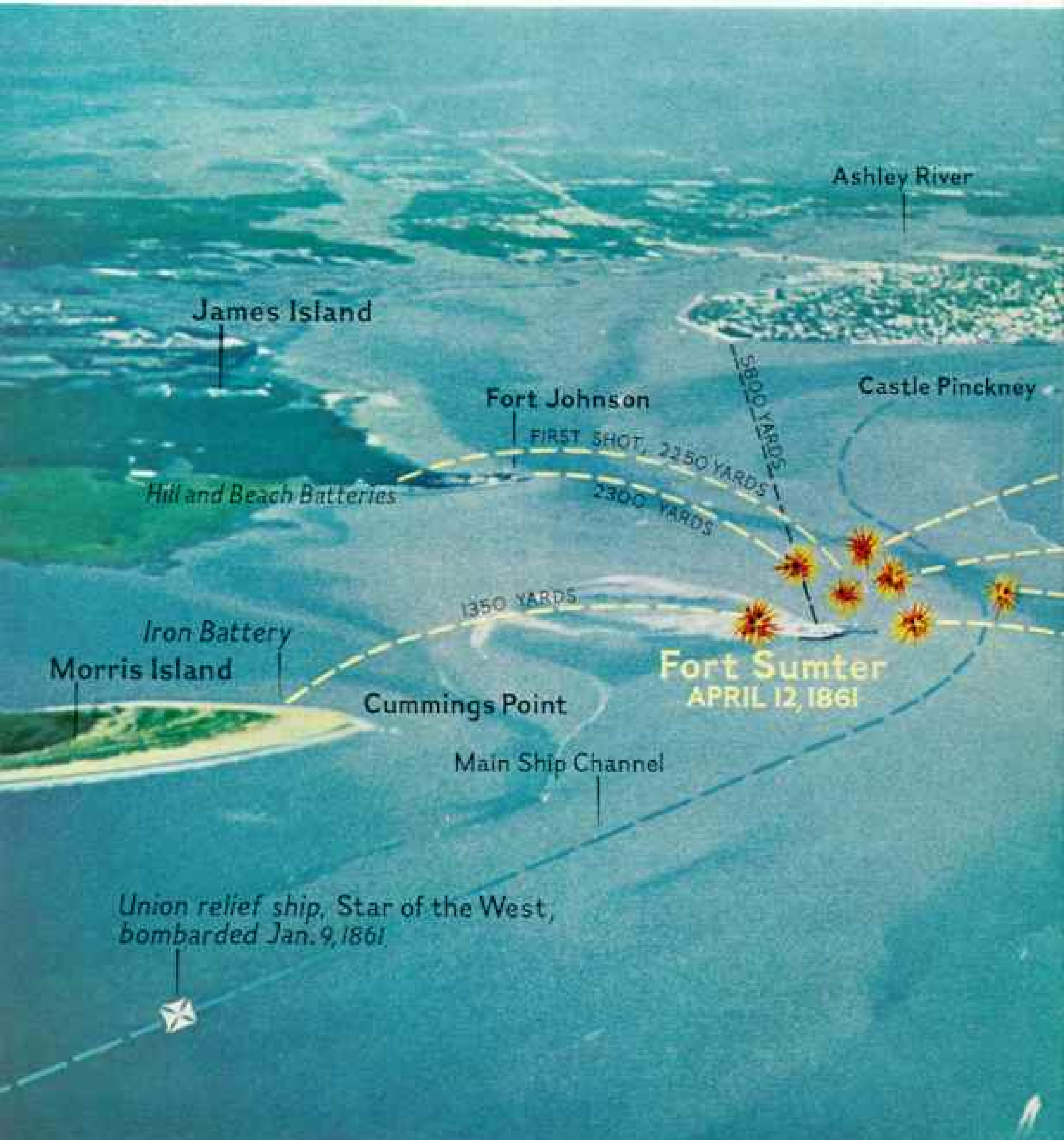
Sir Winston Churchill has termed this fratricidal war that rent our Nation 100 years ago "the noblest and least avoidable of all the great mass-conflicts of which till then there was record." And the English military

historian Gen. J. F. C. Fuller has described it as "one of the most extraordinary of wars ever fought—an epoch-making war in military and civil history."

Indeed the United States Civil War stands as a crossroads between the limited wars of yesterday and the total wars of today. It was the last war in which generals frequently faced and met death while personally leading their troops; it was the first war in modern times to engage entire populations rather than just professional armies.

For all Americans its story must be dear, because it was essentially our war, with Americans fighting heroically on both sides. Its battlefields are here where we can easily visit them and study them, and millions of us had ancestors on one side or the other—or both. Because the men in each contending army believed they were fighting for a cause worthy of "the last full measure of devotion," they bravely sustained proportional battle losses unheard of since Leonidas and his 300 Spartans died at Thermopylae.

Fort Sumter, built on a shoal, guards the mouth of Charleston Harbor. Aerial view



Unschooled in war, these same American troops forever altered the science of military strategy. Since no immutable doctrine from previous conflicts had been impressed upon either army, each was free to use the resourcefulness inherent in the American character. The respective armies solved in their own way the problems they encountered; their innovations transformed the art of war.

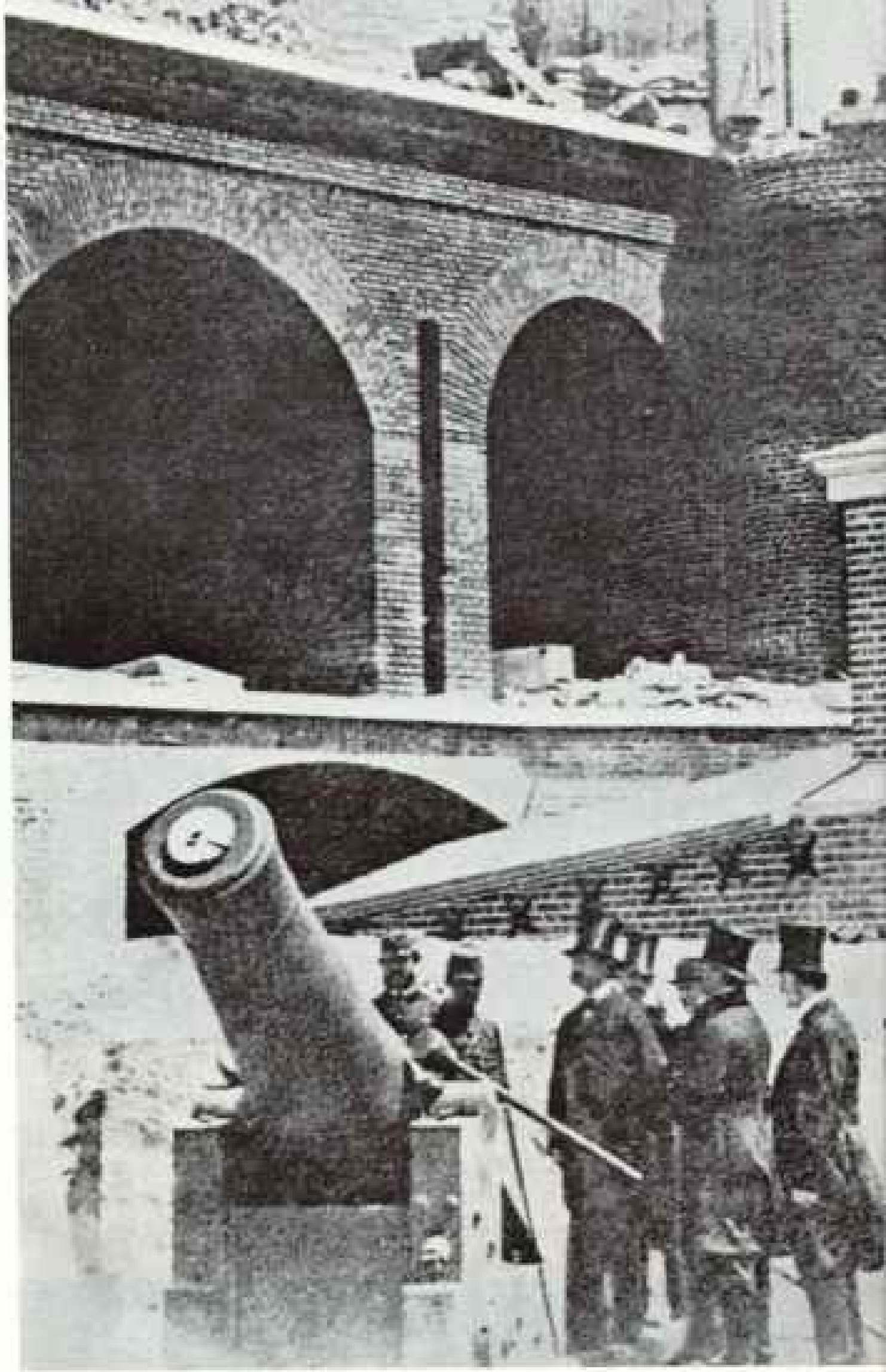
Rifled cannon and breech-loading repeating rifles forced the development of new tactics; the telegraph enabled commanders, for the first time in history, to exercise simultaneous control over widely separated armies; railroads and river steamers provided new mobility for troops, permitting the rapid transfer of large units from one theater of operations to another.

Submarine mines (electrically fired) and booby traps were widely used in the Civil War, as were wire entanglements and pontoon trains for quick bridging of rivers.

When the ironclads U. S. S. *Monitor* and C. S. S. *Virginia*—actually the rebuilt Federal

identifies the Confederate batteries that bombarded the Union bastion a century ago

KODACHROME BY RALPH GRAY, NATIONAL GEOGRAPHIC STAFF © N.G.S.



NATIONAL ARCHIVES, BROWN COLLECTION

Masonry gun rooms along Fort Sumter's east face (opposite) mounted cannon that dueled with distant Sullivans Island. Guided by a National Park Service historian, sightseers examine a 10-inch columbiad, part of Sumter's original armament. Confederates modernized the gun and used it to defend Charleston.

Fort Sumter entered the war with two tiers of casemates. The second tier still stood when the top-hatted South Carolinians at right toured the stronghold and inspected a captured columbiad three days after the evacuation. From 1863 on, Union ships and siege guns pounded the fort's walls to rubble.

frigate *Merrimack*—locked in battle at Hampton Roads on March 9, 1862, they revolutionized naval warfare. Before the sun went down on that historic day, every wooden man-of-war in every navy of the world had suddenly become obsolete.

International law also felt the impact of the Civil War. The publication of General Orders, No. 100, on April 24, 1863, stands as the first codification of the laws and usages of civilized warfare regarding treatment of prisoners as well as the population of occupied territory. Francis Lieber, a professor of international law at Columbia College, New York, had drawn up the code at the direction of Gen. Henry W. Halleck. The Prussian Government soon adopted General Orders, No. 100, for the guidance of its armies in the Franco-Prussian War. Later, the code served as the basis for The Hague Conventions in 1899 and in 1907.

As a Nation, we should never forget that the Civil War was a great human drama. Although the contestants are generally referred to as "the North" and "the South," it is a mistake to believe that the population of either geographical region shared a complete unanimity of opinion.

Many in the North sympathized openly with the South and vociferously denounced the war as it dragged on. On the other hand, many Southerners opposed secession. Most, however, served their States when it became evident that Federal troops would be used to force them back into the Union.

This lack of unity on either side sometimes resulted in agonizing personal decisions. Capt. John C. Pemberton headed south from Pennsylvania to serve as a lieutenant general in the Confederate Army; Col. Samuel Cooper of New Jersey became the Confederate Adjutant General. At the same time, George H. Thomas of Virginia elected to follow the old flag and became a Union major general; David G. Farragut of Tennessee, as an admiral in the Union Navy, crippled the Confederacy's Gulf of Mexico ports.

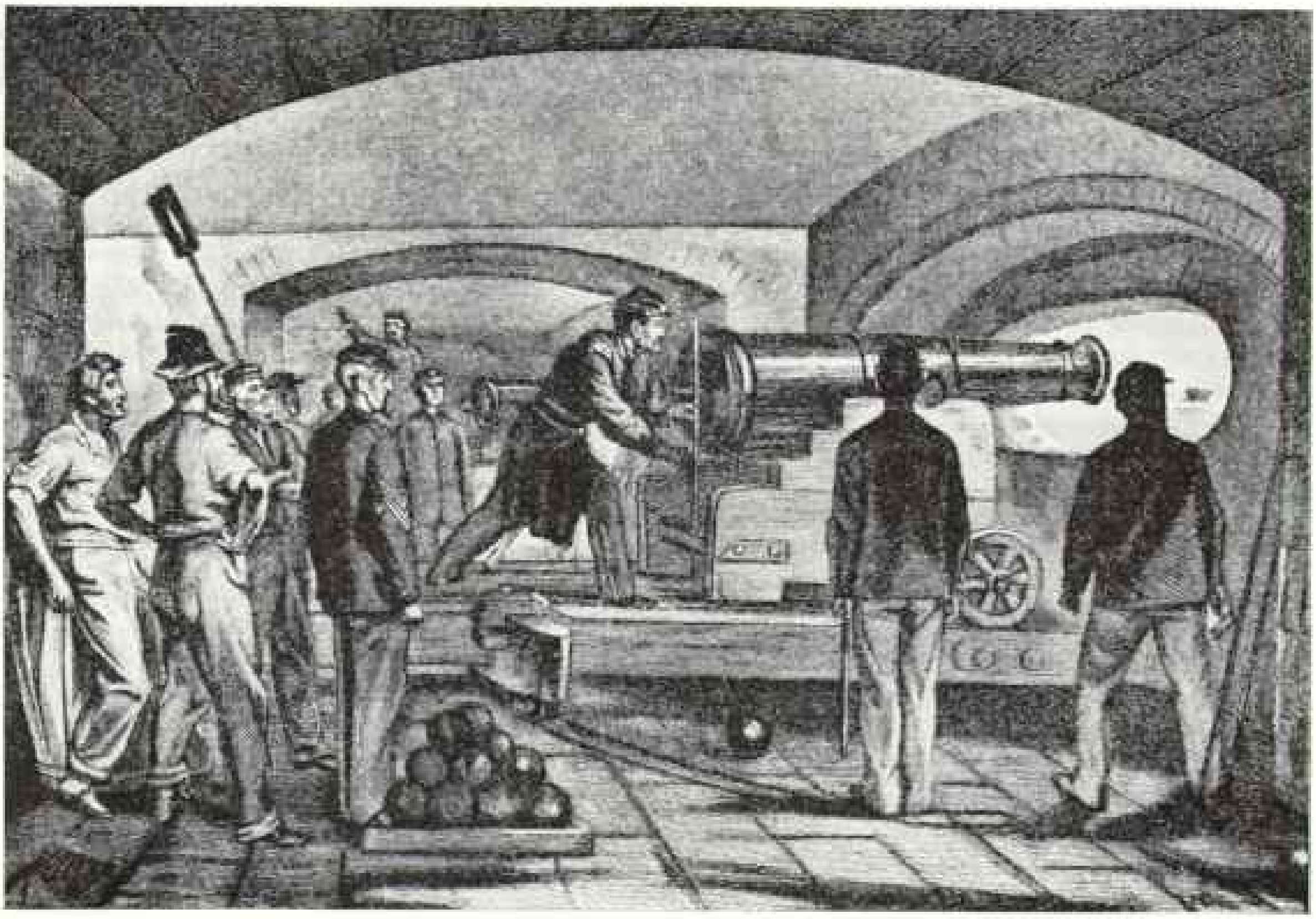
Two Brothers Become Opposing Generals

The division of families stands out as one of the stark tragedies of the war. For example, one son of Senator John J. Crittenden of Kentucky served as a general in the Confederate forces while the other became a general in the Union Army.

Cruelty is the handmaid of war, and outrages mar the records of both Northern and Southern soldiers, but the Civil War was also

AN EXTRACTURE BY NATIONAL GEOGRAPHIC PHOTOGRAPHER VOLKMAR WENTZEL © N.G.S.

Cannon and casemate (above) conjure up memories of the men who grimly defended Fort Sumter. From such a gun room, Capt. Abner Doubleday (below) aimed the first Union gun to reply to the Confederate barrage of April 12. Solid shot from his 32-pounder bounced harmlessly off the ironclad battery at Cummings Point. The engraving was made in 1872 by an artist who consulted Doubleday, then a colonel.



replete with instances of mutual consideration, knightly courtesy, and nobility. At Fredericksburg, Confederate Sgt. Richard Kirkland heard wounded Union soldiers calling for water. He vaulted across a stone wall with as many canteens as he could gather and relieved their suffering at the risk of his own life.

In an unpublished manuscript a Union soldier describes the surrender of Vicksburg. He tells how the men of the two armies fraternized immediately after the surrender, and adds, "But along with that there was a preliminary arranged which proved satisfactory to all parties, and that was that the poor starved fellows should receive all the hard bread and bacon and coffee our boys could furnish them." This they evidently provided from their own depleted haversacks.

Mercy Lightens Dark Years

At Kenesaw Mountain in Georgia on June 27, 1864, underbrush sheltering Union wounded broke into flame. Confederate Col. W. H. Martin saw the threat to his wounded enemies, jumped on the parapet waving his white handkerchief, and shouted to the Federal troops: "We won't fire a gun until you get them away."

After the surrender of Fort Donelson, Tennessee, when Confederate Gen. Simon Bolivar Buckner was informed that boats stood ready to transport his captured brigade north, he invited my grandfather, Gen. Ulysses S. Grant, to see them off. Buckner's troops had fought well, and he was proud of them even in defeat.

When Grant reached the boats, the prisoners crowded around their captor with respectful curiosity. General Buckner addressed them, pointing out that General Grant had behaved with kindness and magnanimity. He bade his men remember this, and then added that, should the fortunes of war shift, they should accord to Grant or any of his soldiers the same treatment they were now receiving.

Many instances of General Grant's consideration for the people in territory occupied by his troops have been brought to my attention—sometimes by descendants of those he benefited. His General Orders, No. 50, of August 1, 1863, issued in Mississippi, is an example of his desire to mitigate the horrors of war: "Within the County of Warren, laid waste by the long presence of contending armies," he appointed two commissaries to "issue articles of prime necessity to all destitute families calling for them. . . ."

Sternly he added: "Conduct disgraceful to the American name has been frequently reported to the Major General Commanding. . . . Summary punishment will be inflicted upon all officers and soldiers apprehended in acts of violence or lawlessness."

Col. Charles Marshall, who accompanied Gen. Robert E. Lee at his surrender, publicly

NATIONAL ARCHIVES

Stars and Bars of the Confederacy wave above the captured fortress on April 14, 1861, the day the fort changed hands. Southern shelling caused no deaths but started fires that gutted the barracks at left. Confederate troops manned Sumter until 1865, when the approach of a Union army forced its evacuation. It remained a military post until 1948.

praised General Grant for the terms granted at Appomattox. Lt. John S. Wise, C. S. A., remarked of his comrades in a subsequent speech: "How could they have lived and died so gloriously unless under the deep conviction that they were right? Grant appreciated this as few others did, and testified to it in every manly way. It is that which makes every true Confederate soldier venerate Grant's memory and hold his fame next to that of his own Commander. . . . Almost before they had completed their surrender to him, he seemed more anxious to feed his prisoners from the rations of his own men than he was to secure his captives."

Yet a deep gulf divided civilian and military views of the surrender terms. Nicolay and Hay, in their great biography of President Lincoln, wrote of Grant: "He ended with a phrase which he had evidently not thought of, and for which he had no authority, which practically pardoned and amnestied every man in Lee's army—a thing he had refused to consider the day before, and which had been expressly forbidden him in President Lincoln's order of the 3d of March."

That forbidden phrase provided that "each officer and man will be allowed to return to their homes, not to be disturbed by United States authority so long as they observe their paroles and the laws in force where they may reside."

Some years later that same generous clause enabled General Grant to prevent indictment by the civil courts of General Lee and other military leaders of the defeated South.

It is, therefore, no exaggeration to acclaim the Civil War as the last gentlemen's war.

The Civil War Centennial Commission does not look upon the war's hundredth anniversary as an occasion for celebration, reviving here the exultation of victory and there the sadness of defeat; rather, this anniversary must give us a new understanding of the way in which Americans built from suffering and sacrifice an enduring Nation.

Our forefathers fought to the limit of endurance for four years; when the echo of the

KODACHROME (ABOVE) AND NO EXTACHROME BY NATIONAL GEOGRAPHIC PHOTOGRAPHER THOMAS NEBBIA © N.G.S.

"Load . . . prime . . . fire!" A century-old cannon bucks and roars; smoke billows from its muzzle. Tense artillerymen enact a battle scene of 1861-65. Representing the Washington Blue Rifles, they take part in a North-South Skirmish at Fort Lee, near Petersburg, Virginia, in 1960.

Civil War buffs in Union blue surround a campfire at Fort Lee; the scene suggests the night before a battle. Turning back the clock, North-South Skirmishers wear authentic uniforms and carry antique muzzle-loaders. But they blaze away at targets, not at one another.

last shot died away, they saw in the unity of their land something that overshadowed the bitterness of the struggle. Since then, the sons and grandsons of Federals and Confederates alike have fought shoulder to shoulder in four foreign wars.

In their great internal conflict, Americans have given the world an example not only of how to fight a war, but of how to end a war. History offers few lessons more inspiring.

So the centennial must be a new study of American patriotism — a study which should give us a deeper appreciation of the bravery, sacrifice, and idealism in the American character. The study must be based on a broad

Cannon on Lookout Mountain sights across the Tennessee River on Chattanooga. The 12-pounder Napoleon is the same model as the Union fieldpiece on page 457, photographed at Chickamauga, Georgia.

Defeated at Chickamauga, Federal forces retreated to Chattanooga. There they faced starvation from a Confederate siege. Ulysses S. Grant reopened a supply line and mustered reinforcements. His troops heroically routed the enemy at near-by Missionary Ridge in November, 1863. The victory opened the way to Atlanta for Gen. William Tecumseh Sherman; from Atlanta he began his March to the Sea.

Modern Chattanooga, a city of 130,000, sprawls within the serpentine loops of the Tennessee. Cheap hydroelectric power from Tennessee Valley Authority dams helps to make it a manufacturing center. Cable cars climb 1,400 feet from city streets to the top of Lookout Mountain.

Puffing his inevitable cigar, General Grant visits Lookout Mountain, where Union troops won the "battle above the clouds."

knowledge of the underlying facts. From the ingenuity with which an unprepared people met the challenge of the first modern war, we can learn much.

It goes without saying that, where fables and legends have obscured real facts, the truth must be made clear. We are not preparing to commemorate a romantic myth; we are preparing for a searching look at a chapter of our own history, a chapter that recounts our greatest national tragedy. But from this tragedy has emerged a more firmly united country—a country that has become the leader of the Free World.

By producing an extraordinarily informative map showing the sites of all the principal events of the Civil War, together with a comprehensive series of articles to appear in the next four years, the National Geographic Society is making a notable contribution to the Civil War Centennial.

In the map notes and in the articles, readers will discover persons and events barely alluded to in general histories of the Civil War. They will learn that this war was not a game of military chess played with human pawns, but an experience that evoked the bravest and the finest in the American character.

From this added knowledge, from the entire centennial observance, we should and will gain enhanced pride in being Americans.

ENTACHROME BY NATIONAL GEOGRAPHIC PHOTOGRAPHER THOMAS NEBBIA © N.G.S.

NATIONAL ARCHIVES, BRADY COLLECTION

Battlefields Map Traces a Nation's Conflict

ARMIES MARCH to the drumbeat of the past across your Society's newest map, **Battlefields of the Civil War.** Atlas Plate 14, distributed with this issue to 2,700,000 member-families, presents a fascinating blend of cartography and historical research.

Official records and eyewitness reports contributed to this remarkable eight-color map. It provides an invaluable supplement to NATIONAL GEOGRAPHIC features marking the Civil War Centennial.*

Based upon the original map used by Gen. Ulysses S. Grant to plot his 1864 campaigns, the double Atlas Plate portrays the vast arena of the epic struggle that beset the Nation from 1861 to 1865. Hundreds of notes illuminate the sites that shaped history. Those printed in blue describe events prior to April 1, 1863, the war's approximate mid-point. Those in red relate subsequent developments. Railways are shown in green and roads in orange, as they existed in the 1860's. Place names are spelled as they were at that time.

Rarely in warfare have the naked facts of geography played so decisive a role. Shortly after war erupted in Charleston Harbor in 1861, the commanding general of the Union Army, Winfield Scott, proposed a way of exploiting the geographic vulnerability of the South. His pattern for victory became known as the "Anaconda Plan."

Scott reasoned that, with a naval blockade sealing off the Southern coastline, an advance down the Mississippi Valley would sever the Confederacy from its western States and squeeze the southeast in a python-like grip. Union armies driving from the Mississippi could then reduce either sector while the other remained isolated.

Anaconda Strategy In Action

Although never formally adopted, Scott's strategy was borne out by the four bitter years of victories and defeats, setbacks and advances that followed. In the map inset at lower right, blue lines depict major Union offensives; red lines indicate Confederate attacks. Dashed lines show the great cavalry raids of both sides.

One such dashed red line, snaking out of Kentucky, traces Gen. John Hunt Morgan's spectacular 1,000-mile raid into the heart of

the Union. Morgan and his troopers met final defeat at Salineville, Ohio, in the Confederates' northernmost thrust.

Copious notes along the coastline of the large map tell of the vital contribution of naval blockade to ultimate Union victory. They recount the exploits of Adm. David G. Farragut, scourge of the Confederacy's Gulf Coast, who captured New Orleans and Baton Rouge in 1862 and crowned his dazzling career by closing Mobile Bay in 1864. During this battle, Farragut voiced the immortal order: "Damn the torpedoes!... full speed!"

This is really a dozen maps in one. The reverse side supplements the main map by spotlighting critical theaters of action. "War in the Southwest," at upper left, traces the 1861 campaign of Col. John R. Baylor's Texans, who threatened to win all New Mexico Territory—including present-day Arizona and the southern tip of Nevada—for the Confederacy. It shows the last land battle of the war at Palmito Ranch, Texas, on May 13, 1865—a month after Appomattox.

"Vicksburg Campaign," "Memphis to Huntsville," and "Nashville to Atlanta" cover actions that historians have lumped together under the title of "The War in the West." A large-scale inset portrays the "Battles for Atlanta."

Within the four-State area shown as the "Cockpit of the Civil War," the rival capitals of Washington and Richmond faced each other across a bare hundred miles of viciously contested ground. Here Gen. Robert E. Lee led his legendary Army of Northern Virginia in a series of slashing campaigns that still stand as tactical classics.

"Of all the daring gamblers who ever wore an American military uniform, Lee unquestionably was the coolest," wrote historian Bruce Catton. Lee's memorable battles, from the defense of Richmond to the high-water mark of the Confederacy at Gettysburg, spring to life in the map notes. Stonewall Jackson in battered forage cap canters up the Shenandoah Valley, and Jeb Stuart flashes in and out of Union lines, even filching Gen. John Pope's coat at Catlett's Station.

This "Cockpit" map also follows Grant as he bottles up Confederate armies at Petersburg and Richmond, and traces Lee's last agonizing retreat across Virginia to Appomattox Court House on Palm Sunday, 1865. There, on a soft April day, Generals Grant and Lee signed the documents that ended four years of bloodshed and restored the Union.

*Members may obtain wall-sized copies (42 by 32½ inches) of the new map, **Battlefields of the Civil War**, by writing to the National Geographic Society, Dept. 65, Washington 6, D. C. Printed on both sides, the map is priced at $3.00 on paper (folded); $2.00 on fabric (sent rolled); postpaid to all countries.

Historic sketchbook holds maps drawn by Jedediah Hotchkiss, a Confederate topographer. Underlying map shows the position of Maj. Gen. George B. McClellan's Union army at Harrison's Landing, Virginia, on July 7, 1862. National Geographic cartographers used such century-old wartime drawings in plotting **Battlefields of the Civil War,** a supplement to this issue.

US EXTACHROME BY NATIONAL GEOGRAPHIC PHOTOGRAPHER VOLKMAR WENTZEL © N.G.S.

Gen. Ulysses S. Grant 3rd inspects National Geographic drawings prepared from the map on which his grandfather planned operations. Now retired, Major General Grant heads the Civil War Centennial Commission. He attended West Point with Douglas MacArthur and holds the Legion of Merit and decorations from six foreign countries. As an Army engineer, he supervised construction of Arlington Memorial Bridge at Washington, D. C. The bridge, symbolizing the unity of North and South, spans the Potomac River between the Lincoln Memorial and the Custis-Lee Mansion.

WITNESS TO A WAR

Century-old woodcuts and words preserve a British correspondent's experiences in the U. S. Civil War

By ROBERT T. COCHRAN, JR.
National Geographic Staff

"IT IS A MIGHTY UPRISING of a united people determined to protect their flag to the last," English war correspondent Frank Vizetelly wrote to the *Illustrated London News* from New York in May, 1861. Fresh off the Liverpool packet, the artist-writer was hurrying south from Boston to join the Federal Army and cover the American Civil War.

He was writing about the Union side that day, but later he would say much the same about the Confederacy. For Vizetelly reported the war from both sides, almost from its beginning to its bitter end, with vivid sketches and dispatches. He was under fire innumerable times as he ranged through the battlefields and cities of a Nation at war with itself.

A typical Vizetelly drawing (**left**) showed the bloody, no-quarter assault by Federal troops on Battery Wagner, a Confederate fort near Charleston, South Carolina, in 1863. Men fought with bayonets, rifle butts, even hand to hand after a landing from the sea.

The enterprising *News*, the world's first and oldest illustrated magazine, peppered dispatches from around the globe with on-the-spot drawings to show its readers history as it unfolded. Cast in the classic mold of war correspondent, Vizetelly had roamed France, Italy, and Sicily before coming to America.

Throughout his career he was irrepressible, a sprawling, gregarious *bon vivant*. He excelled at his exciting trade because he threw himself without reserve into the stories he covered. Like Virgil, he could have said: "These . . . things I saw, and a great part of them I was."

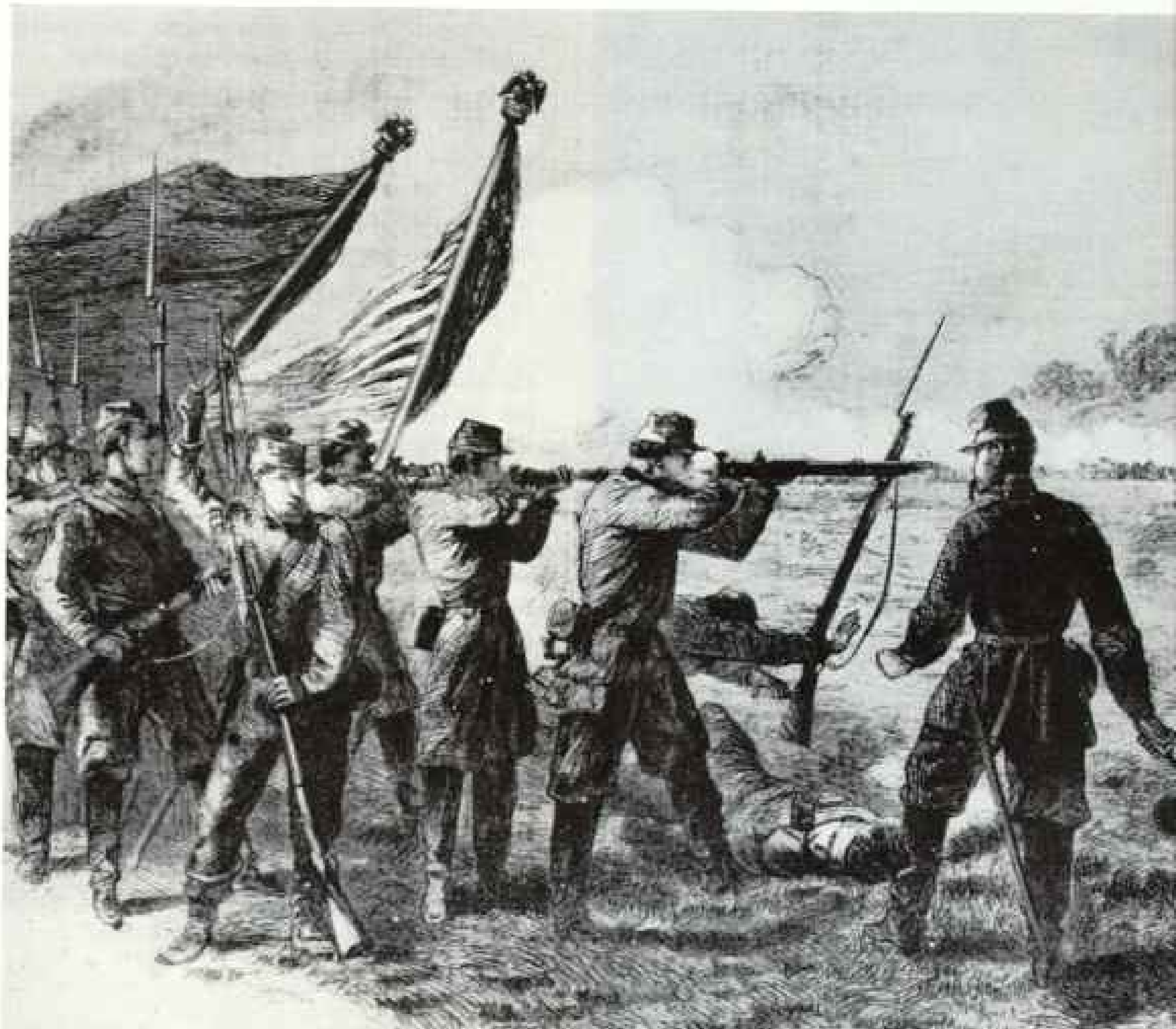
ALL WOOD ENGRAVINGS FROM THE ILLUSTRATED LONDON NEWS, COURTESY LIBRARY OF CONGRESS

PHOTOGRAPH FROM BRADY-HANDY COLLECTION, LIBRARY OF CONGRESS

Fiasco at Bull Run sends Federals in full retreat

THE CIVIL WAR boiled into a maelstrom of confusion and panic near Manassas, Virginia, in the first Battle of Bull Run, July 21, 1861, and Vizetelly (**left,** in a Mathew Brady photograph) plunged into the thick of the fighting. Each side flung hastily mobilized, untrained troops into ragged combat as Federal Gen. Irvin McDowell launched a bold thrust at Richmond (see Atlas Map supplement with this issue).

Confederate lines held, the Federals broke, and by late afternoon, panic spread. "Retreat is a weak term to use when speaking of this disgraceful rout," Vizetelly wrote. "Those who had been fortunate enough to get places in the baggage-wagons thrust back others with their bayonets and musket-stocks.



Wounded men were crushed under the wheels of the heavy, lumbering chariots that dashed down the road at full speed" (**above**).

The war might have been decided that hot Sunday. But the panic taught President Lincoln and his generals a hard lesson: This war was no lark, the Confederacy no push-over. To win, the Union had to hammer together armies from its mobs of volunteers. As it turned out, the task took four years.

TROUBLE WAS, not many of the raw recruits at Bull Run knew much about fighting. Vizetelly watched the 71st New York and an Alabama regiment earlier in the day "blaze away . . . at three hundred yards until both were badly cut up" (**left**), but as one who had seen Europe's professionals fight, he knew long-distance sparring did not take ground and whip the enemy. Troops who grappled won.

"I think that if the bayonet had been used more freely the matter would have been sooner decided, and with less loss of life," he said. At day's end, disorganized Confederates watched unhappily while panicked Federals, plums ripe for the plucking with a slashing counterattack, made good their headlong retreat to Washington.

Out of confusion, a Confederate hero

THERE WERE PLENTY of bumblers in the two inept armies that clashed at Bull Run, but out of the confusion and dust there emerged an authentic hero. A stray bullet smashed Thomas J. Jackson's finger, but he gained a reputation and the war's most memorable nickname.

At the battle's height, several harassed Confederate regiments wavered and nearly broke. A Southern brigadier glanced frantically about. "There stands Jackson like a stone wall!" he shouted. Today a row of cannon and a statue of the great commander mark that famous line (**right**).

After Bull Run, both sides waited: the North until a new commander, Gen. George B. McClellan, could put another army together, and the South, with some logic, for the North to make the next move. The South had only to defend itself successfully to win in the end; the North lost if it failed to restore the Union.

VIZETELLY ALSO WAITED. There was no blood and thunder in sketches of camp life. "At present I am almost at a standstill for subjects for illustration," he complained. What bustle there was he could scarcely sketch. "The only persons who appear to me to display any amount of activity are the greedy hordes of hungry contractors, who are determined to have their pound of flesh from the sorely pressed Union."

Meanwhile, he scouted around Washington's perimeter, visiting advance posts and riding out with skirmishing parties. "I am getting tired of this continual 'Wait another week and you will see something done,' which I am constantly being told by officers high in command."

As the North's determined mobilization continued, he grew optimistic: "We may have an attack here from hour to hour, and I dare scarcely leave," he told his readers. "Both sides are now awfully close together, and very, very strong. I am waiting to get some definite notion of the next move on the cards, and shall then act promptly."

LIBRARY OF CONGRESS

DURING THE CIVIL WAR, a man could climb a tall poplar on Virginia's Confederate-held Blue Ridge and, with a telescope, see Washington's unfinished Capitol dome (**above**). In 1865 the dome was finished; Federal victory preserved the Government it symbolizes. Eventually, after Reconstruction had run its course, former Confederates sat in Congress, and the Capitol once again stood for a truly United States.

Buckskin and satin grace the President's House

VIZETELLY met President Lincoln at the British Embassy soon after he arrived in Washington, and on New Year's Day, 1862, visited the White House. "I assisted to swell the crowd of anything but swells who went to pay their respects to the President" (**below**), he wrote.

In the 19th century the President was not the protected, remotely grand figure circumstances have since forced him to become. People wandered in and out of the White House as though they owned it and approached him as a first among equals.

So the reception seemed strange to Vizetelly's British sensibilities. "The visitors pass directly in front of the Chief of the State, and each appears . . . to endeavour to squeeze the nails out of the president's fingers, who, by-the-by, appears to have a pleasant word for everybody, and especially addresses himself to the ladies and children."

Englishmen tended to regard America as somewhat outlandish at best, and the reception confirmed Vizetelly's opinion. For here

FRANCIS HOUTT, WASHINGTON EVENING STAR

was Judge Harney, of New Mexico, in "full hunting costume of deerskin," who shook the artist's hand gravely and allowed as how in the Southwest they hardly wore anything else, even in court.

Today, as in 1862, Westerners in buckskins enliven Washington occasions. Bearded Arizonans (**above**) came to pay their respects to President John F. Kennedy and rode in his inaugural parade last January.

"Soft falls the dew on the face of the dead"

PROWLING THE POTOMAC, natural boundary between the Confederacy and the Union, Vizetelly looked for battles. To his dismay he found few in late 1861 and early 1862. But the scenery had a wild magnificence—and there were always pickets.

He sketched Great Falls, 15 miles above Washington, as forbidding and turbulent then (**below**) as now (**right**), and its opposing corporal's guards fighting a typical, mean little engagement that could leave a man every bit as dead as a major campaign. A popular wartime song told the story:

"All quiet along the Potomac tonight,
No sound save the rush of the river;
While soft falls the dew on the face
of the dead—
The picket's off duty forever."

Soldiers on both sides, who often had no stomach for sniping, agreed on their own rough rules and stuck to them. For instance, late in the war, Confederates crouching for a surprise attack near Petersburg made a noise. A Federal picket immediately called a challenge.

"We are just gathering a little corn," a

ACRACHROME BY NATIONAL GEOGRAPHIC PHOTOGRAPHER KATHLEEN REVIS © N.G.S.

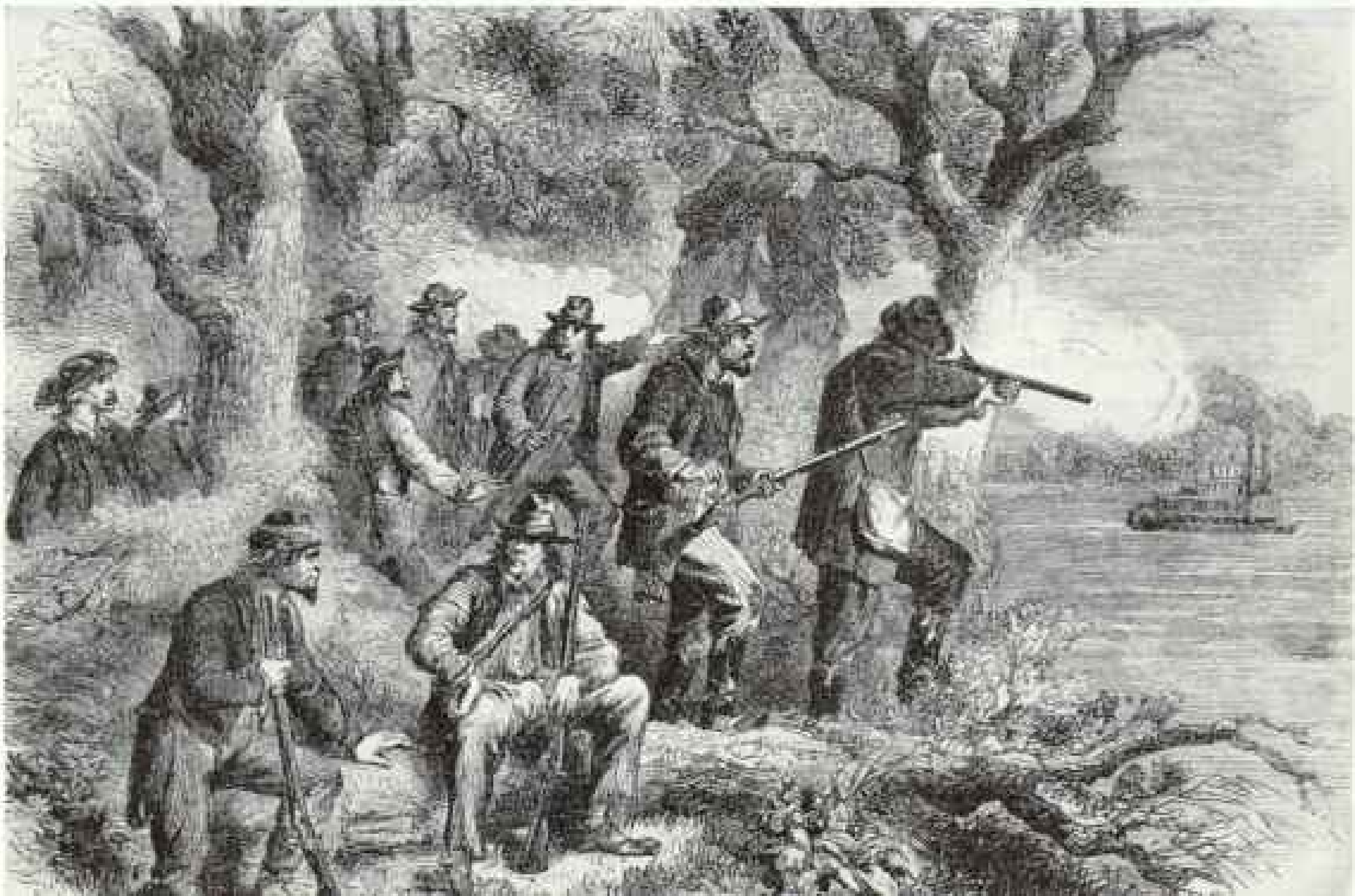
quick-thinking Reb called back. "All right, Johnny . . ." the reassured Yank replied.

Soon the Confederate commander ordered his man to fire, signaling the attack. Johnny Reb hesitated, determined to play fair. Finally he yelled: "Hello, Yank! . . . Look out, we are coming!" His conscience clear, he fired the signal and the attack began.

More than pickets clashed on the Potomac in October, 1861, when a Federal force pushed across at Ball's Bluff, near Leesburg, Virginia. Confederates pinned the Union men against the riverbank, and the boats that brought them over sank. Vizetelly finally sketched bayonets in use. "Believed to be the only instance in which a bayonet charge has been attempted by a regiment in the Federal army," the *News* observed tartly.

"THE WESTERN MEN are proving themselves the heroes of the war," Vizetelly wrote on April 11, 1862. "I leave this evening for the West." Behind his sudden decision lay a long and vexing haggle with Federal authorities. When General McClellan took his army to the Virginia Peninsula to begin a major offensive which he hoped would crash into Richmond's back door and end the war, Vizetelly's credentials were canceled, and he was left behind.

So he went to report the war along the Mississippi. "There . . . I shall find field enough for the exercise of my profession," he told his readers, "where battles, not petty skirmishes of advanced posts, but good, honest, sledge-hammer fights with wholesome bills of mortality, were the order of the day."



PAINTING BY HUGO N. KARPEN © NATIONAL GEOGRAPHIC SOCIETY

"This West has a mighty destiny"

AS VIZETELLY HEADED WEST to find the war, he learned a great deal about the Nation engaged in it. America was large ("Oh! how many times since starting have I bemoaned the extent of this 'Almighty big country'"); its people casually dressed ("the favourite style appearing to be a slouched hat, rough flannel shirt of gorgeous pattern, and bedtick trousers tucked into high boots"); and voracious at mealtime ("the celerity with which they ship their supplies is incredible, and their bill of lading is assorted").

On his way to the Federal base at Cairo, Illinois, where the Mississippi (**above,** left) and Ohio Rivers join, his train took him across the Alleghenies ("winding round the ledges . . . in a most intricate and remarkable manner"); to Pittsburgh ("the forge of the United States"); through Ohio and Indiana ("little smiling villages . . . burst upon us like sparkling opals from the emerald woods").

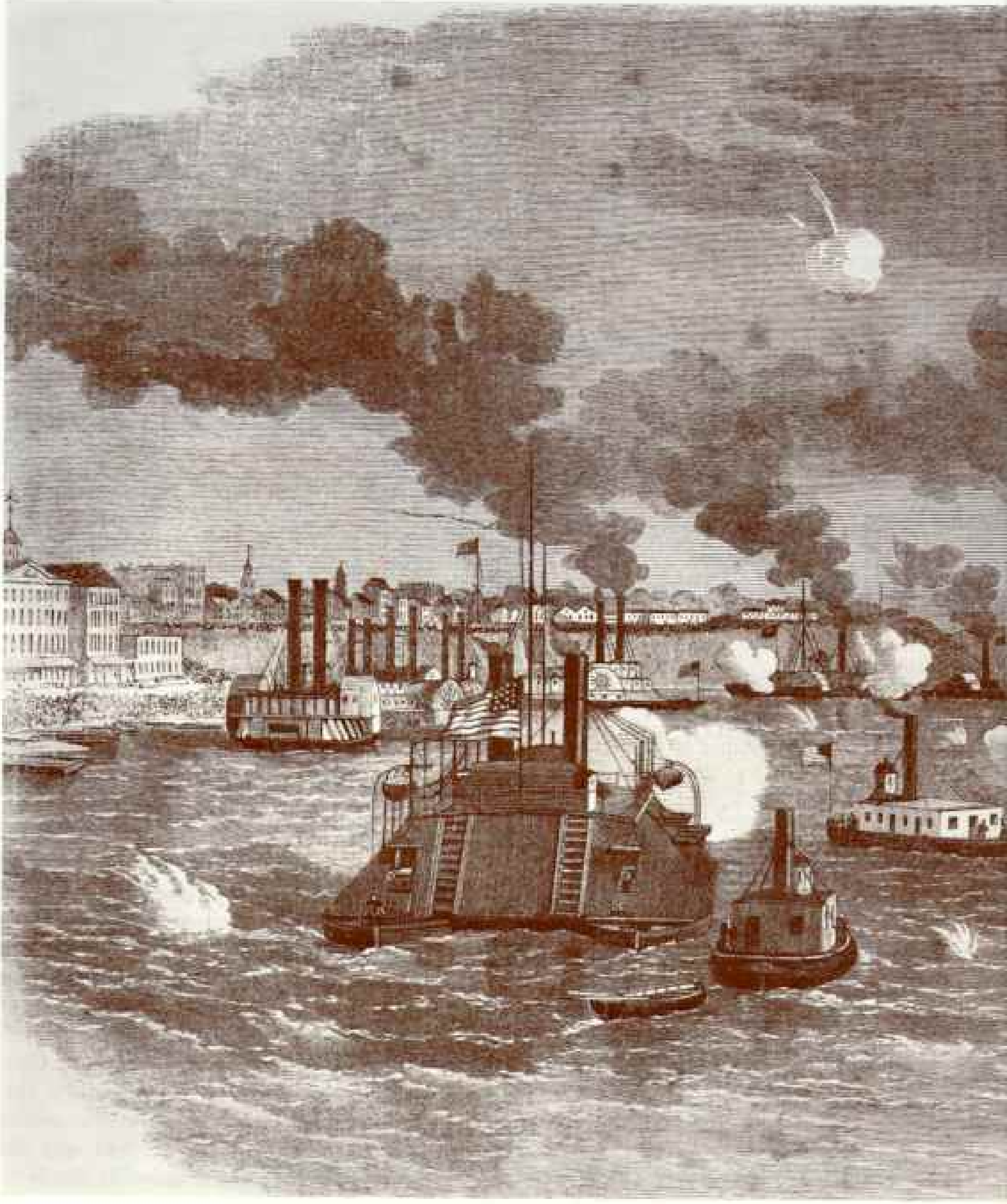
Heading south through Illinois, Vizetelly saw the vast American prairie for the first time. As his train rattled toward Cairo, it would "startle the quiet of some little town, a settled island, as it were, in a dried-up inland sea. . . ."

Cairo was the northern springboard of the Federal campaign that in 1862 pushed Confederates from much of the Mississippi Valley. Gunboats swept most of the river and its tributaries clear, and vessels had only the harassing fire of ragged guerrilla bands to worry about (**left**).

Ironclads smash cottonclads at Memphis

A BRAVE CONFEDERATE FLEET, armored mainly with bales of cotton, defended Memphis, Tennessee, against powerful Federal ironclads at dawn on June 6, 1862. Vizetelly, with the Federal flotilla, sketched a predictable victory. Gunboats (foreground) and rams polished off the Confederate fleet in short order.

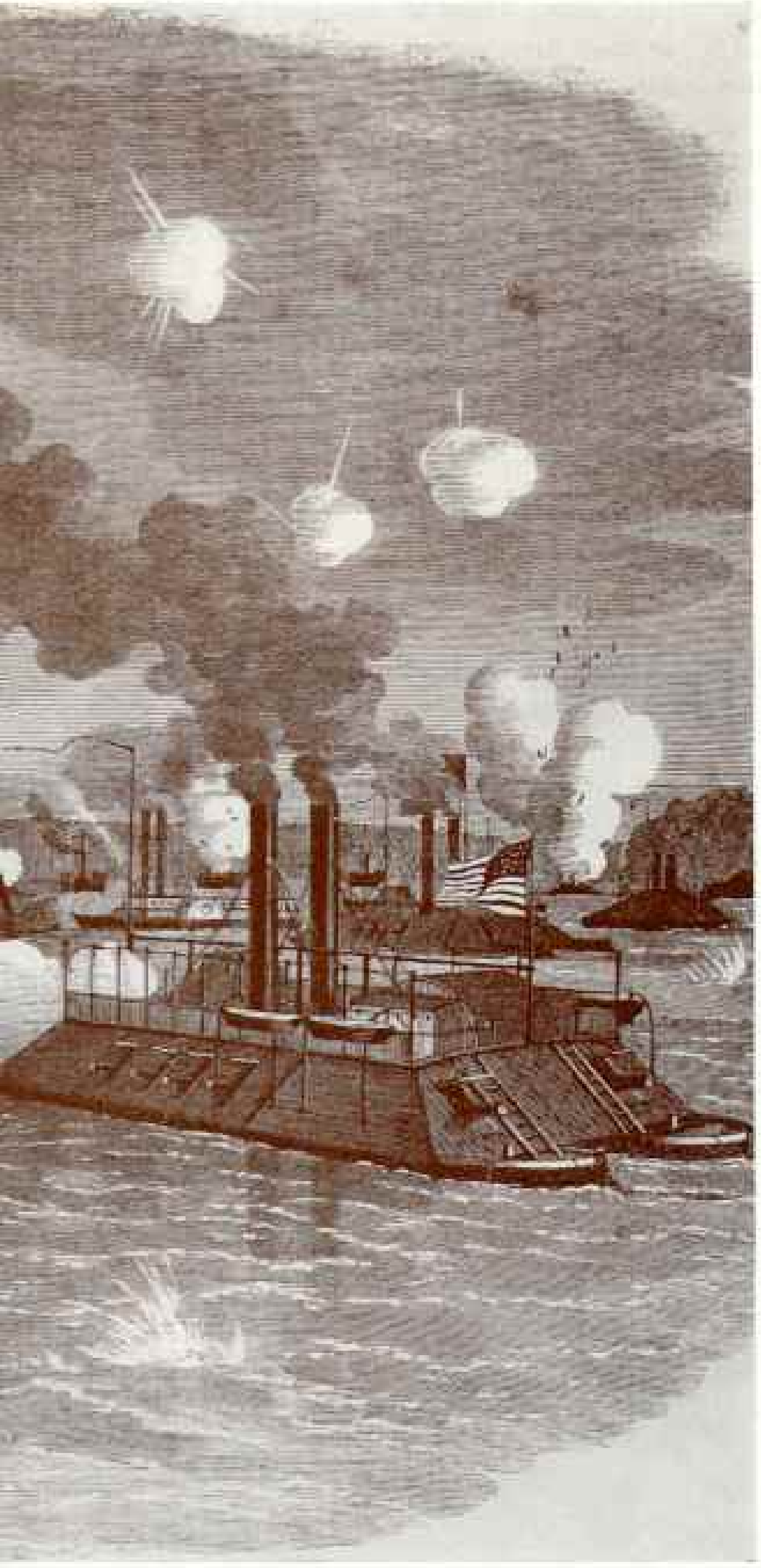
The Federal victory was a tribute to James B. Eads as much as anyone else. A production genius, he hammered out eight ironclads in 100 days at hastily improvised shipyards, and the battle for Memphis was won. His craft



squatted low in the water, with turtlelike superstructures made of heavy wood covered with thick iron plates.

Necessity, not choice, forced Confederates to use cotton armor at Memphis. Here and there, an inspired tinker fashioned old boilers and railroad iron into flimsy protective plating, but generally the South had not the resources to give a man like Eads his head. Vizetelly, as early as 1862, had a flash of prescience. He summed up:

"We find that each day the North is developing her gigantic resources; all her foundries are busily engaged . . . regiment after regiment of well-equipped soldiers flow in legions from her States, and the cry is still 'They come!' Can the South, in the face of all this, maintain their ground? I doubt it."



THE SOUTH'S LIFE LINE, the Mississippi, showed many of its moods and faces to Vizetelly as he pushed his way south with the Federal fleet. He saw high river bluffs "reflecting their dark masses deep into the eddying stream," and, rising from flooded lowlands, "a gauzy veil of violet-toned mist."

At night his boat scudded along the river "shooting a red glare from . . . open furnaces across the black waters." As the sun rose on the morning of the Battle of Memphis, it bathed "the brown old Mississippi in a flood of light that made its opaque waters fairly sparkle."

Heavy rains brought the river to a high crest that spring—"an ocean in volume flowing through a valley of over three thousand miles. . . ." In the region to the east, a Northern general, Ulysses S. Grant, proved that despite a sorry record in the East, the United States could field an army that would fight. Opposing forces struggled to control the wavering States of Missouri, Kentucky, and Tennessee.

Federal forces under Gen. Henry Halleck finally occupied Corinth, in northern Mississippi, a key rail junction. Vizetelly asked to go cover the campaign, but got an equivocal reply. He could not use army river transports. But, he observed, "There are no others. . . . Unless Transatlantic journalists are supposed to provide for their transportation by each man paddling his own canoe." So he joined Commodore Charles Davis's naval force, that fought its way down to Memphis.

Secession dies hard in occupied Memphis

STRETCHING HIMSELF after weeks in a cramped riverboat cabin, Vizetelly scrambled ashore in Memphis (today, **below**), eager for his first look at the occupied South. What he saw opened his eyes.

"I believed from all I heard that the Secession movement was but skin deep after all," he wrote. Such was not the case in Memphis. "Though the stars and stripes floated from the public buildings, and the supremacy of the Federal Government had been asserted by the Federal arms . . . all were clamouring for separation."

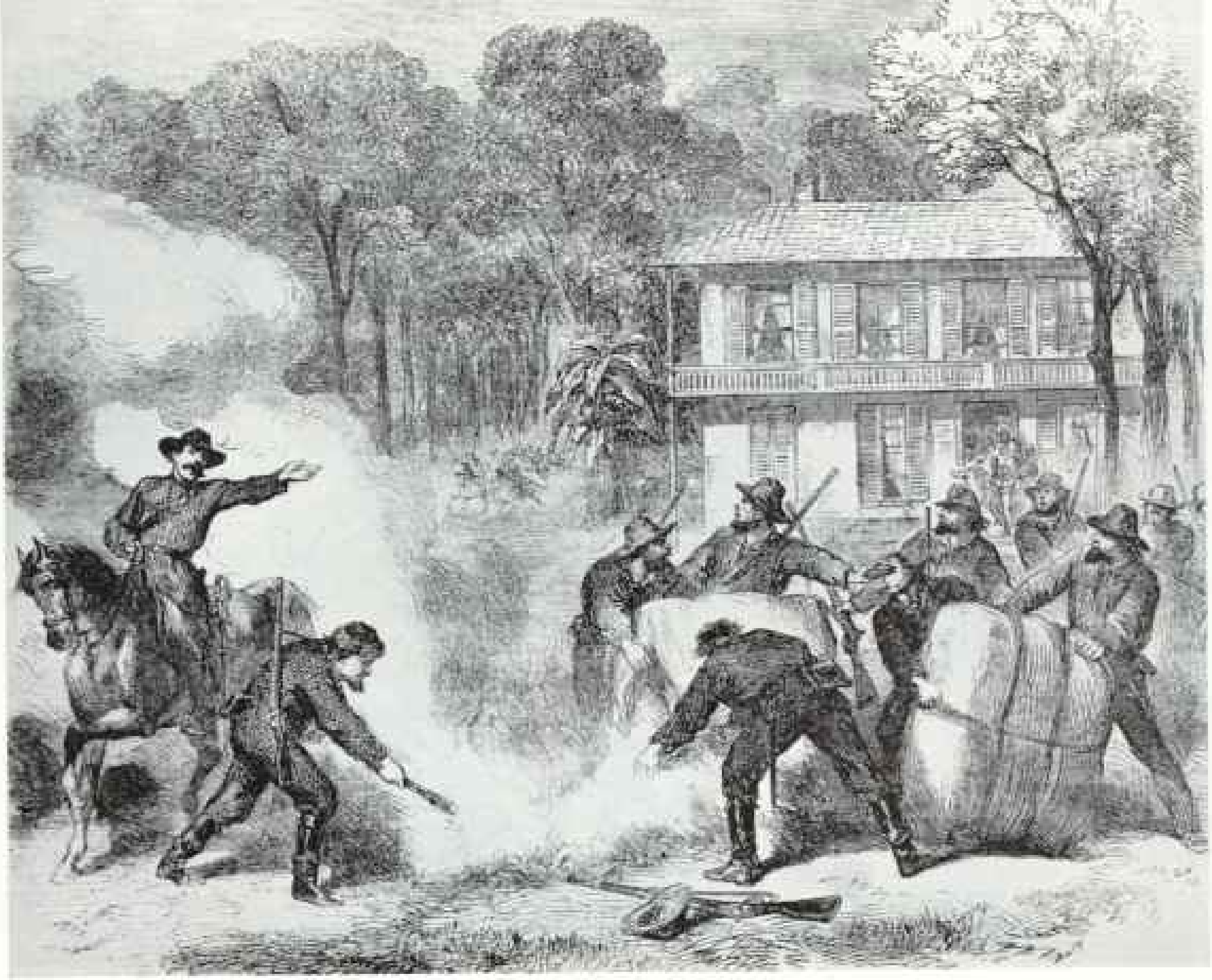
Passions in Memphis had been kindled and fanned by such men as Benjamin Dill, editor of the *Appeal*, who urged townspeople to give no quarter to the invaders. When all seemed lost, Dill loaded his presses on the last train leaving for Mississippi, determined that the voice of the *Appeal* should not be silenced. Then he led a willing crowd of diehards who burned ten thousand bales of cotton in warehouses and on wharves.

Confederates burned cotton all through the Mississippi Valley to keep it from falling into Federal hands. Scarce on world markets because of the Federal blockade, it was an eagerly sought prize of war.

Vizetelly rode out from Memphis with Indiana cavalry as they swooped down on plantations. Once he sketched Confederates as they fired ripped-open bales (**right**). He saw the Mississippi "covered by floating masses cast from the bank," and came upon scavengers skimming cotton from the water. Asked why it had been thrown in, they replied: "They say it's by order of the Government, but there aint been no such thing in this *dog-goned* country for over a year."

Federal forces were willing enough to fill the vacuum. By late 1862, they controlled the Mississippi north from New Orleans and south from Memphis, except for a stretch below Vicksburg, last important Confederate river stronghold.

CHARLES WITHUCK



AN ALERT CORRESPONDENT, like a queen in chess, moves in all directions as the game demands. "The thunder of the cannon before Richmond reached me in ominous echoes down the valley of the Mississippi," Vizetelly wrote after he hurried back to Washington. He hoped he might at last join General McClellan's army on the Peninsula. But again the authorities marooned him in Washington. So he did something no chessman can ever do: change sides.

Confederate sympathizers along the Potomac smuggled him past Federal patrols in true cloak-and-dagger style. Afterward he recalled a two-day wait in a dugout canoe hidden among reeds at the river's edge. A patrol boat hovered near by, and he and his guide had to delay their crossing. Fortunately, the reeds concealed an oyster bed. Vizetelly, as usual, dined well.

His arrival in Richmond marked a turning point in the *Illustrated London News* coverage. Until the end of the war, its editors got their stories of Union affairs from other sources. Vizetelly covered the Confederacy.

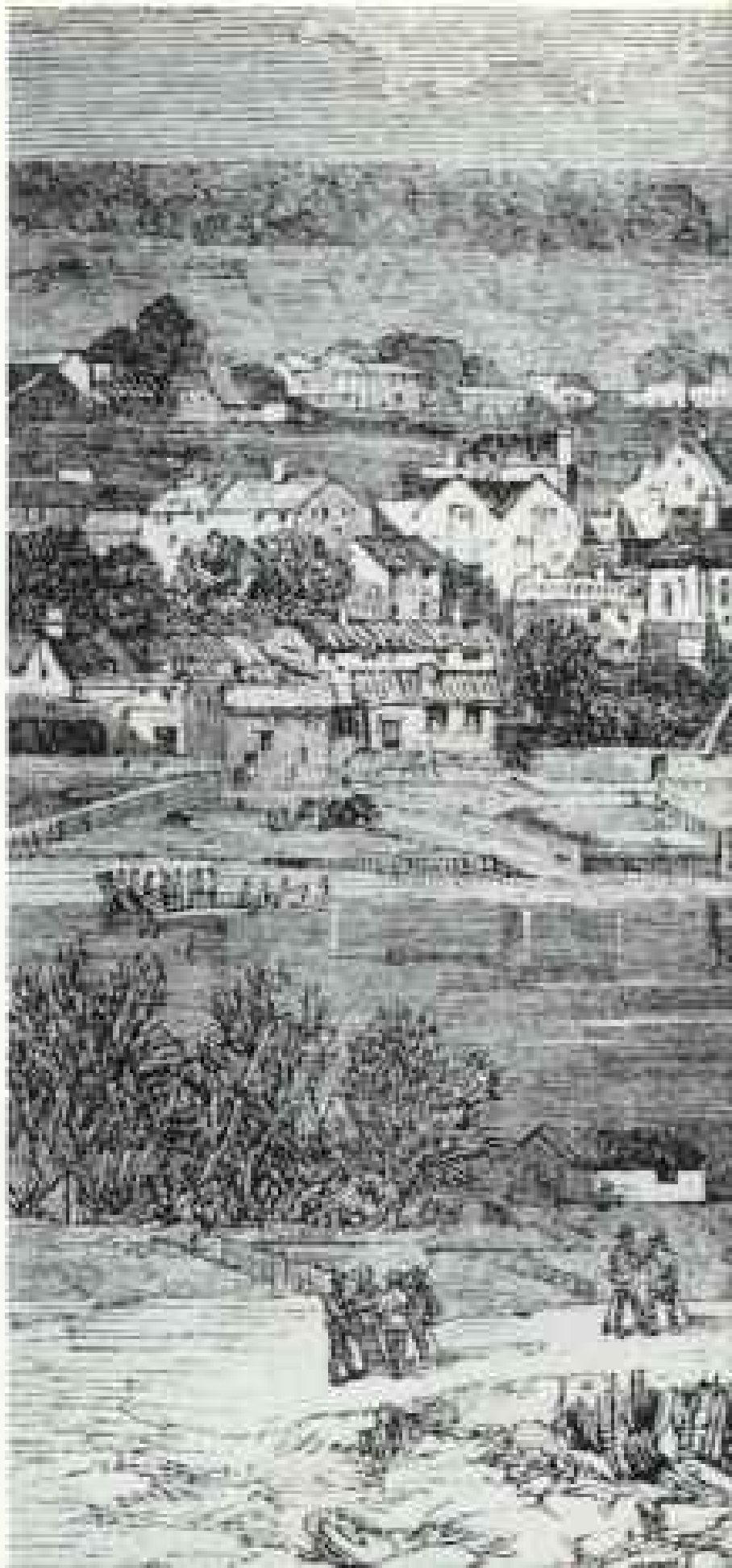
Grape, shell, and canister at Fredericksburg, 1862

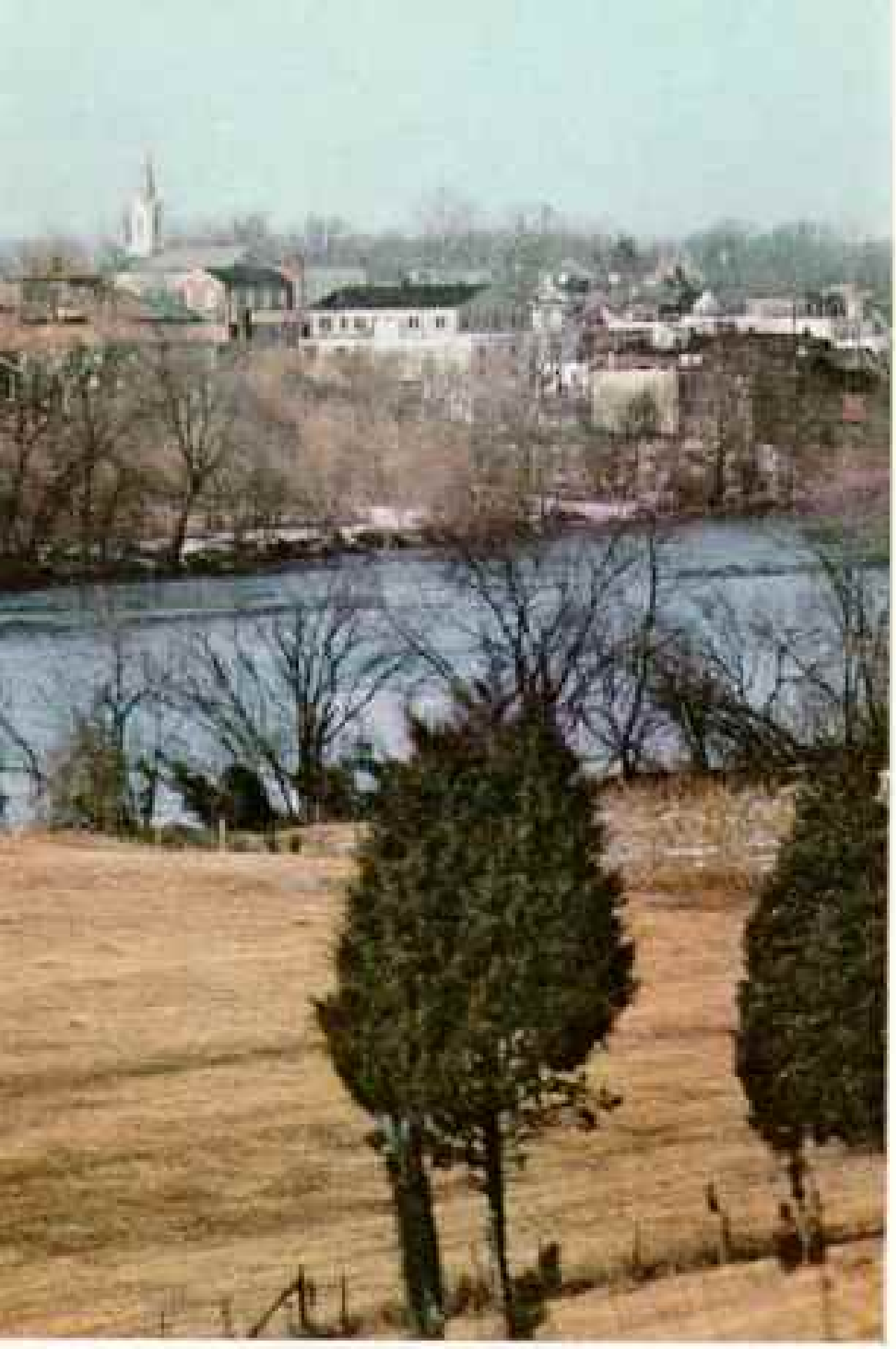
HOW DID A RESOURCEFUL, sometimes foolhardy correspondent like Vizetelly go about reporting a major battle? Here he is with the Confederate Army at Fredericksburg, Virginia, in December, 1862—a story told in his words and by a companion.

Before the battle, at a Confederate advance picket post on the river's edge: "The Rappahannock at Fredericksburg [today, **above**, and in 1862, **right**] is scarcely more than a hundred yards in width, and this is the distance that divides the Confederates from the Federals."

Few trees lined the river. Instead, there was the litter of war—a burned bridge, a sunken boat, and twisted stumps. The *News* published a drawing by an unidentified artist with Federal forces, showing the buildings and steeples of the pleasant little town, some still standing today. Vizetelly was on the opposite shore with the Confederates.

While he sat sketching, "a sentinel who was leaning on his musket, looking over me, suddenly called out to a blue-coated German on the other side, 'How many men



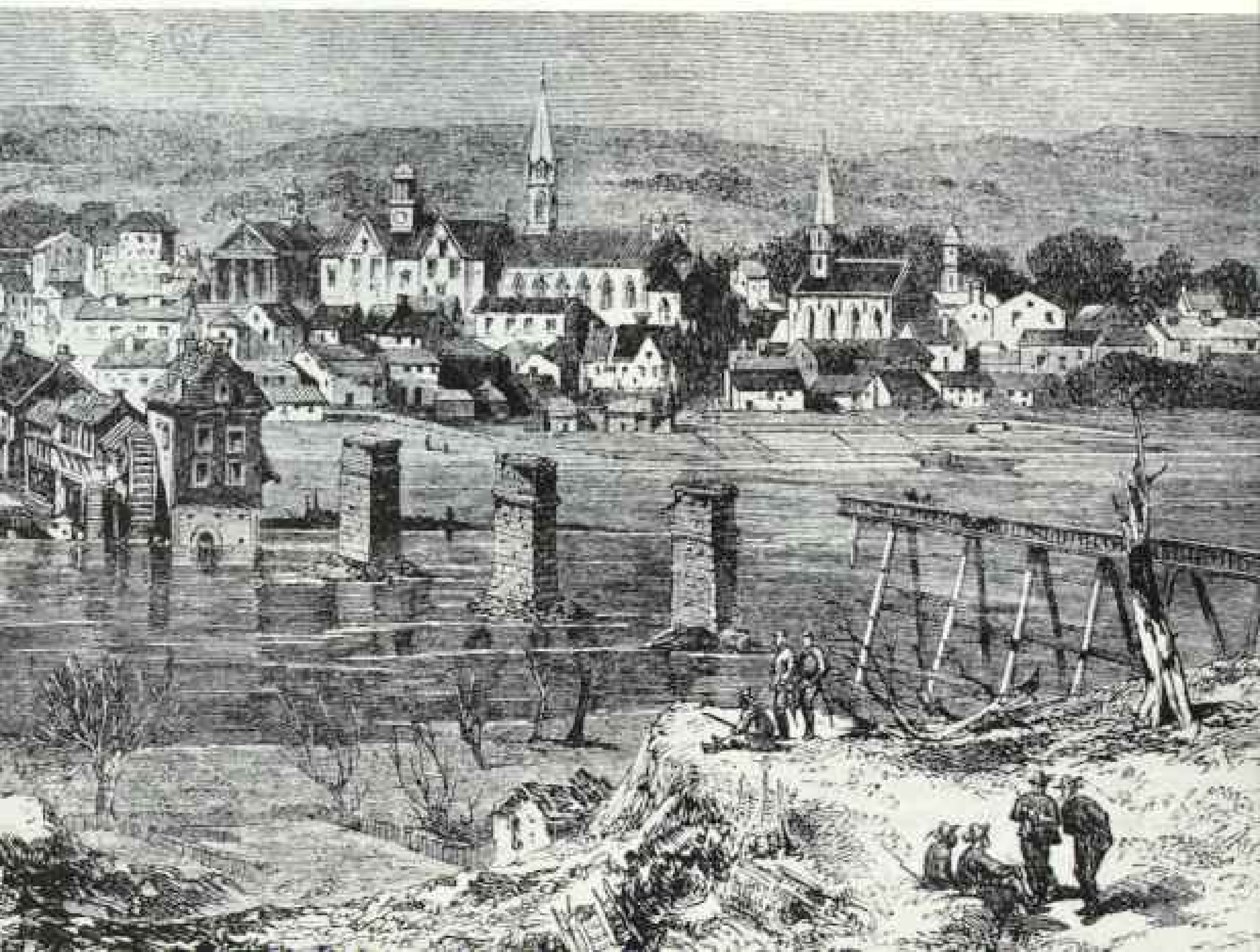


have you got over thar, Yank?' 'Doo or dree dousand,' grunted the Teuton. 'Oh, bring them along; that's nothing. We reckoned you had an army!' "

Again with Vizetelly in camp, before Federal Gen. Ambrose Burnside threw pontoon bridges across the river: "It is whispered at head-quarters today that an attempt will be made by the enemy to cross the river at three different points during the night."

During the tense lull just before the battle: "I am lying out in the pine-woods at the advance, ready to wield my pencil when the struggle begins. Every shot we hear as we lie with our feet to the fire during the long cold nights starts us on our legs. . . . What a bursting of shells over my bed there will be when the ball opens!"

At the battle's height, wave after wave of Federal soldiers charged up the hill behind Fredericksburg (background) at the entrenched Confederate Army: "From the point where I stood, with Generals Lee and Longstreet, I could see the grape, shell, and canister from the guns . . . mow great avenues in



the masses of Federal troops rushing to the assault, while the infantry . . . decimated the nearest columns. . . ."

After the battle, when the riddled Federal Army had fallen back across the river in defeat: "I counted 660 dead lying on a small plot of ground."

Still later, he rode out to meet a detachment bringing in Federal prisoners. A staff officer, Heros von Borcke, recalls Vizetelly under fire: "He had just entered into conversation with a corporal from a South Carolina regiment . . . when the hostile batteries . . . opened fire, and one of their very first shells, passing quite close to our friend, tore the head of the poor fellow with whom he was talking completely off his shoulders. . . .

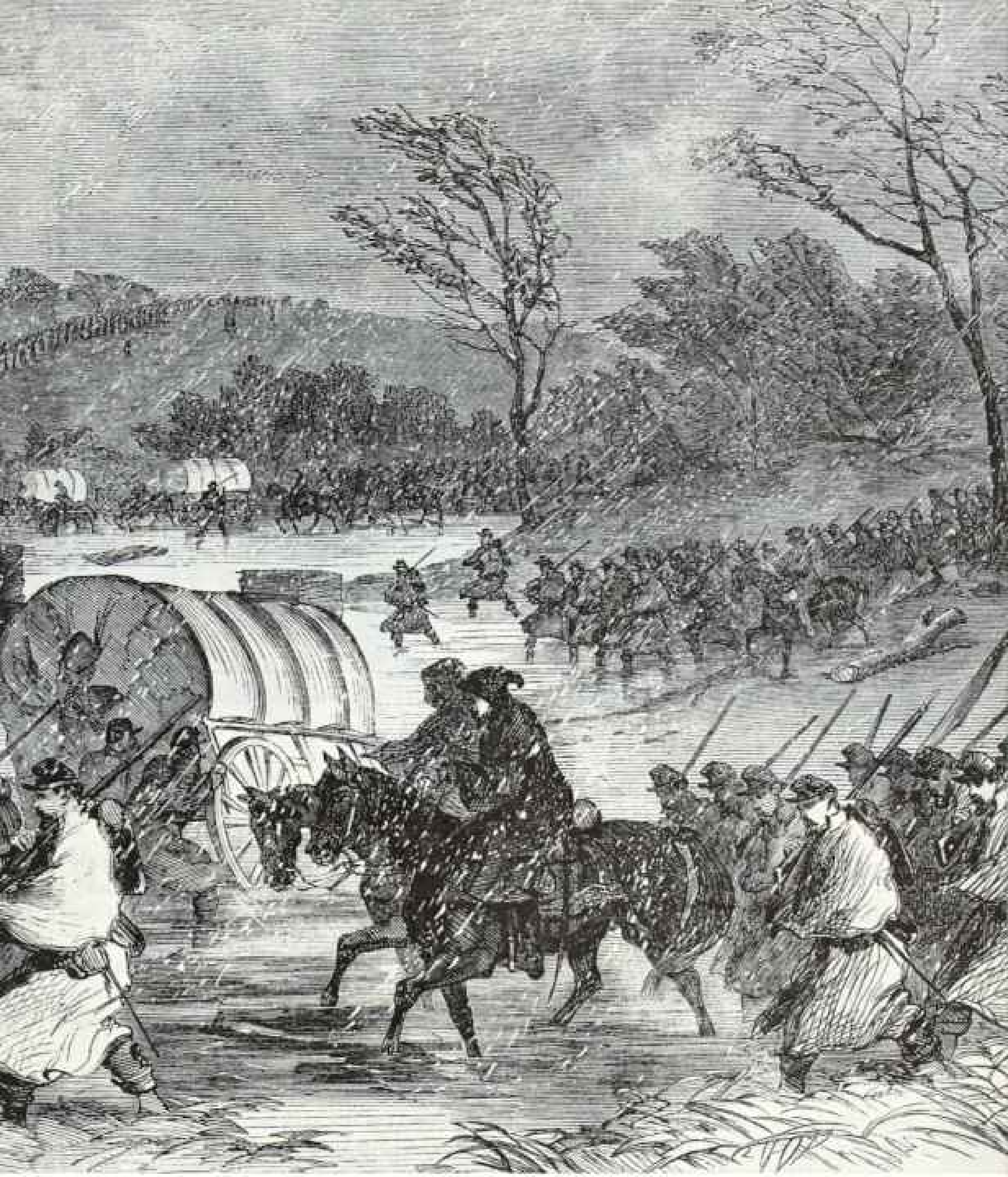
"Horror-stricken at this sad incident, and having no call of duty to remain, the artist at once put spurs into his charger's flanks, and galloped off as fast as the noble steed could carry him. But the hostile gunners seemed to take particular pleasure in aiming at the flying horseman, and ever closer and closer flew the unpleasant missiles about his ears, while we who from Lee's Hill were spectators . . . were for some time seriously alarmed that we should never again hear his merry laugh and joyous songs; but at last he reached us in safety, though much exhausted, and was received with loud cheering in our midst."

DISHEARTENED but still game after the bloody repulse at Fredericksburg, General Burnside pulled his army together. He tried to push it across the Rappahannock upstream to flank the Confederates, but failed. The Federals, pelted by rain and sleet, waded through streams and slogged along roads of bottomless mud in yet another retreat (**right**).

Again, Robert E. Lee and the Army of Northern Virginia had saved Richmond and the Confederacy. Sharing its camps, marches, and battles on and off for three years, Vizetelly came to know this amazing fighting force well. "I am lost in admiration at its splendid patriotism, at its wonderful endurance, at its utter disregard for hardships . . ." sings one of his accolades.

Commanded through most of the war by Lee, and led in battle by his able lieutenants—men such as Stonewall Jackson, James Longstreet, and Jeb Stuart—this Confederate army twice, at Antietam and Gettysburg, carried the war into the North. At home it fended off repeated Federal offensives. Vizetelly described its Virginia battlefields: "a classic ground, crimsoned with deeds that will make history for the future."

Usually outnumbered by armies sent against them, Southern commanders patched and maneuvered to make every ragged sol-



dier count. The men spiced hard fighting with fun. The same soldiers Vizetelly saw advancing "to meet their foes, the light of battle shining on their countenances, determined to be victorious or die," could while away the tedium, as they did before the Battle of Fredericksburg, with a monster snowball fight involving entire divisions.

And men dancing around a campfire at night, perhaps pitching frozen oysters into its embers to roast, would bawl out "The Perfect Cure"—"one of the favorite songs of the day in the London music halls . . . introduced to our notice by Vizetelly."

Friends beyond number fell "in the awful drama that has spread desolation over many a once smiling acre of Virginia soil. . . . In many a distant clump of pine wood slept their last sleep those whom I had known in life. *Requiescant in pace.*"

Aristocratic Charleston makes war a social event

"GENERAL RIPLEY yesterday reviewed the garrison at Fort Sumter. The review was witnessed by quite a number of spectators, including . . . Mr. F. Vizetelly . . . the correspondent of the *London Illustrated News*, and several ladies."—The *Mercury*, Charleston, S. C., January 20, 1863.

Sociable Mr. Vizetelly and sociable Charleston met on grim ground. He picked his way south from Richmond, determined to see the city where the war began, and arrived to find a Federal blockading fleet cruising steadily back and forth at the harbor's mouth, stitching one of the few remaining holes in the sack that slowly smothered the Confederacy.

Charleston, aristocratic and assured, faced it all calmly. Ladies and their escorts and crowds of frolicking Negroes turned out on April 7, when Adm. Samuel du Pont vainly hurled his ironclads at Fort Sumter (**above**).

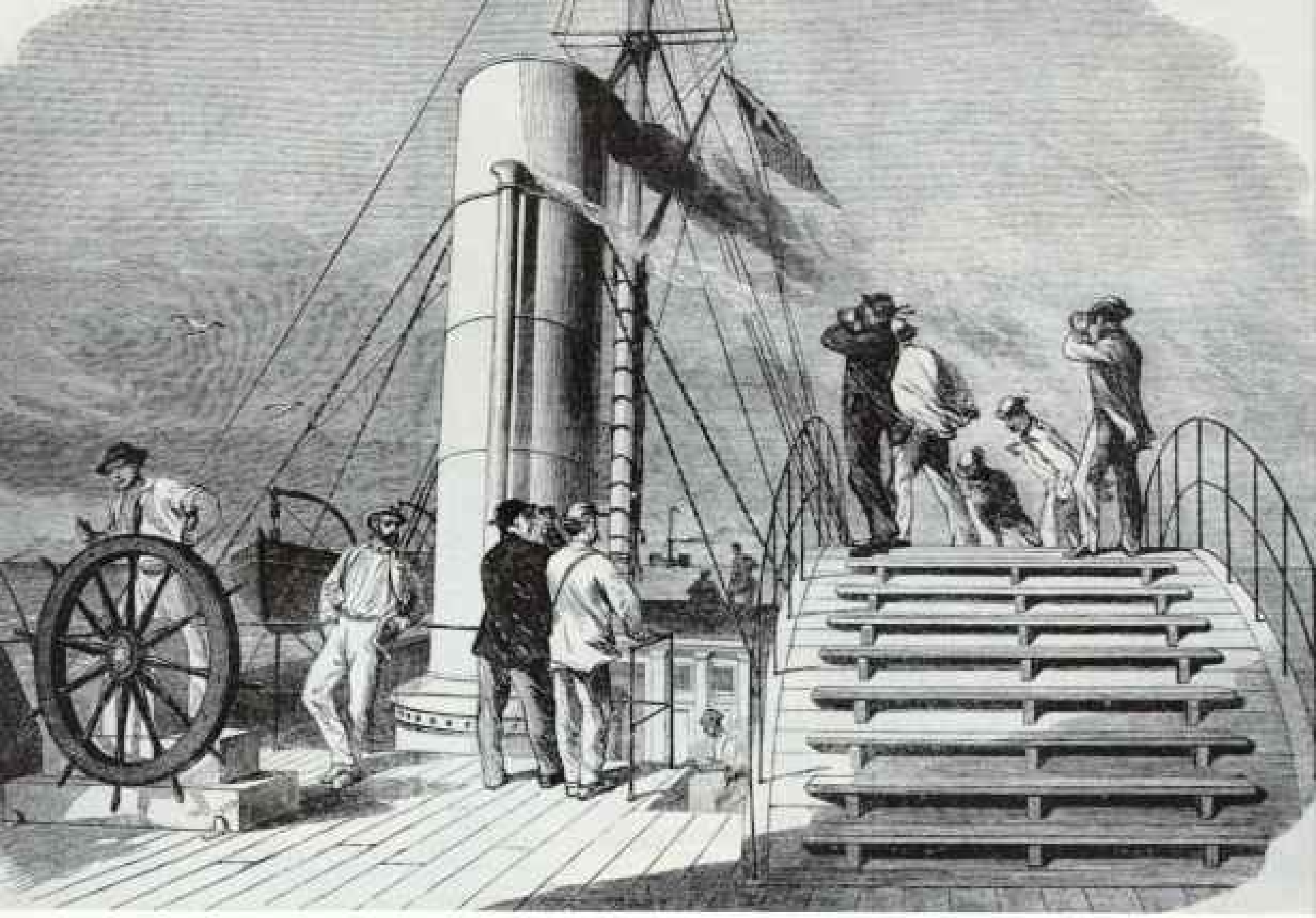
Vizetelly watched from a parapet of the fort. The garrison ran up its flags, a band blared "Dixie," and officers, playing Drake in the face of the Federal armada, finished dinner between the time the fleet advanced at 2 p.m. and firing began an hour later.

Insulated from Federal armies by the breadth and depth of the Confederacy, and harassed but not seriously threatened by the blockading fleet, Charleston preserved some of the Old South's amenities and gaiety. The *Mercury* chronicled life in the city Vizetelly knew and loved so well.

"Hibernian Hall. A Grand Ball and May Festival will be given by the Amicita Club this evening, May 1st. The services of the Celebrated Palmetto Band have been engaged for the occasion."

Today, hoop-skirted girls and Citadel cadets recall the spirit of the time in a Charleston ballroom (**right**).

HIGH SPEED EKTACHROME BY NATIONAL GEOGRAPHIC PHOTOGRAPHER THOMAS NEBBIA © N.G.S.



Vizetelly learned firsthand about the blockade later in the war. He stood on the deck of the *Lillian* (**above**) as the swift steamer slipped away from a Federal cruiser (background). In Charleston, however, he saw the blockade from shore.

Despite the Federals, munitions, fancy dress goods, and even books slipped in. Charles Dickens's *Great Expectations* was one: "With what refreshment we welcome into our blockaded world a work by *Boz*. . . ."

There were other refreshments: "Dr. Cohen's Soda Water Fountain . . . is the only one of the kind running in the Confederacy." And to quench the heat of a blistering Carolina summer, Messrs. Marjenhoff and Bredenberg "have on hand . . . a large supply of Hamburg Lager Beer."

BUT AN UGLY THREAD runs through the *Mercury's* columns, reminder of the South's "peculiar institution."

"Negroes sold remarkably high yesterday," a report says, with stock-market matter-of-factness. Advertisements sometimes listed entire families: "Mary 89, Rose 17 . . . Anna 8, Team 6, Eliza 2, and Infant 8 months."

Today's *News* continues a great tradition

VIZETELLY'S DRAWINGS and dispatches competed for space in the *Illustrated London News* with accounts of other wars, treaties, and the obituaries of eminent persons—all of interest to empire-conscious English readers.

A pioneer in global reporting, the *News* might feature an article about the Polish situation, and complete the page with a Vizetelly drawing of rare Confederate ironclads chewing at Federal ships near Charleston (**right**). Ironclads notwithstanding, blockaders bottled up much of Vizetelly's material.

In 1960 the Board of Trustees of the National Geographic Society presented Sir Bruce Ingram with a Jane M. Smith life membership in the Society. The award recognized his extraordinary contributions to geography through the *Illustrated London News*, which he has edited for the past 60 years. His grandfather, Herbert Ingram, founded the magazine in 1842.

Stamped Edition, 6d

THE ILLUSTRATED LONDON NEWS.

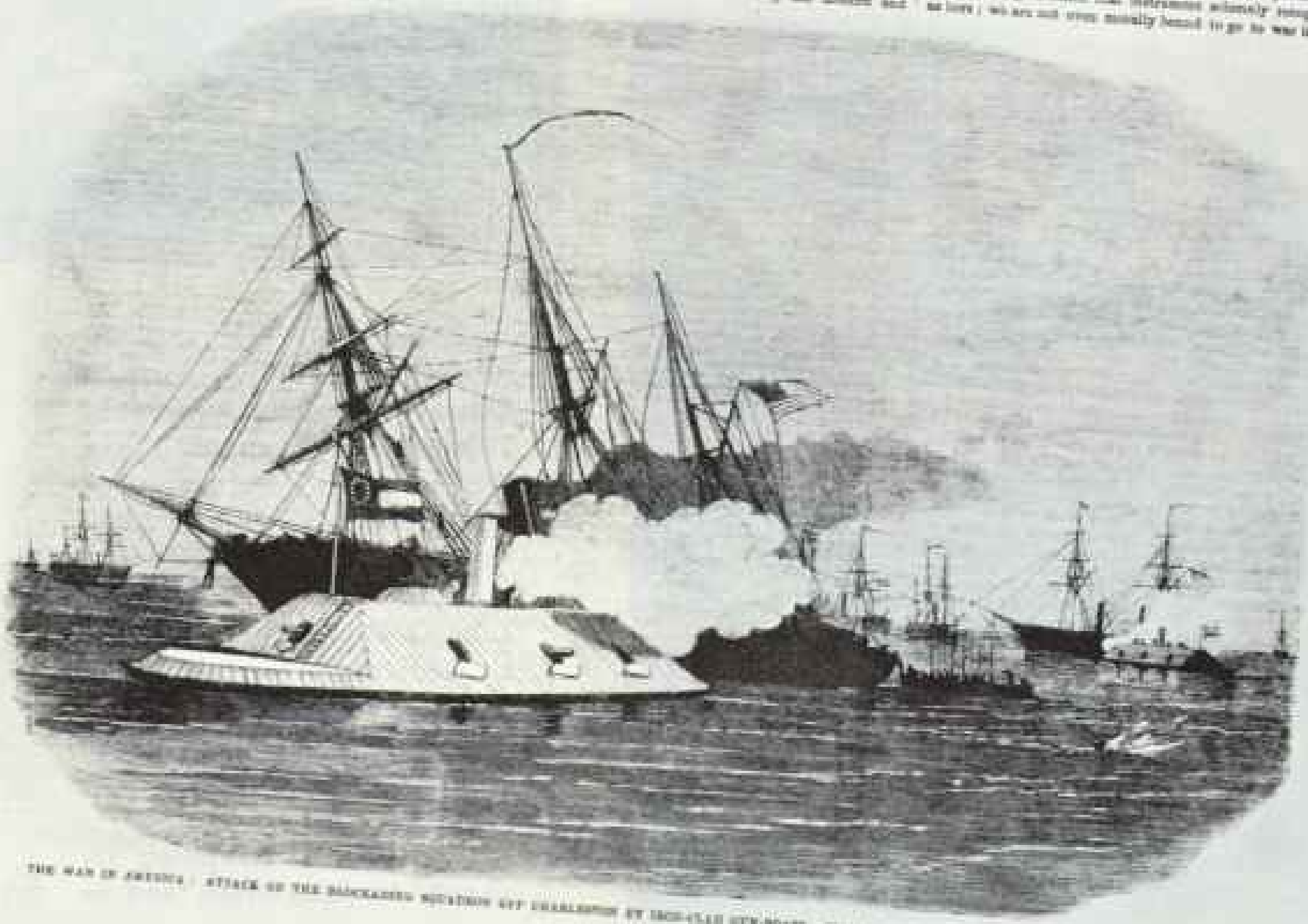
No. 1197.—VOL. XLII. SATURDAY, APRIL 4, 1863. Two Sheets, Fivepence

CONGRESS TO ENFORCE THE RIGHTS OF POLAND.

A few hours before Parliament adjourned for the Easter holidays, Lord Palmerston, in reply to an inquiry put to him by Mr. Horsman, announced in somewhat general terms that England and France had agreed upon a course of diplomatic action in reference to the affairs of Poland, and that he believed the papers which he hoped to lay before both Houses soon after Easter would satisfy the country as to the steps which the Government had taken on behalf of that unhappy nation. We suppose there can be but little room to doubt the authenticity of the information given to the British public in the Times of the same date, to the effect that, "both as members of the community of nations, the civilization of which has been outraged by the tyranny of the Russian Government, and as parties to the Treaty of Vienna, the chief States of Europe have felt themselves compelled to remodel their relations with Poland, and to take counsel as to the best means of preventing a great scandal and a danger to the peace of the world." The noble Premier, it is true, did not, in words, pronounce this announcement, but neither did he deny its accuracy; so that, piecing together the authoritative language of the Premier Friday morning and the more minute phrases of Lord Palmerston on Friday night, we are tolerably safe in considering that England and France are evidently seeking a conference of those European Powers whose representatives signed the Treaty of 1815, to which Russia will be invited that she may at once explain her own case, and submit it upon the decision of Europe.

We can well understand why the leading Governments of Europe should entertain objections to the assembling of a general congress, and should discourage a resort to the moral coercion which the kind of international machinery may bring to bear upon States supposed to be chargeable with the offence of misruling their own subjects. Each is disposed, as a matter of course, of preserving intact its own sovereign rights, and is therefore cautious of trespassing upon those of others. But the relations of Russia and Poland are so peculiar, the title of the other Powers of Europe to deal with them is a matter of such express treaty stipulation, and the peace of the world would be so endangered by a continued refusal to act upon that title, that general objections are overborne by the pressure of the particular case, and it has become safer to employ an immediate diplomatic action for the protection of the Poles than to be prevented in this instance by the modern and general-accepted principle of non-intervention. The truth is, that Poland has never yet surrendered her rightful claim to be considered an independent nation. The partition of the old Kingdom of Poland in 1772 by Russia, Austria, and Prussia was a crime which the conscience of Europe has never condoned; and the earliest provisions of the Treaty of Vienna in 1815 prove that all the parties to that great international instrument, Russia included, formally recognised the right of the Poles, under whatever sovereignty, to retain inviolate the nationality of their kingdom.

We accept Lord Palmerston's interpretation of the treaty as the true one. It is a public engagement to which the several sovereign Powers pledge themselves to each other in relation to the distribution amongst them of political authority, an engagement which gives a European sanction to all the stipulations it contains, which confers each Power to see the whole force of its resources, should it be so advised, to enforce upon any of the other Powers an observance of the provisions, but which does not bind any of them to draw upon the own resources, or to risk its own wellbeing in the attempt to give effect to the common agreement. We are under no treaty obligation to preserve to Poland the rights which that instrument solemnly recognised as hers; we are not even morally bound to go to war in her



THE WAR IN AMERICA: ATTACK OF THE IRONCLADED SQUADRON OFF CHARLESTON BY IRON-CLAD GUN-BOATS.—FROM A SKETCH BY OUR SPECIAL ARTIST.—SEE PAGE 324

"A few yards of canvas" shelter Vicksburg refugees

GEN. U. S. GRANT preferred to slug with his opponents toe to toe. But in one of the war's decisive campaigns, he maneuvered for months and finally pirouetted around the defenders of Vicksburg, Mississippi, picking them off with an easy grace reminiscent of Stonewall Jackson at his best.

Vizetelly, on the scene, understood what he saw. "The campaign . . . will, I believe, decide the duration of the war."

The Confederacy hung by its finger tips to a short stretch of the Mississippi River around

Vicksburg—last link with its western States. When Vizetelly hurried west from Charleston, Federal forces had already slipped between the city and the rest of Mississippi, and Federal ships closed the river. Grant tightened a noose around Vicksburg and Gen. John C. Pemberton's besieged Confederate Army. Vizetelly reached Jackson, forty miles to the east, and joined Gen. Joseph Johnston, who was unable to raise the siege.

"The town is completely invested," Vizetelly wrote, "and we

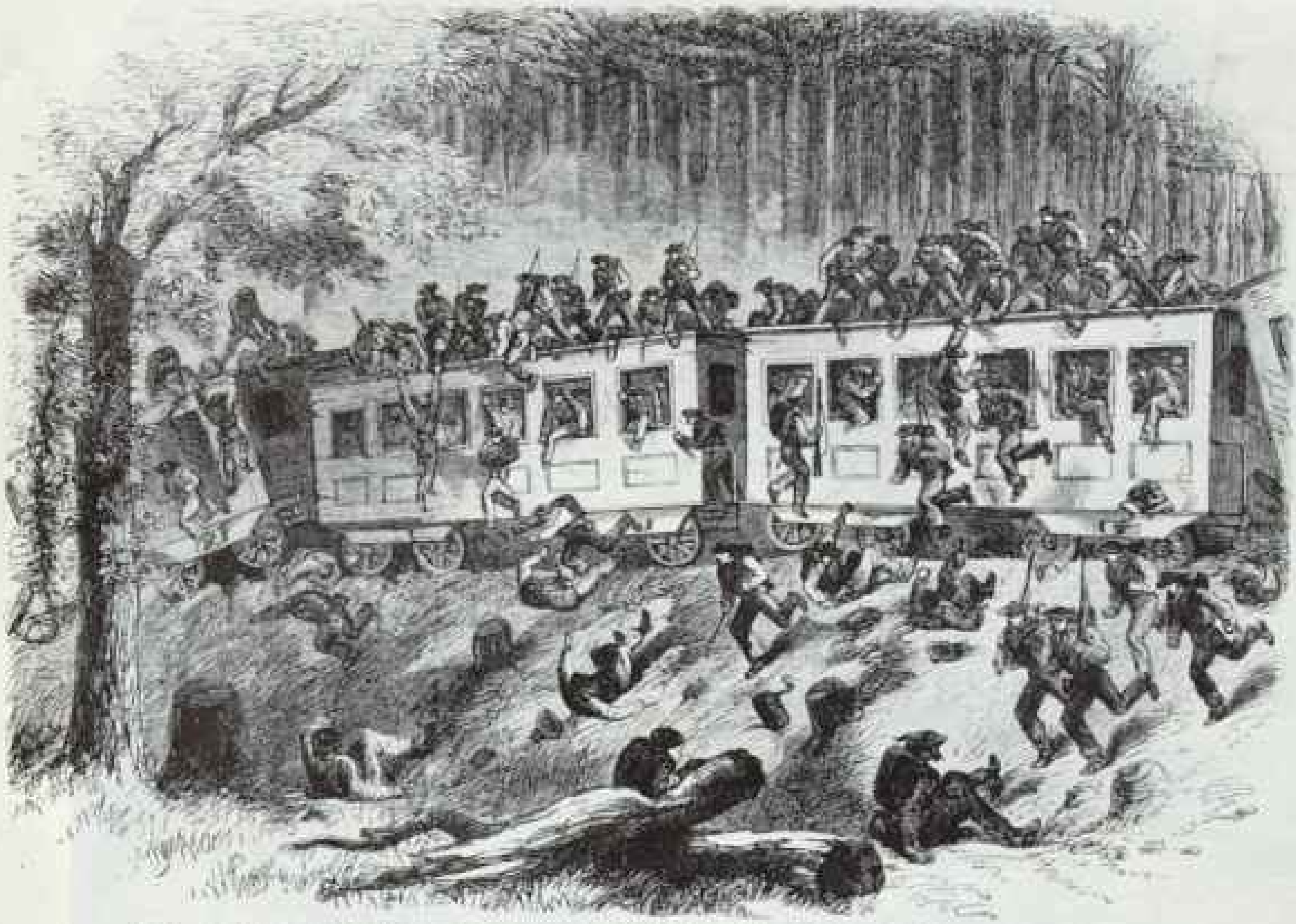
only get intelligence by an occasional courier, who runs the gauntlet of the Yankee lines." Today, Federal and Confederate dead share the fields over which they fought (**left**).

On July 4, 1863, Vicksburg surrendered. Its fall opened the river, split the Confederacy, and forecast its defeat.

Marching armies swept the country around Vicksburg, and savage bands of guerrillas and deserters pillaged what was left. Routed from their homes, women, children, and loyal slaves huddled in makeshift camps (**above**). "With nothing but a few yards of canvas to protect them from the frequent thunderstorms which burst in terrific magnificence at this season of the year over Mississippi, they support with dignity their heavy trial," Vizetelly wrote.

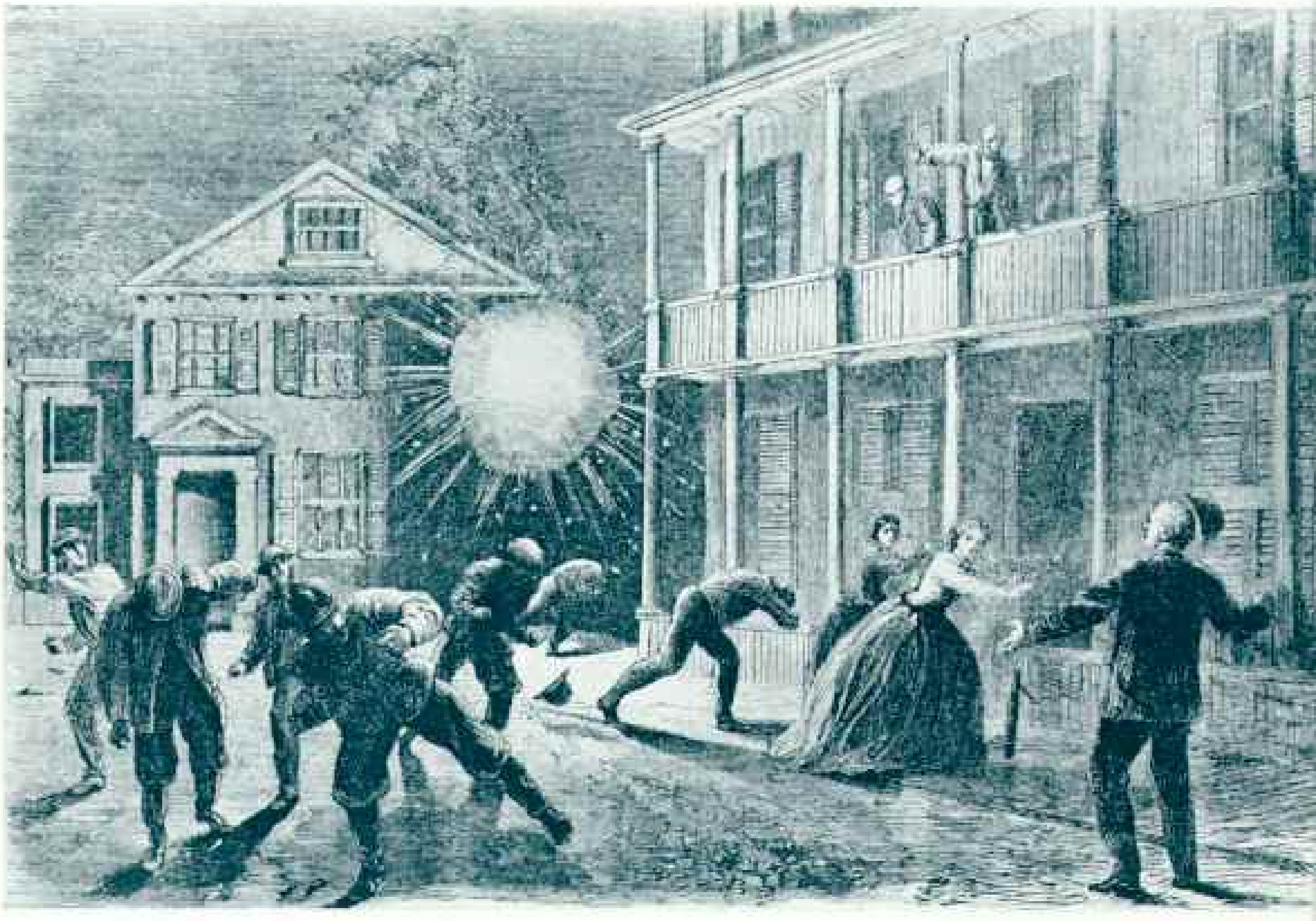
He may have ridden into camp with a courier bringing mail. For despite war's devastation, life went on somehow. There were reunions, marriages, births, and deaths. Especially deaths—not all of them in battle.

"DIED ON THE 18TH INSTANT," read an obituary that summer in a near-by newspaper, "Mary Belle Key, only daughter of Capt. John T. and Helen Shaaff. A weary little pilgrim with an age of suffering on its baby head, and yet three years to its life has gone to Him who bade little children to come."



THE CIVIL WAR IN AMERICA: TRAIN WITH REINFORCEMENTS FOR GENERAL JACKSON MOVING OFF THE TRACK IN THE FOREST OF KENNESAW.
FROM A SKETCH BY OUR SPECIAL ARTIST.

THE CIVIL WAR IN AMERICA: RE-OCCUPATION OF JACKSON, MISSISSIPPI, BY THE CONFEDERATES.—FROM A SKETCH BY OUR SPECIAL ARTIST. SEE FOLLOWING PAGE.



Wrecks, fires, shellings—Vizetelly was there

TRAIN WRECKS, burning cities, and bombardments flashed before Vizetelly like patterns in a kaleidoscope as he dashed about the Confederacy. A nose for great events, a liking for adventure, and inexhaustible energy drove him to places where the war's outcome was being decided, and to him, as to today's tourist, getting there was often half the fun.

Of his jolting journey from Charleston to Jackson, Mississippi, over the South's casually built, haphazardly maintained railway system, he wrote: "Three times the cars ran off the line **[left, top]** . . . and on one of these occasions . . . I was unaware of what had taken place until I shook myself together, and then I found that my arm was badly bruised."

Vizetelly sketched Gen. Joseph Johnston's army marching into one end of Jackson **(left, bottom)** as Federals burned the other. The traditional cheering section of Southern gentlewomen turned out—they seemed drawn to battles as if by a magnet.

Vicksburg fell, and Vizetelly returned to Charleston. During the summer, Federal forces established a beachhead and inched their way toward the harbor. Cleverly floating a monster cannon nicknamed "Swamp Angel" on timbers in a marsh four and a half miles away, they opened fire on the city early in the morning of August 22, 1863.

Again, Vizetelly was there. He sketched the scene **(above)**, noting "a watchman . . . is taking leave of his senses and his staff in the foreground."

Later, he and FitzGerald Ross, an English soldier of fortune, walked to the Charleston waterfront. "We could hear the whizz of the shells long before they passed over our heads," Ross wrote, "and I offered V. a thousand to one that a shell we heard coming would not hit either of us. He took the odds —forgetting that if he won he would have had but a small chance of realizing his wager —and, of course, I won my dollar."

Victory at Chickamauga, then disaster

"CHICKAMAUGA . . . was one of the most brilliant victories ever gained by the South, though, unfortunately, not decisive in its results . . ." Vizetelly reported from the battlefield.

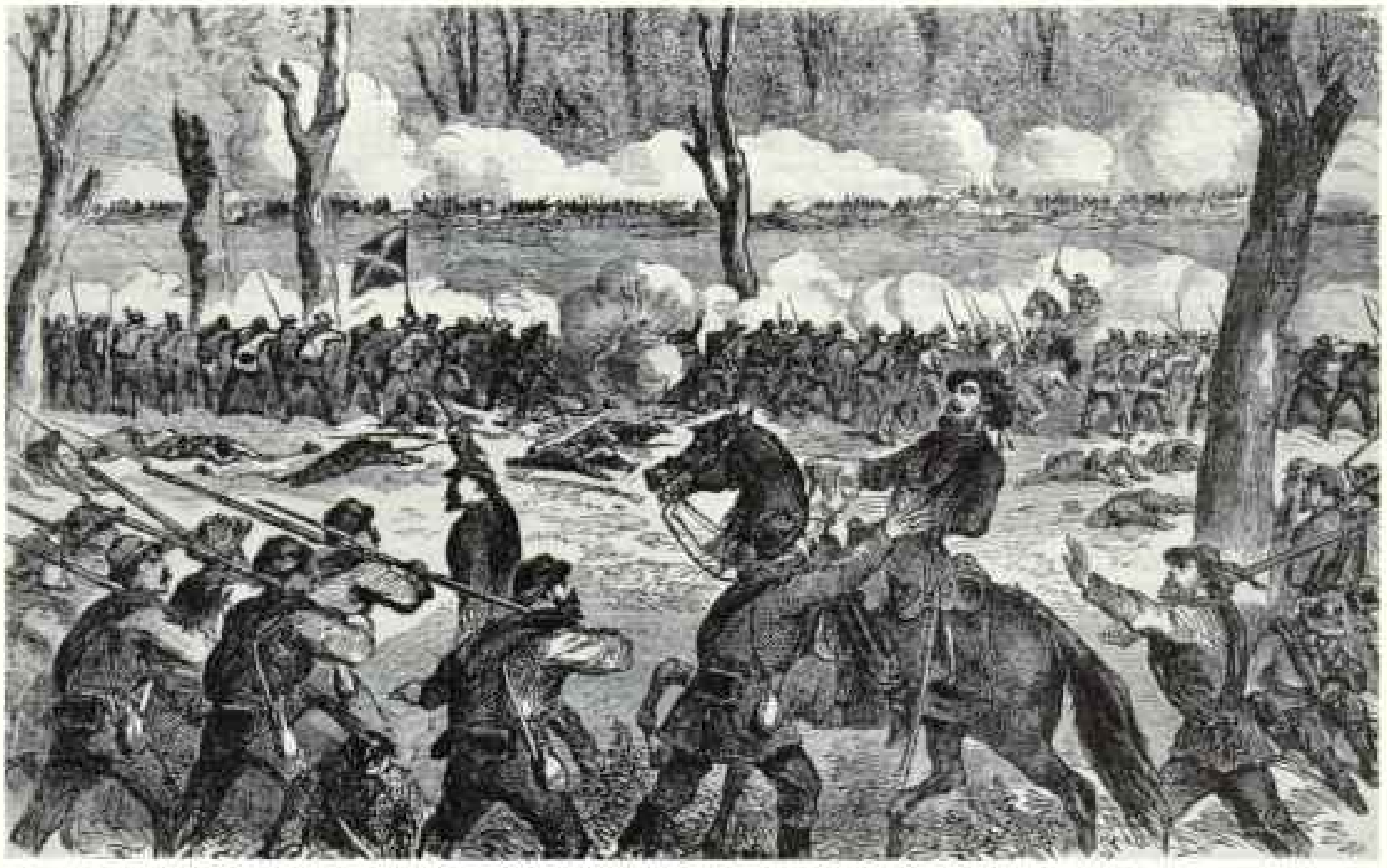
The war swept from the East to the Mississippi in the last six months of 1863. Lee's thrust into Pennsylvania was stopped at Gettysburg the same day Grant took Vicksburg. In September, action erupted at Chattanooga, key to eastern Tennessee.

When Vizetelly arrived, Confederates had crossed Chickamauga Creek north of Lee and Gordon's Mills (**above**), and soon the armies grappled in earnest. Vizetelly scoured the woods for a vantage point, but found none, "not being able to see more than a hundred yards either way. . . ." Similarly handicapped, Confederates still managed to drive the enemy back into Chattanooga and bottle them up.

At the battle's height, Gen. John Bell Hood, one of the Confederates Vizetelly delighted in spraying with pure essence of chivalry, fell (**right**) when "an Enfield ball passed through his right thigh, smashing the bone to pieces. . . ." Hard luck for "the Bayard of the Confederate army, literally *sans peur et sans reproche*. . . ."

The bewildered Confederate victor, Gen. Braxton Bragg, let Federal forces regroup ("You are a coward," stormed his subordinate, Gen. Nathan Bedford Forrest), and soon the Federals counterattacked, winning back what had been lost, and more.

PAINTING BY NATIONAL GEOGRAPHIC PHOTOGRAPHER THOMAS HOEGEN © N.G.S.



DAVID C. DICE © NATIONAL GEOGRAPHIC SOCIETY

Vizetelly romps in wartime Richmond

CAPITAL OF THE CONFEDERACY, Richmond, Virginia, saw Vizetelly at his frothy, delightful best. Capering through drawing-room entertainments, poking about munitions factories and prison camps, tearing off at intervals to campaign with his friends Jeb Stuart and Robert E. Lee, he behaved precisely as a glamorous war correspondent should.

Many of his dispatches from Richmond failed to slip by the blockade, but happily, memoirs of his friends fill in the picture.

The city, dominated by its imposing Capitol (**above**, and in Vizetelly's drawing **right**), was a swollen shadow of the pleasant, provincial capital of Virginia. In it were crammed the Confederate government, the State government of Virginia, the South's most important industries, the junction of several strategic railroads, huge hospitals, prison camps, supplies for whole armies, and, periodically, the armies themselves.

RICHMOND played its role as seat of the Confederacy seriously and sometimes self-consciously. Hostesses improvised frantically to hide gaps and shortages no self-respecting ante bellum establishment would have tolerated. High officials, distinguished foreigners, profiteers, and officers (many of whom would have been quite unacceptable by prewar Richmond social standards) thronged to receptions, balls, and dinners. Vizetelly, when available, was yeast in this heavy loaf. His infectious spirits leavened many an evening that might otherwise have fallen flat.

Mrs. Burton Harrison, a wartime belle, recalled him as "a big, florid, red-bearded Bohemian, of a type totally unfamiliar to us Virginians, who could and would do anything to entertain a circle. In our theatricals . . . he was a treasure-trove. . . . He painted our scenery and faces, made wigs and armor . . . sang songs, told stories, danced *pas seuls*, and was generally most kind and amusing."

One evening, Jeb Stuart bungled his duties as stagehand in a Vizetelly production. Mrs. Harrison, who felt the lapse keenly, tells the story: "I, as a rustic maiden, was to divide my smiles between Colonel John Saunders, an humble swain of my own estate, and Vizetelly, a plumed cavalier with a purse of gold to offer. . . ." She perched on a rustic stage-prop stile, one end of it held up by Stuart, daydreaming behind the scenes, and as "Vizetelly was prepared to make his swaggering entrance . . . my perch gave way and I slid to the ground."

Late in 1863, Vizetelly, FitzGerald Ross, and a party of friends proved there was no food shortage in the Confederacy—if one had the price. A dinner for nine at the Oriental Saloon included venison, game birds, Madeira, claret, and Havana cigars—all for $631.50 in inflated Confederate currency.

But theatricals and venison suppers were shiny plating on the hard, common metal of Richmond life. Most people, coping somehow with everlasting deprivation caused by cruel lack of necessities and skyrocketing prices, did not fare so well.

The war even affected the course of true love; punctuation may have been missing from the letter young Fannie Tyndall wrote to her future husband, serving with the 10th Virginia Cavalry, but sentiment there was in full measure:

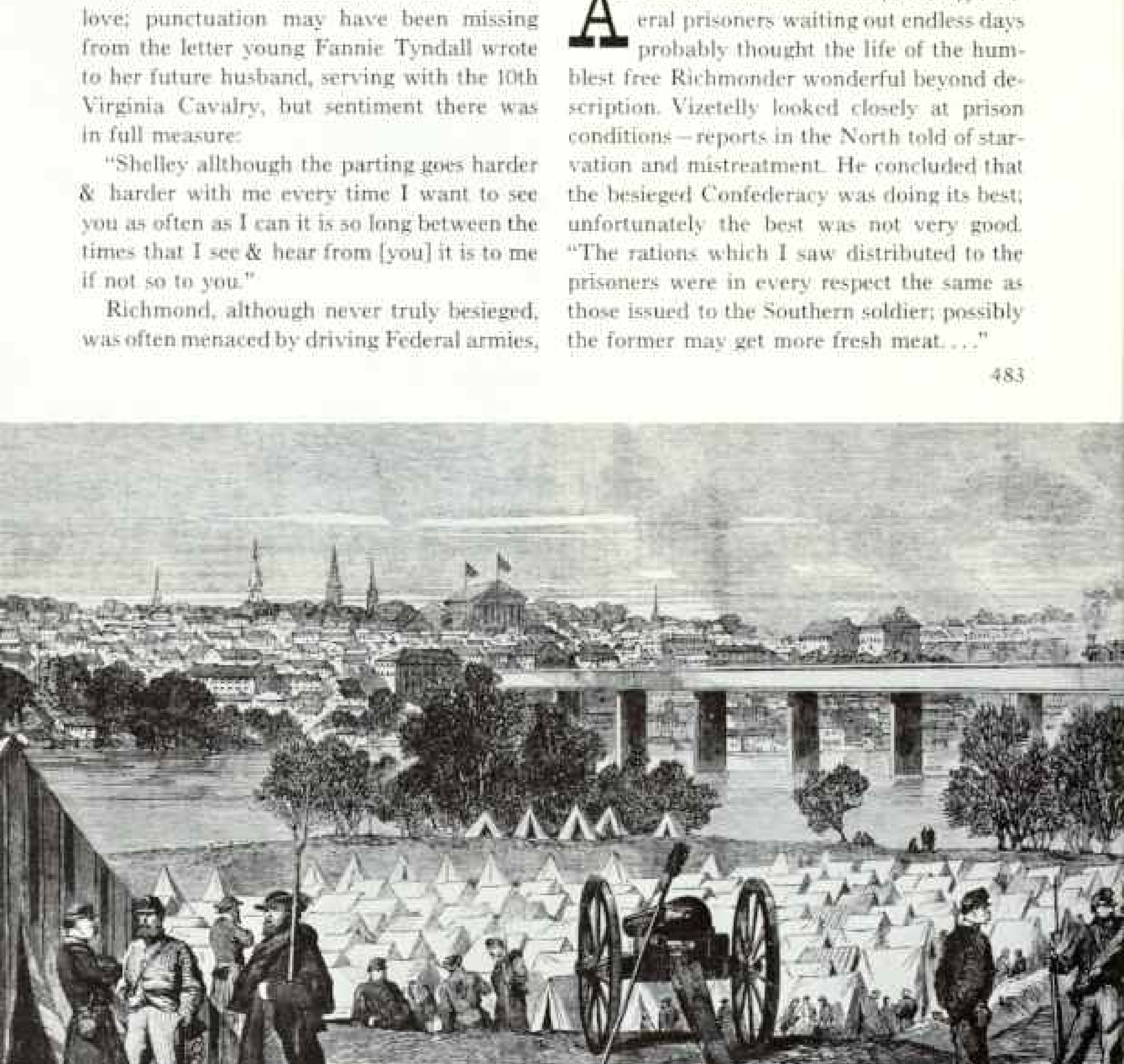
"Shelley allthough the parting goes harder & harder with me every time I want to see you as often as I can it is so long between the times that I see & hear from [you] it is to me if not so to you."

Richmond, although never truly besieged, was often menaced by driving Federal armies, determined to capture it and end the war. McClellan pushed to its suburbs in 1862, and Lee and Grant, wheeling in desperate efforts to outflank each other, circled close to the east in 1864 before falling into a bloody stalemate to the south at Petersburg.

Bravely, the city held out, heartened but in the end not succored by words of the Book of Joel flung from pulpits:

"But I will remove far off from you the northern army, and will drive him into a land barren and desolate. . . ."

AT CAMPS like Belle Isle (**below**), Federal prisoners waiting out endless days probably thought the life of the humblest free Richmonder wonderful beyond description. Vizetelly looked closely at prison conditions—reports in the North told of starvation and mistreatment. He concluded that the besieged Confederacy was doing its best; unfortunately the best was not very good. "The rations which I saw distributed to the prisoners were in every respect the same as those issued to the Southern soldier; possibly the former may get more fresh meat. . . ."



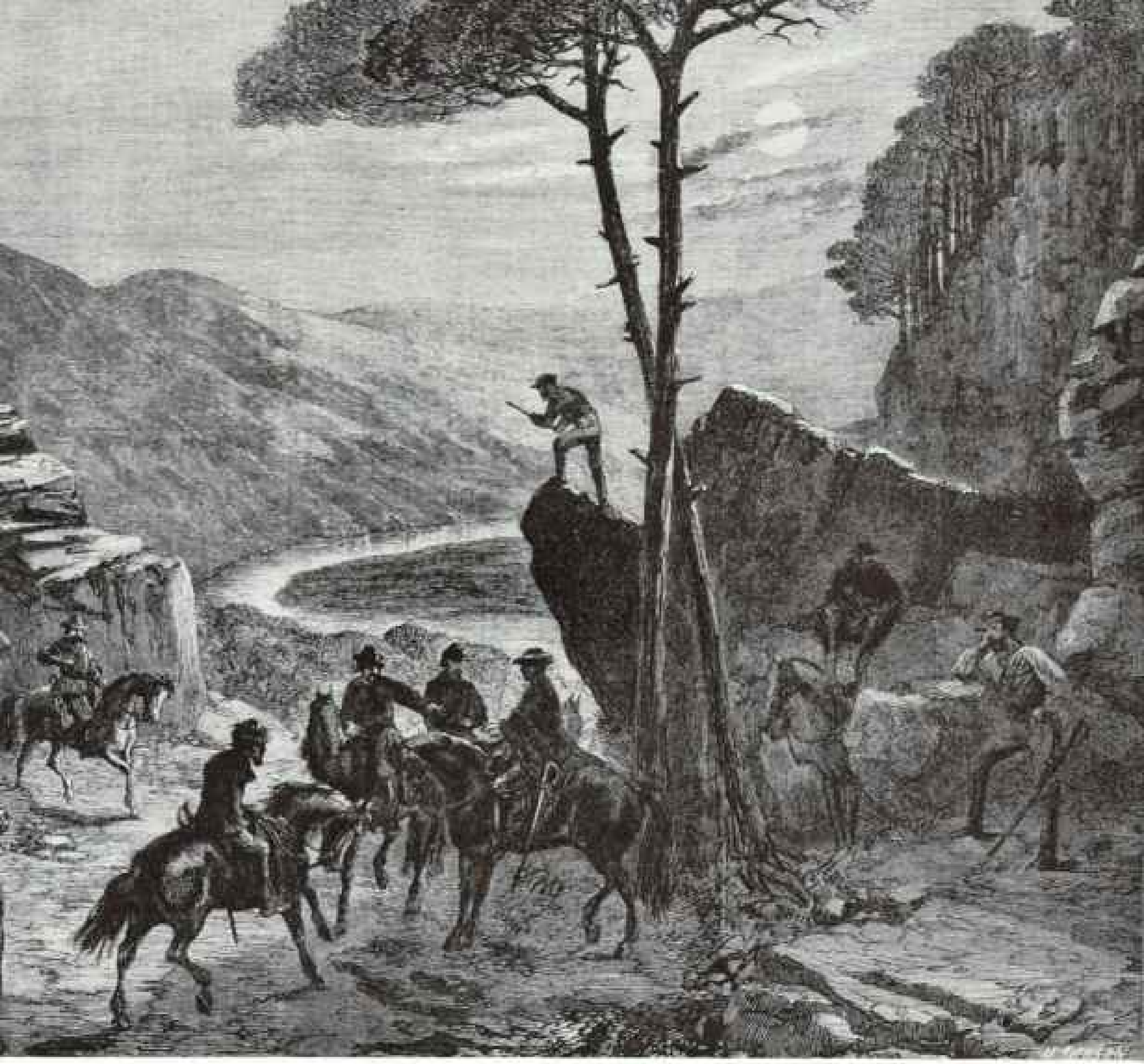
A merry Christmas with Jeb Stuart's boys

A REALIST, surveying the Confederacy and its chances at Christmas, 1863, could have found scant reason for comfort and joy. But Gen. James E. B. Stuart and his rollicking cavalry command (**below**) always made the best of even a bad situation, and Vizetelly and FitzGerald Ross accepted eagerly his invitation to spend the holidays with his command.

They sat "around a roaring fire in the General's tent," Ross recalled. Sam and Dick Sweeny "played the banjo and violin: V., who is a great favourite of the General's, told some of his best stories. . . ."

Jeb Stuart seemed to vault from the pages of a romantic novel into the war, but beneath all the glitter and fun lay hard, professional efficiency. Not until late in the war did Federal cavalry learn to fight as well.

Of course Stuart liked Vizetelly. He was "the most interesting narrator I have ever listened to around a campfire," an aide recalled. "There was not a disreputable or reputable place in the civilized world that he did not know all about, and his accounts of his gallantries in Paris and other parts of the world were as interesting as a novel."



"A line is only as strong as its weakest point"

WHEN VIZETELLY returned to Virginia in June, 1864, after slipping through the blockade to visit London, he found a ragged, reeling Confederacy. "The Battle Hymn of the Republic" was inspiring the Union to redouble its war effort—it sang of "the watchfires of a hundred circling camps," and they burned brighter than ever. But the strains of "Dixie" were fading, and, one by one, Confederate hopes flickered and died.

Remorseless generals led growing Federal armies, and, as they ground out victories, the irrepressible optimism that had buoyed Confederates faded. As the odds lengthened, they depended more and more on men like Col. John S. Mosby (**above,** center), a quiet Virginian who brought true tactical genius to his terrible guerrilla trade.

His fast-moving band harassed Federal columns ("As a line is only as strong as its weakest point, it was necessary for it to be stronger than I was at every point, in order to resist my attacks," he wrote). He provoked retaliation in kind ("I will . . . let them know there is a God in Israel," grimly vowed Federal Gen. Philip Sheridan.)

Mosby's men melted into the Virginia countryside between raids. Vizetelly sniffed out one of their rendezvous in the Blue Ridge Mountains, and he met Mosby there.

War scorches the earth of the green Shenandoah

WEARY OF A WAR that seemed destined to drag on forever, the Federal Government, in 1864, ordered General Sheridan to destroy everything in Virginia's lush, beautiful Shenandoah Valley.

Vizetelly, with the outnumbered Confederate force (**above**) that sparred unsuccessfully against Sheridan, reported that even in occasional retreats, the Federals carried out their grim mission, "burning and laying waste every homestead in their track . . . treating the State of Virginia as a hostile country."

Gen. William T. Sherman in the Deep South, Sheridan, and other commanders turned to scorched-earth tactics for a simple reason. Regions like the Shenandoah supported Confederate armies, and as long as these armies remained in the field, war would continue. Americans had the unpleasant distinction of fighting the first modern total war—where an acre of ground that fed a soldier or a homestead that sent him off to fight became a logical military objective.

Vizetelly's sketch, later tinted, shows Ker-

HOUGHTON LIBRARY, HARVARD UNIVERSITY

shaw's and Fitz Lee's divisions uncoiling into the valley from Front Royal (background) near the Blue Ridge Mountains. They joined Gen. Jubal Early's army in a futile bid to hold the Shenandoah Valley.

Skilled artists in London redrew Vizetelly sketches on blocks of close-grained Turkish boxwood bolted together. The blocks were then separated and parceled out among engravers. Each cut his part of the drawing into the wood. Finished segments were bolted together again, a wax impression made, and the wax plated with copper. Printing was done with the copper plate. Some engravings were as large as 9 by 12 inches.

Hope might ebb, but courage never

ALTHOUGH IT WAS LICKED by the end of 1864, the Confederacy clung to the illusion that it could fight on. Federal forces hacked at the remains of a crumbling nation. Grant gripped its throat below Richmond, armies in the West and the blockade in the Atlantic pinned its arms, and Gen. William T. Sherman slashed a wide swath of destruction across its soft midsection, from Atlanta to the sea.

Somehow, Confederates scraped together troops and supplies and continued to fight a gallant holding action. Hope might ebb, but courage never.

Vizetelly described eager Texans in an unplanned assault against Federal trenches before Petersburg: "They straggled to the front by twos and threes, despite every effort to keep them back. At last, the whole body, officers and men, gave a yell, and, with one rush, they were in the works. The Yankees fled pell-mell to a line of intrenchments beyond, leaving heaps of dead and dying."

The Confederacy's generals, magnificent tacticians to the last, yielded slowly and stubbornly. They put a fearfully high price on every foot of ground, but the North, while it winced at the terrible cost in lives, showed in victory after victory that it was willing to pay.

The Civil War reached no awesome climax; it had no Waterloo where both sides gambled for victory on the outcome of a single battle. Instead, attrition defeated the Confederacy. Federal forces squeezed it inexorably to death. The ultimate surrender was almost a formality, for there was precious little left in the South to give up.

One thing there was left, though, and that was a sense of humor. During the war's final days, a spick-and-span Federal detachment surprised a tattered, dejected North Carolinian, scavenging for his supper.

"Surrender, surrender," they yelled, "we've got you!"

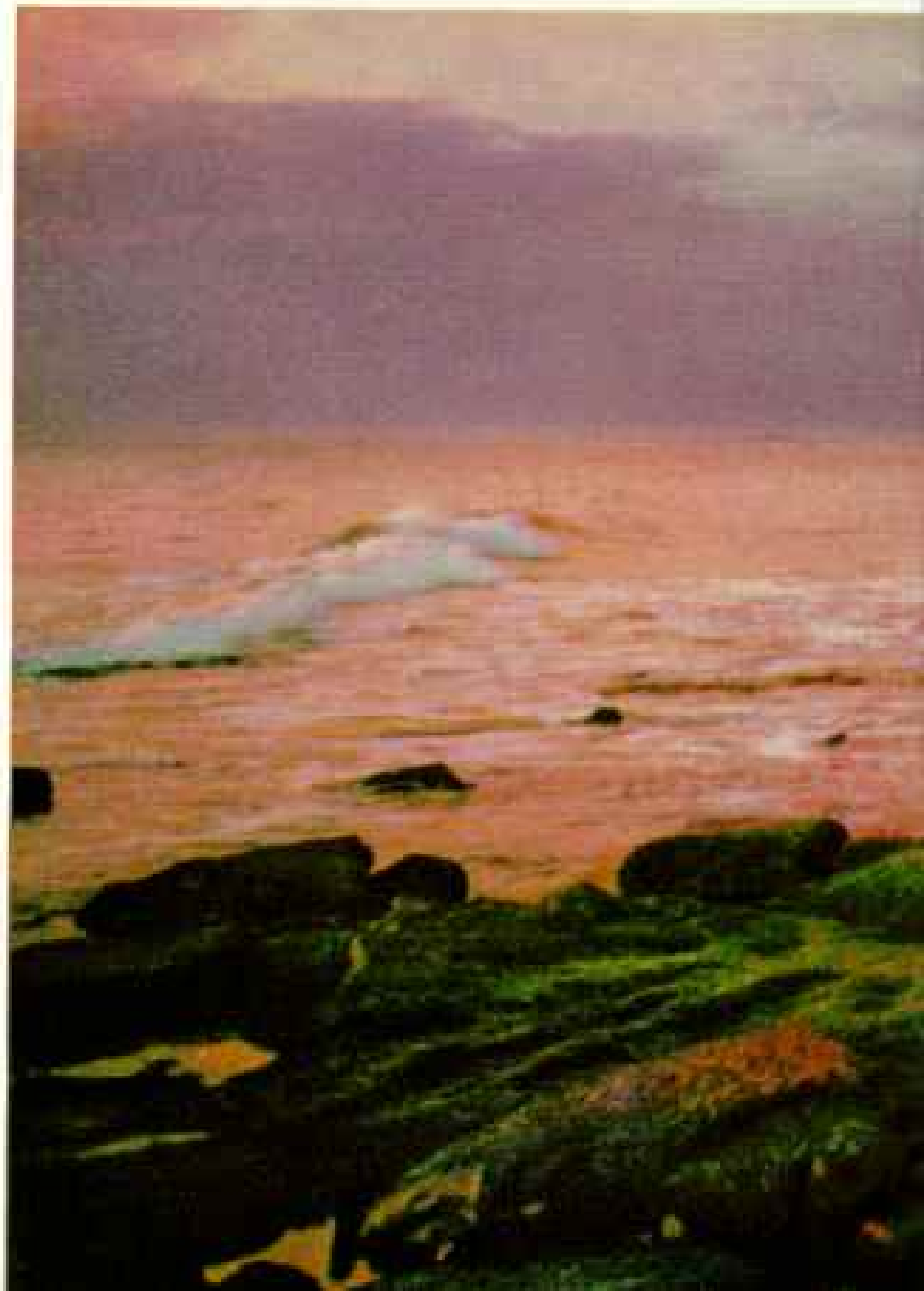
The weary Rebel dropped his gun. "Yes, you've got me," he said, "and the hell of a git you got!"

Fort Fisher's fall slams the last door

THE CONFEDERACY'S fortunes were moored to booming ports like Wilmington, North Carolina. Daredevil captains slipped fast steamers loaded with priceless munitions—and useless but eagerly sought luxuries—past blockading Federal cruisers to safety under the Confederate guns of Fort Fisher; the fort, now washed away, squatted on a sandspit that ran out from shore (**right**).

In 1864, Vizetelly and Francis Lawley, of the London *Times*, ran into Wilmington on the *Lillian* (page 474). Lawley described the voyage:

"Silently and with bated breath we passed cruiser after cruiser, distinctly visible to every eye. . .



Another moment and we are under the mound upon which stands the fort, and eagerly questioned for news. 'The news is good all round.'" Cheers rang out. "'Three times three for General Johnston; six times six for General Lee'; and in mirth and laughter and song the night wears away."

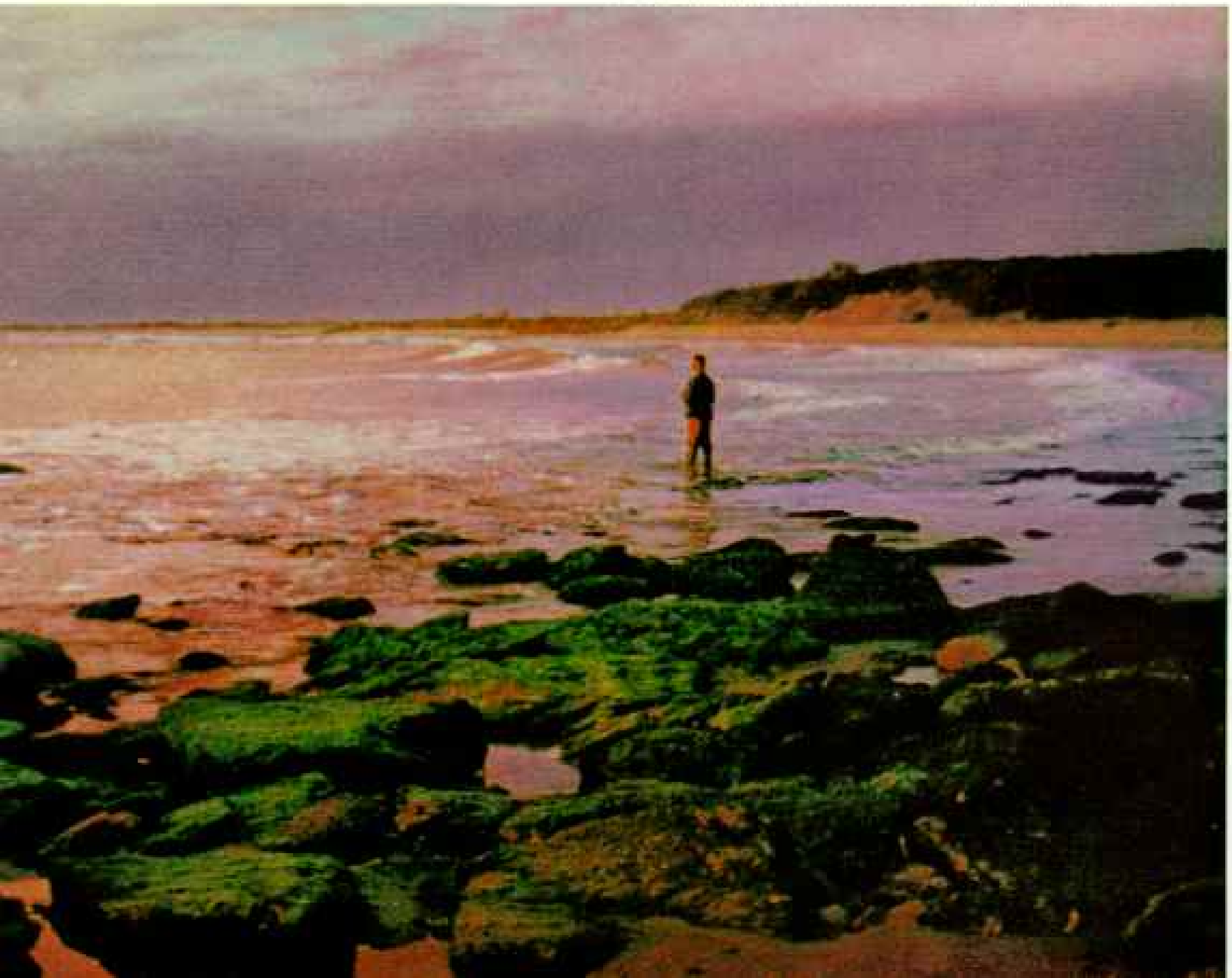
As the blockade tightened, port after port either fell into Federal hands or, tightly guarded, became useless. In early 1865, only Wilmington remained open, the mouth of its harbor protected by Fort Fisher.

Lee decided that if Fort Fisher fell, he would have to evacuate Richmond. In January, 1865, a Navy-Army force bombarded and then captured it.

Vizetelly arrived in time for the final battle (**left**). Shells tore at the fort, and he saw three men (foreground) killed by flying fragments. Another shot scattered a reserve stack of ammunition, and stretcher-bearers threaded their way among artillerymen serving heavy siege guns.

Wilmington sealed, the Confederacy could no longer import critical supplies – medicines, rifles, raw materials – that somehow kept its shaky war economy in operation. Another nail had been driven into its coffin.

BOMBARDMENT BY NATIONAL GEOGRAPHIC PHOTOGRAPHER THOMAS NEBIT © N. G. S.

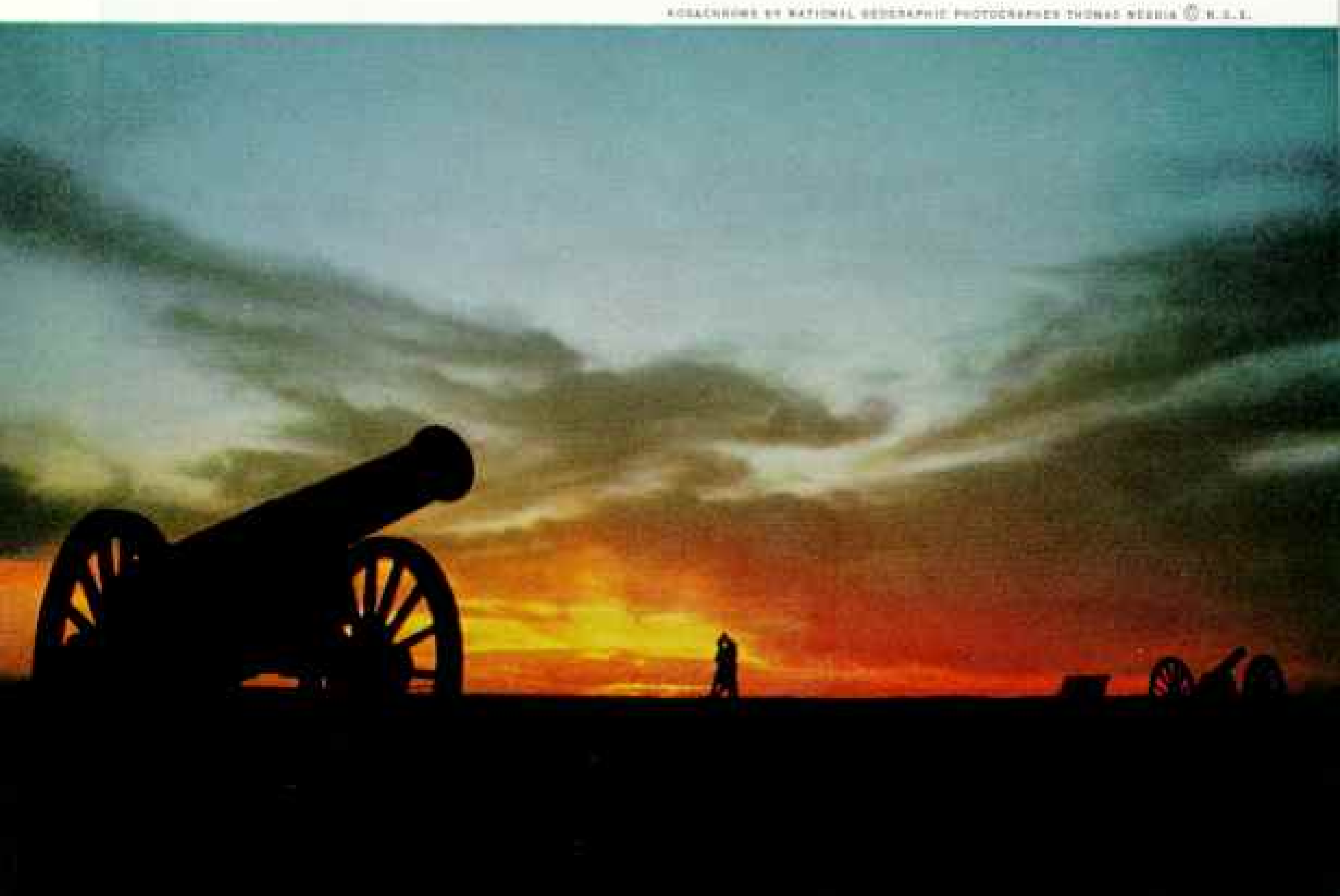


Vizetelly witnesses the drama's last act

NOW IT WAS OVER. Richmond fell, and Lee surrendered at Appomattox Court House. Vizetelly, cut off from England and surrounded by the ruins of the Confederacy, faded into the hectic anarchy that swirled through the ravaged South.

He made his way from Virginia to Gen. Joseph Johnston's army in North Carolina, one of the last major Confederate forces left in the field. There, with a veteran correspondent's sure instinct, he picked up the trail of President Jefferson Davis, who had fled south from Richmond with remnants of his government.

The only reporter with the party, Vizetelly recorded the hopeless, sad last days of the Confederacy. One sketch (**right**) showed Davis flanked by Gen. Braxton Bragg (in cap) and Secretary of State Judah P. Benja-



min, plodding through Georgia woods.

Davis's futile flight ended five days after the drawing was made, when a Federal cavalry force caught up with him. Vizetelly had left 48 hours earlier to pick his way to a port —it could have been Charleston, Wilmington, or Savannah—and sail for England. Before he left, the story goes, he put 50 pounds in good English gold into a fund to help the former President.

AN OLD CAMPAIGNER at 34, Vizetelly left America to seek new wars and adventures. He never lost relish for his dangerous, knockabout trade. In 1883 an Egyptian force marched out to pacify the rebellious Sudan, and Vizetelly—of course—was in the thick of the fighting. Mahdist tribesmen surprised and annihilated the army, and there, among the 10,000 men he campaigned with, sketched, and wrote about, he vanished —presumably killed—at the age of 53.

The headlong rush of great battles and events were his life. But along the way, he gave his British readers a better understanding of the real United States—until then a storybook land of red Indians, rowdy frontiersmen, and drawing-room buffoons. His facile pen put before them a new Nation, young perhaps and yet unformed, but nevertheless one to reckon with.

The guns of the campaigns of the Civil War are long since silent, and few people remember Vizetelly's name. Like many a great reporter before and since, he buried himself in his stories and was lost in them.

But perhaps somewhere in a pine wood, a campfire flickers in the soft twilight, and Jeb Stuart leans back and takes his ease among his friends. Someone beckons, a banjo sounds a chord, and "The Perfect Cure" carols across the countryside. Vizetelly is there, red beard flying and feet pumping as he beats out the time. He throws his head back and his voice booms out, merry and irrepressible, leading the chorus.

SCOTLAND from her lovely LOCHS and SEAS

By ALAN VILLIERS

Illustrations by National Geographic photographer ROBERT F. SISSON

Bucking wind and whitecap, the

"I RECKON it's just across this bay and around the next mountain!" shouted Nance, clutching the soggy chart in one hand and the rigging with the other, while the *Cristoden* jumped and bounced.

"And how far's that, please?"

"Quarter of an inch on this chart!" she yelled against the wind.

But what a quarter of an inch! The wind howled and the rain drove and the sea, fretful and breaking, was throwing the little ship all over the place. Great sprays drove over us all, gathered by the wheel. No sooner had we crossed that bay than another bay and yet another mountain came into gloomy view, and the rain swept down in torrents.

Our fat ex-Dutch *botter*, a sort of yacht built on barge lines, was bucking like a bad-

author heads *Cristoden* out of a Highland loch on a 2,500-mile odyssey through Scottish waters

tempered bronco as she staggered along the uncomfortable and salty way, pounding and punishing herself and us. But she could take it, and what did we care? Those gloomy mountains were beautiful, too, and this was the Isle of Skye. It was the famous Skye Week in Skye, the last week in May, and we would soon be in. Quarter of an inch, indeed! It took us three hours, spray in the face, spray in the ears, salt in the eyes.

North About by Scottish Shores

We were bound on the most wonderful cruise offering anywhere in the northern European world—Clyde to Clyde north about, around beautiful old Scotland by her lochs and her canals and her glorious isles (map, pages 496-7).

Our ship was a chartered Dutchman, a stout, seaworthy, and comfortable vessel with a strong diesel down below and sails enough to drive her along very nicely with anything like a favorable wind. She had been a fisherman in the North Sea once, but now she had three good cabins and a nice saloon below, a reasonable galley—even a bath. She was the ideal means of seeing Scotland from the sea. With her, we could go anywhere, even round those stormy Western Islands, and have our own accommodation when we got there.

Heaves on a capstan bar swing lock gates on Scotland's Caledonian Canal. *Cristoden's* crew often helped keepers walk the gates open or shut.

Tight going in the Crinan Canal keeps all hands alert. "Our fat Dutchman," says the author, "drew nearly six feet with her centerboard up, and here the canal was six deep. But we squeaked through."

A nine-mile cut opened in 1801, Crinan Canal avoids a 120-mile run around the Mull of Kintyre. Once well traveled, it now serves occasional small freighters and yachts.

Both Nance and I had seen something of Scotland in the war. We were married at Fort William. Our first son was born in Glasgow. Now we could revisit old haunts, and please ourselves—we could go anywhere.

We had found our Dutch *Cristoden* in North Wales and sailed up to Clydeside earlier in the year. Our crew were *Mayflower* veterans Ike Marsh and Graham Nunn—Ike who'd been boatswain of the 17th-century copy and was now 60 years old, and Graham Nunn, aged 19, who had been the choice of British Boys' Clubs as one of the two ship's boys.*

From time to time we called in other

*Captain Villiers wrote in the NATIONAL GEOGRAPHIC: "We're Coming Over on the *Mayflower*," May, 1957, and "How We Sailed the New *Mayflower* to America," November, 1957.

Forty years a sailor, Capt. Alan Villiers writes of the sea with zest and authority. He has shipped aboard Antarctic whalers, raced in the last of the Australian grain ships, commanded Normandy invasion craft, and skippered *Mayflower II* across the Atlantic. NATIONAL GEOGRAPHIC has carried many of his adventures under sail.

For his latest exploit, Villiers chartered a broad-hulled Dutch *botter*, a onetime North Sea fisherman with jib, mainsail, and diesel engine. In it he sailed from Clyde to Clyde by way of Scotland's storied lochs, canals, and kyles. The map traces his 10-week voyage.

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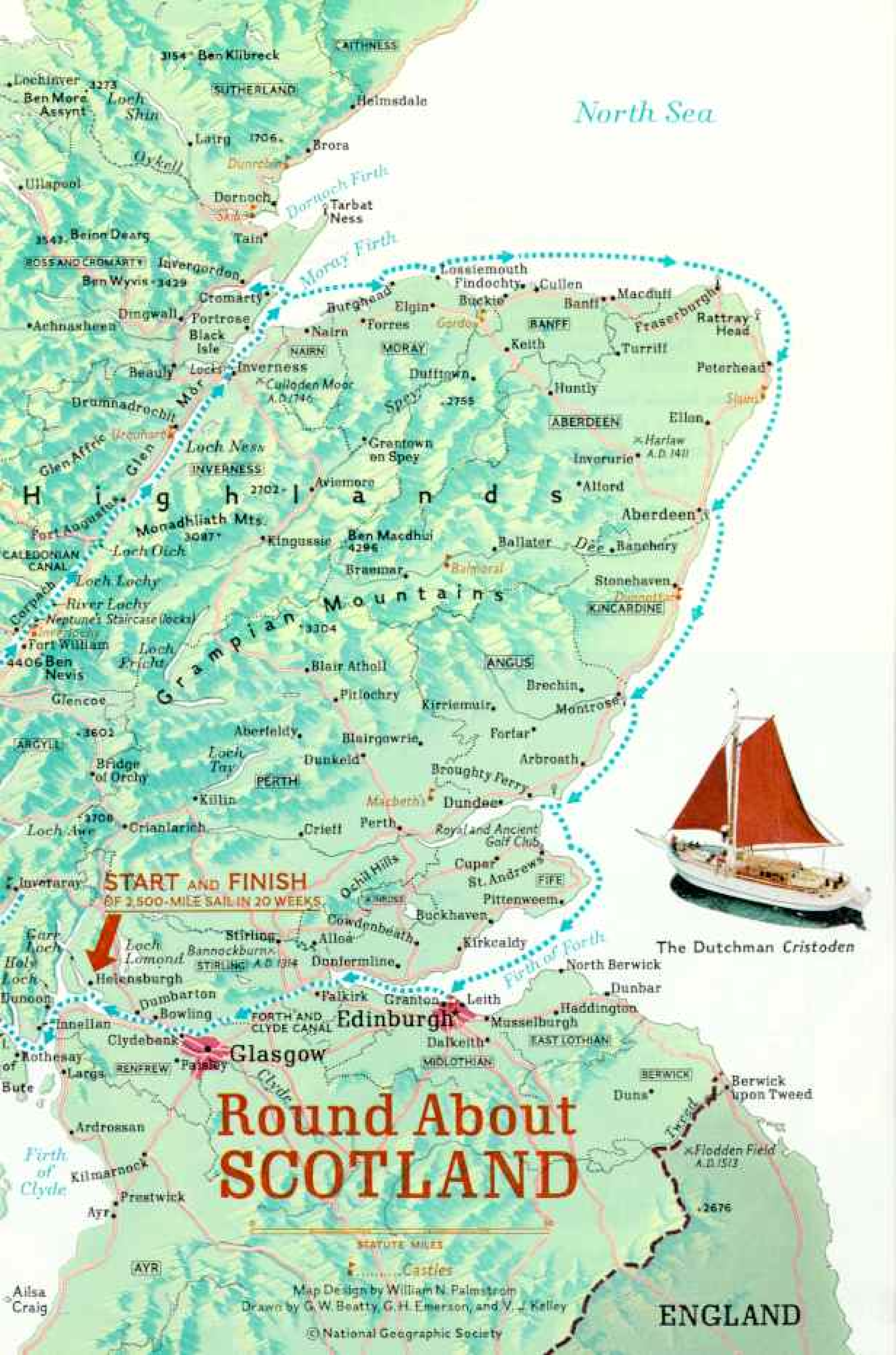

Round About
SCOTLAND
START AND FINISH
OF 2,500-MILE SAIL IN 20 WEEKS
The Dutchman Cristoden
North Sea
CAITHNESS
3154 Ben Klibreck
Lochinver
3273
Ben More Assynt
Loch Shin
SUTHERLAND
Helmsdale
Lairg
1706
Brora
Oykell
Ullapool
Dornoch
Dornoch Firth
Tarbat Ness
Tain
3547 Beinn Dearg
ROSS AND CROMARTY
Invergordon
Moray Firth
Ben Wyvis 3429
Cromarty
Dingwall
Fortrose
Achnasheen
Black Isle
Burghead
Elgin
Lossiemouth
Findochty
Cullen
Buckie
Banff
Macduff
Fraserburgh
Rattray Head
Nairn
Forres
BANFF
Keith
Turriff
NAIRN
MORAY
Peterhead
Beauly
Inverness
Culloden Moor A.D. 1746
Dufftown
Huntly
Drumnadrochit
Glen Mor
Spey
2755
Ellon
ABERDEEN
Harlaw A.D. 1411
Glen Affric
Loch Ness
Grantown on Spey
Inverurie
INVERNESS
Glen
Aviemore
2702
Alford
Highlands
Fort Augustus
Monadhliath Mts.
3087
Kingussie
Ben Macdhui 4296
Aberdeen
Ballater
Dee
Banchory
CALEDONIAN CANAL
Loch Oich
Braemar
Balmoral
Stonehaven
Loch Lochy
Grampian Mountains
KINCARDINE
Corpach
River Lochy
Neptune's Staircase (locks)
3304
Fort William
4406 Ben Nevis
Loch Ericht
Blair Atholl
ANGUS
Brechin
Glencoe
Pitlochry
Kirriemuir
Montrose
3602
Aberfeldy
Blairgowrie
Forfar
ARGYLL
Loch Tay
Bridge of Orchy
Dunkeld
Arbroath
Broughty Ferry
PERTH
Killin
Macbeth's
Dundee
3708
Loch Awe
Crianlarich
Crieff
Perth
Royal and Ancient Golf Club
Inveraray
Ochil Hills
Cupar
St. Andrews
FIFE
Pittenweem
Buckhaven
Cowdenbeath
Loch Lomond
Stirling
Alloa
Bannockburn A.D. 1314
Kirkcaldy
Firth of Forth
STIRLING
Dunfermline
North Berwick
Holy Loch
Helensburgh
Dunbar
Dunoon
Dumbarton
Falkirk
Granton
Leith
Haddington
Innellan
Bowling
FORTH AND CLYDE CANAL
Edinburgh
Musselburgh
Clydebank
Dalkeith
EAST LOTHIAN
Rothesay
Glasgow
MIDLOTHIAN
Largs
RENFREW
Paisley
Bute
Clyde
BERWICK
Berwick upon Tweed
Duns
Tweed
Ardrossan
Flodden Field A.D. 1513
Firth of Clyde
Kilmarnock
Prestwick
Ayr
2676
STATUTE MILES
AYR
Castles
Ailsa Craig
Map Design by William N. Palmstrom
Drawn by G. W. Beatty, G. H. Emerson, and V. J. Kelley
© National Geographic Society
ENGLAND

good mariners to assist, for, though small enough by big-ship standards, the broad-beamed Dutch botter handled best with a crew of four or five. Bob Sisson, staff photographer of the National Geographic, met us in the Clyde. Godfrey Wicksteed, ex-mate of the *Mayflower* and an old hand at cruising in Scotland, came when he could be spared from his duties at a teachers training college in Leeds. For the rest, the crew were our family—Christopher, aged 16, Katherine, 14, and Peter, 11. They could come only in vacations from their schools.

Burnt Islands Burn No More

With such a crew in such a ship, our passage was a happy romp—from off Helensburgh in the Firth of Clyde, past Holy Loch with its laid-up merchant ships (where someday Polaris-missile submarines may moor), past picturesque spots with names like Dunoon and Innellan and Rothesay, and on up the Kyles of Bute to the narrows there by the Burnt Islands, where there was said to be a vitrified fort. What is a "vitrified fort"? I didn't know. Who burned the Burnt Islands? And what, for that matter, are "kyles," and what is "Bute"?

We sought answers to all such questions, and had the time to find them. Kyles, it seems, are straits, and Bute is the name of an island. As for the Burnt Isles and their fort, we landed by dinghy and found nothing there—no slightest trace of any fort, only rough rocks at the sea's edge and the low land covered with soft and springy long grass, very wet, with sea gulls' nests everywhere and the disturbed gulls shrieking over us.

Vitrified forts, we found, are for archeologists with patience and tools to dig for them, and the islets had last been burned some centuries before—in 1685, to be precise, when the Earl of Argyll's garrison blew up the place, alarmed at the near approach of some ships of King James.

We anchored for a night in Loch Riddon,

Rain and salt spray whip *Cristoden*'s helmsman: an "all-too-common day in the Western Isles," the author comments. Mainsail furled, *Cristoden* pounds to windward under power. Blue-capped Captain Villiers and Graham Nunn, both in oilskins, man the deck.

Barging through Scotland, *Cristoden* follows the Crinan Canal past tree-shaded Ardrishaig. Here, as in other canal towns, boatmen often drop off to do errands while their vessels wait in locks slow to fill or empty.

a quietly beautiful arm of the sea stretching northward from the kyles, one among many of the pleasant and protected sea lochs which make cruising in Scotland's waters so interesting. Then we sailed on down the western strait, and later put the anchor down off a ruined small castle near Lochranza, on the Island of Arran.

The beauty of this western Scots cruising is that there are so many good places in these sheltered straits and long sea arms called lochs. (A lake is also a loch, and so is a bay sometimes.) If the wind blowing

Iona, Scotland's Sacred Isle, Greets Visitors From an Excursion Ship

In the darkness of the seventh century this three-mile-long island of rock and heather shone as a beacon of Christianity. Celtic missionaries from Iona spread the gospel across Scotland and carried culture and learning as far as Germany and Switzerland. Saint Columba died on Iona; kings were borne to burial in its hallowed ground. Viking raids started an eventual eclipse.

These visitors land by tender from their interisland steamer, *King George V*, anchored off the shallows. Granite hills of the Island of Mull mark the horizon.

freshly in makes one anchorage untenable, there is always somewhere else to go for shelter—so long as you can see.

Mists and rain can be blinding and stay that way for weeks, even when the calendar has arrived at the period known officially as summer. We were lucky. It rained, of course, but it was often the soft and gentle rain, so common in those Scottish lochs, that touches the water with swift, soft circles and is so light the brief perfection of these circles is its only evidence, for it cannot be felt on face or hair.

A night's rest at Lochranza, and so on again we sped toward the north, sailing with a favoring wind and the big botter gliding silently and upright, quiet as a Boeing 707 in the stratosphere.

We had to go north before we could head west for the Western Islands. But first we went up Loch Fyne (famous for its herring once) as far as Inveraray, and then back to pretty Ardrishaig for passage of the Crinan Canal. That nine-mile stretch of climbing and descending waters, some 30 feet wide and 10 deep, shifts small vessels by 15 locks from the waters of Loch Fyne to Loch Crinan on the Sound of Jura. It takes four hours, if they hustle. We didn't.

Charging Lock Gates Full Tilt

A special type of little coaster called a "puffer" has been developed for these canals of Scotland. Its upright boiler puffs like a noisy, panting dog. We sailed past one at Ardrishaig, a wall-sided, bargelike little thing with engine, boiler, and bridge jammed into minimal space at one end, mast and winch at the other, and the cargo hold taking up maximum space between (page 508). The puffer puffed past, flat out at five knots, bound light toward the Clyde.

I entered the canal at Ardrishaig warily, for this ditch stuff was a new kind of navigation to me (pages 494 and 498). I find that the water spilling out sets up a current which I must use full power to stem, despite my caution, and charge at the fragile lock gates with alarming speed. No worries, though! The Dutchman is in part designed for such canals. She handles beautifully and brings up short, inches from the waterfall over the lock gates. I quickly accept the offer of the services of an old lock man, Alec McCallum, aged 70, to help us through.

We use a sunny day very pleasantly charging through the canal, climbing up one set of locks and down another, pushing open heavy wooden lock gates, opening and closing sluices, charging at steel bridges which always open in time but sometimes just, being swung laboriously by hand at the last moment.

KODACHROME © NATIONAL GEOGRAPHIC SOCIETY

Everywhere the scene is marvelous—away to the north the jagged mountains of the Highlands, and in the west the sea and the distant isles. Near the canal's western end is a queer round hill where Scotland's early kings were crowned, says Alec McCallum, the lock keeper. Here and there are the ruins of castles, blending perfectly with the wild background, mellowed clusters of harsh old rock crowning strategic hills.

We smelled the bottom more than once and sheered very close to the banks all too frequently. But we passed out of the sea loch bound into the Sound of Jura and by the Gulf of Corryvreckan toward Iona with the unanimous reflection that if this was Scots canal cruising, we were for it.

Our next stop was the fabled isle of Iona with its restored Abbey Church and tombs of ancient Scottish kings (pages 502-3). Macbeth and Duncan, Scotsmen say, lie there beneath moss-grown effigies in stone. The whirlpools of Corryvreckan are quiet as we sail past, and the mountains of Mull are a blue and beautiful wonderland to the north.

At Iona the work of restoration on the abbey is all but completed. We found technicians putting in electric light for the first time in its history. Visitors flocked there by excursion steamer (above), and many pilgrims came, for this lovely small island—it is only a few square miles—saw the birth of Christianity in western Scotland.

Few Crofters Still Farm Rocky Coll

From minute, fascinating Iona, we could see the islands of Tiree and Coll. That learned but pessimistic work published by the Admiralty called the *West Coast of Scotland Pilot* advised that anchorage off Arinagour at Coll should not be attempted without "local knowledge." We had no local knowledge for any of these islands, beyond what we acquired as we went along.

"Don't go in," said Nance, cautious as always.

"I've got the Clyde Cruising Club sketch plans," I said, referring to a folio of excellent small charts acquired in Glasgow. "We draw less than six feet. It's clear, and the sun's behind us. Here we go!"

Coll was the sort of place we liked, a real piece of the Western Islands, unspoiled and unspoilable, despite its loss of population in recent years and the decline of its fishing and its agriculture. It is low and small and off the beaten track.

Here we met a cheerful Scot, hospitable as all his kind, named Guy Jardine, who kept the local pub, ran a croft, and owned one of the very few vehicles on the island. Mr. Jardine had been a rancher in central Africa for 30 years and retired to Coll to settle down. We gathered from him that Coll's population was down to 150 souls, and that the island's two castles, one old and the other new, were alike abandoned.

Iona's abbey enshrines a stone said to have served as a pillow for Saint Columba, who came from Ireland A.D. 563 and made the island a center of Christianity. Blue Hebridean seas sparkle between the restored Norman church and Mull.

St. Martin's Cross, carved by Celtic sculptors in the tenth century, stands before the Abbey Church.

Macbeth and murdered Duncan lie in Iona's graveyard of kings, though their exact resting places are unknown. Sixty-odd monarchs of Scotland, Ireland, and Norway are buried here. Captain Villiers and his wife Nancie visit the mossy cemetery.

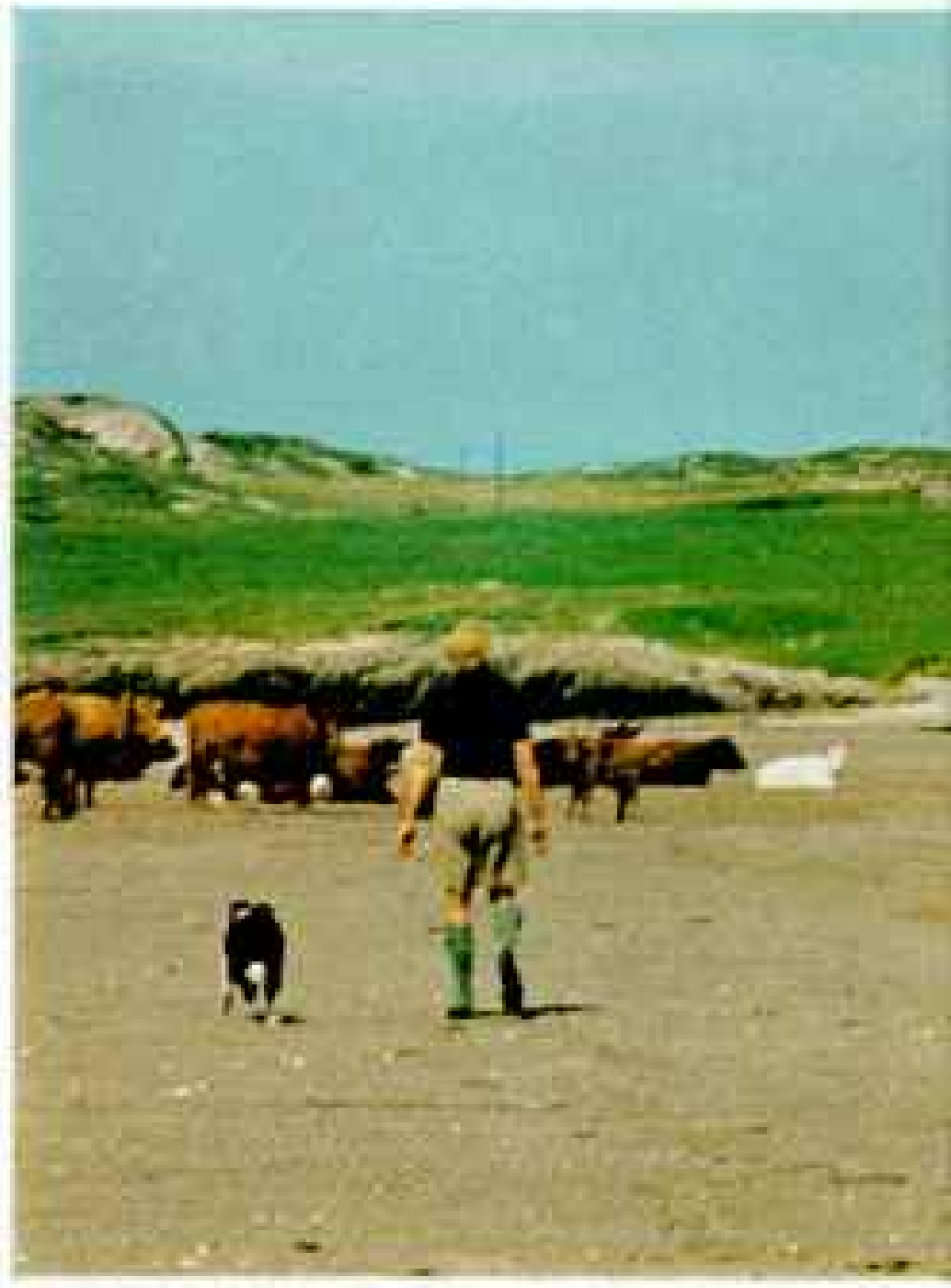
We visited these castles with our new friend and his little red truck, driving over rough roads and rougher fields. We bumped along to a wide, gently shelving beach where the cattle stood at the water's edge. (To them, it was a warm day.) Facing the bay-loch here were the two castles, the one a medieval stronghold in honorable ruin, the other an 18th-century manor which seemed greatly out of place (right). The last laird to live there died in 1939, we were told; his heirs, faced with colossal upkeep costs, simply shut up the castle.

"Some of the library is still there, and a bit of furniture," said our guide. "It's all just going to ruin."

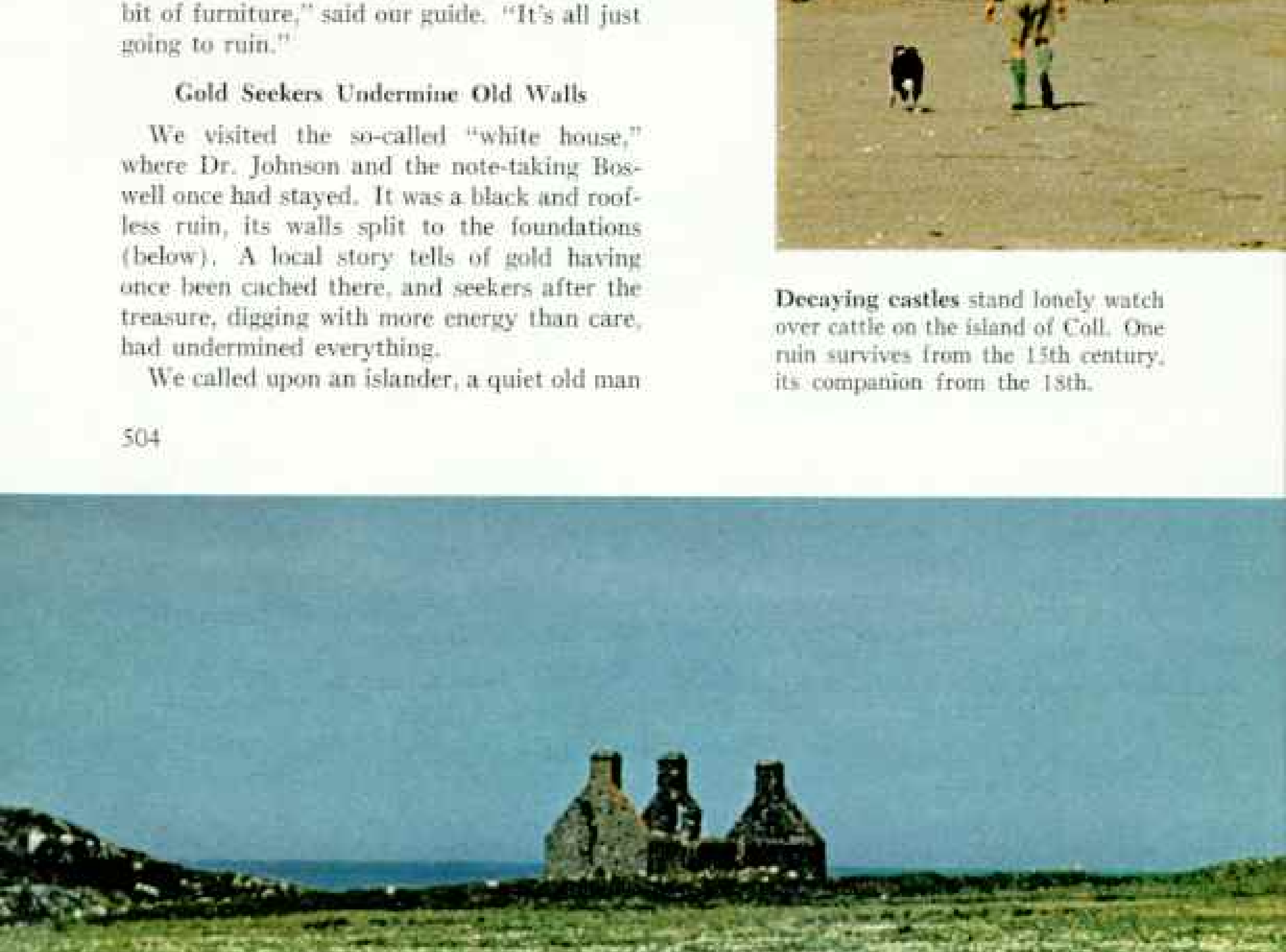
Gold Seekers Undermine Old Walls

We visited the so-called "white house," where Dr. Johnson and the note-taking Boswell once had stayed. It was a black and roofless ruin, its walls split to the foundations (below). A local story tells of gold having once been cached there, and seekers after the treasure, digging with more energy than care, had undermined everything.

We called upon an islander, a quiet old man



Decaying castles stand lonely watch over cattle on the island of Coll. One ruin survives from the 15th century, its companion from the 18th.



Carpet of wildflowers leads the author toward a ruin on Coll where Samuel Johnson and James Boswell found lodging in 1773. Islanders call the structure the "white house," perhaps because chimneys saved it from soot of peat fires. In "black houses," smoke escapes through a hole in the roof, darkening the ceiling. Host Guy Jardine (right) guides Captain Villiers and his wife.

known as Soldier, whose last soldiering had been in the Boer War. Soldier, aged 80 or thereabouts, sat at his peat fire with Morag, his cheerful wife of like age, while we yarned awhile (below).

Outside lambs gamboled or sought, frisky-tailed and energetic, to grab a quick meal from their mothers. Ducks quacked, hens clucked, and the little burn bubbled endlessly over its numerous rocks. The thatched roof was held down by a string of large stones garlanded round it, pendent from an arrangement of wire netting like a woman's hair net.

"Haven't been in town for fifteen years," chuckled old Soldier, meaning Arinagour (two churches, one street, two stores).

"That he hasn't," smiled Morag. "This will do for us!"

The big kettle sang upon the hob, and the neat little cottage reeked with the pleasant smoke of slow-

Coll's rocky bones poke through thin sod beside a crofter's cottage. Driftwood fences and stone walls pen sheep, the island's mainstay.

Peat fire warms the hearth of old soldier Neil McGinnes and his wife Morag as Guy Jardine (left) and Villiers pay a call. Clothes dry on the mantel rod on a dour day.

burning peat. We liked Coll, with its lonely beaches, its almost Mediterranean sea and sky, its peaceful solitude.

"But don't come back in a winter gale!" was the parting advice of Mr. Jardine.

We had heard of the islanders of Tiree, Coll's nearest neighbor, whose gait is supposedly recognizable anywhere in Scotland by the curious shambling angle of approach caused by so often fighting to stay upright against the wild westerly gales. But no wild westerly blew as we sailed quietly on toward Skye on a lovely May morning.

We sailed at 3 a.m., already light in those high latitudes, and wandered northward. All the Inner and many of the Outer Hebrides shone peacefully upon the tranquil sea, and the mountains of Mull and Lorne stood gloriously to the eastward. With a nice favoring breeze we made six knots, and the sea sang softly beneath the broad blue bows.

Into the Sound of Sleat we came sailing, and on through the Kyle of Lochalsh. Steering was so arduous, for the moment, there was scarce time to admire the wonder of our surroundings—upon the one hand, southern Skye, hill upon hill, rolling away toward the 3,000-foot Cuillins; upon the other, half the Highlands of Scotland, with the blue arms of mountain-sided lochs stretching deep into the beautiful valleys, where sunshine and shadow painted wondrous patterns.

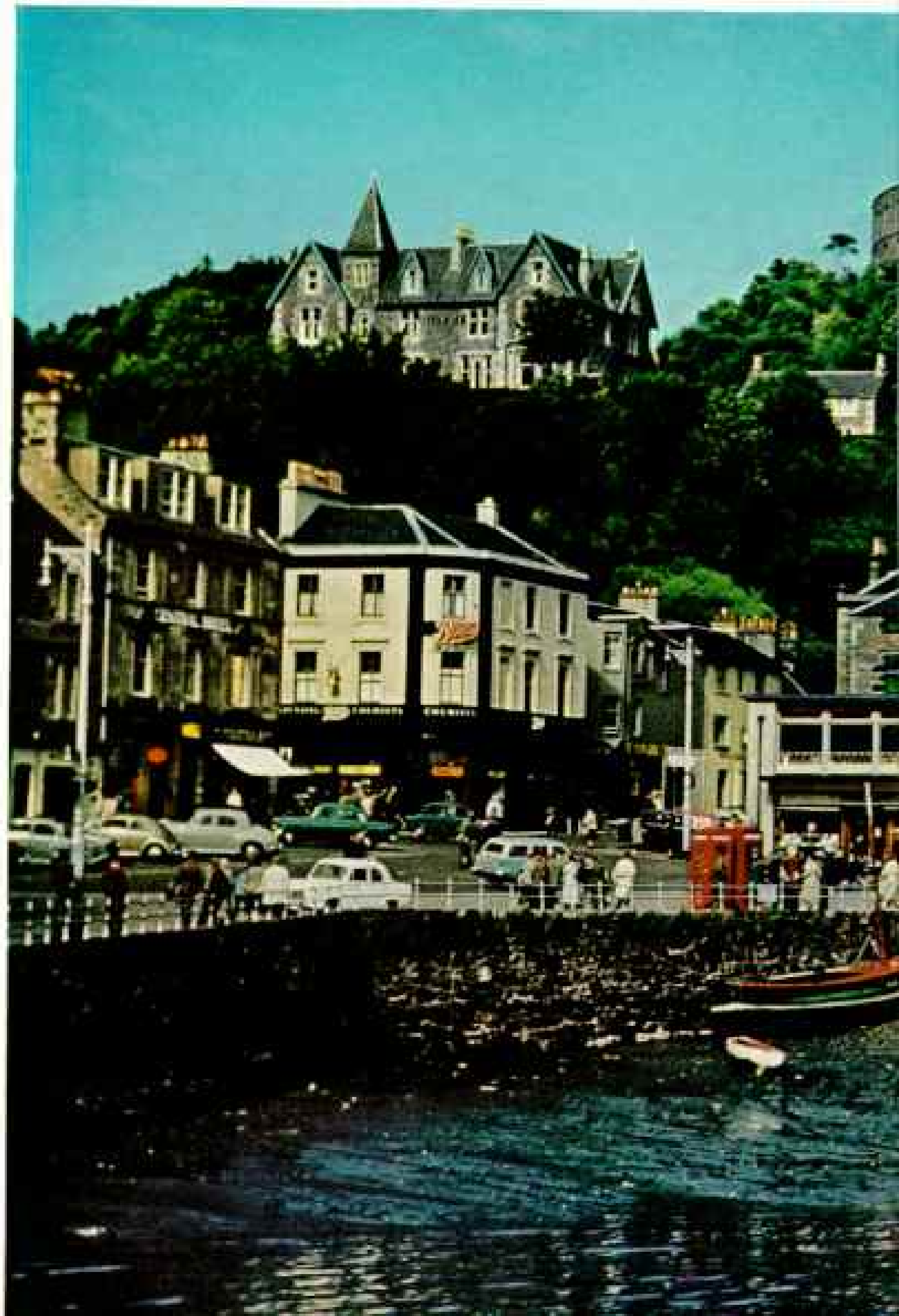
For a while the wind came from the north, and we began an infernally wet and jumping pound of it, staggering along the uncomfortable, ancient, salty way until we reached some shelter. I wondered how the Vikings had managed with their vessels in these waters. They had ruled here for centuries, dominating all these islands, and their burial places are still to be seen back among the hills.

Pipes Skirl a Welcome to Skye

And so we came to Portree, principal and best-sheltered haven in Skye, and anchored near the pier. A water carnival was in progress as part of Skye Week, and a fast outboard towing a shivering water-ski expert set up a jumping wash as it crisscrossed the harbor. Banners flew everywhere. Bagpipes skirled romantically. Welcome to Skye!*

*See in the National Geographic: "Poets' Voices Linger in Scottish Shrines," by Isobel Wylie Hutchison, October, 1957; and "Over the Sea to Scotland's Skye," by Robert J. Reynolds, July, 1952.

High and dry on purpose, a puffer discharges her cargo on Iona. The freighter ran onto the beach at high tide. Now, balanced on her flat bottom, she winches oil drums into a truck. Carrying cargo to and from the islands, she puffs "like a noisy, panting dog," says Captain Villiers. "Puffers need no piers," he adds. "That way, their canny Scottish owners save port fees whenever possible."



"McCaig's Folly" Crowns Oban

A circular building that the author calls "too big to roof, too empty to use," McCaig's Tower took shape in the 1890's. The Oban banker for whom it was named built it to memorialize his family and give work to masons laid off by a depression.

From Oban, a fishing port and resort center, cruises run to Scotland's Western Islands, and tours set out to the Argyll countryside.

Skye is the second largest island in Scotland, measuring some 50 miles from north to south and as much as 25 miles across. We had come primarily to attend the famous MacLeod Day at Dunvegan Castle; so, hiring a car, we hurried off toward Loch Dunvegan. The coastal road climbed mountains, swung along clifftops, and wound its quiet and narrow way through scenery of stirring beauty.

The sun shone and the peat cutters were about. Once we passed a family doing its wash at a mountain stream. They had set up a large copper, such as whalemen used to use, to boil sheets. The stream rinsed and the keen, clear air dried the washed clothes, spread out upon the heather and the grass.

Against a background of distant mountain and near-by loch, Dunvegan Castle stands solid, dominating, upon a sheer wall of rock. A castle has stood at that spot for more than a thousand years, and this stronghold of the Clan MacLeod has been lived in by the same family for at least 700 of them. From the battlements the wild music of the Scottish pipes had roused the countryside to arms, to victory, to rejoicings or lamentations.

Now the music of the pipes floated down again, welcoming the returning MacLeods to the ancient headquarters of their clan. MacLeods streamed past us, the manner of their garb proclaiming some to be from America, some Australia or New Zealand (next page).

Dame Flora MacLeod Leads a Pilgrimage on the Island of Skye

Behind a piper, the 83-year-old chief of the Clan MacLeod sets out to honor Scotland's masters of the bagpipe.

A wind-swept cairn on Skye marks the site of Boreraig, where the MacCrimmons, hereditary pipers to the MacLeods, taught a celebrated piping college. Legend tells that the MacCrimmons got their gift of music from a fairy, and that an ancestral spirit helped one of them compose a famous air now known as "MacCrimmon's Sweetheart." Neophytes trained for seven years here to win their piper's diploma.

The last MacCrimmon piper of note died in the 1820's, and Boreraig dwindled into ruin, but the MacLeods hope to revive the college.

ARRIVING (ABOVE) BY MARCIE VILLIERS AND HIGHLANDERS BY ROBERT F. JOSCH © N.G.S.

Both doughty Scots: Skye resident Seton Gordon, author and naturalist, and his cairn terrier Morag (Gaelic for Sarah), the secret name by which fleeing Prince Charlie was known to his followers.

Cairns won their name for an ability to squeeze into rock piles for foxes and wildcats.

Dunvegan Castle, home of Dame Flora, 28th chief of the MacLeods, overlooks a clan gathering during Skye Week. Clansmen journey from afar to attend MacLeod Day. MacLeods have lived in the castle for seven centuries. The piper plays a lively air to encourage the hikers.

The chief of Clan MacLeod stood smiling on the parapet before the castle. Dame Flora MacLeod of MacLeod, aged over 80, is a Dame of the Order of the British Empire and 28th chief of MacLeod. Her world travels helped to make this MacLeod Day such an international occasion.

Clan Gathers From Around the World

"We hold MacLeod Day so we can all get to know each other better," said Dame Flora, taking a moment off from welcoming the hundreds of guests and visitors. "It is a grand opportunity for MacLeods from all over the world to exchange greetings."

The clan spirit is strong and growing even stronger, though the real significance of the clan system has been gone from Scotland since the failure of Bonnie Prince Charlie to restore the Stuarts to the throne of Britain in 1745-46.

After that hopeless rising of the clans against the Hanoverians of England, the wearing of the kilt and the carrying of weapons were alike prohibited. It was the time of the infamous "clearances"—the clearance of the clansmen and the substitution of sheep—when shipload after shipload of Highlanders sailed for the United States, for Nova Scotia (where descendants still speak the Gaelic and wear the kilt on occasion), for Australia and New Zealand.

We went to a place called Boreraig at the Atlantic end of Loch Dunvegan, where the MacCrimmons, historic pipers to the chiefs of MacLeod, for 300 years held a famous piping college. Dame Flora made the journey from her castle by boat, with a piper deafening all hands in the bows; a wild and moving sound somehow right for those parts.

The finer points of all this piping were explained to us by Seton Gordon, well-known Highland naturalist and writer and himself a noted judge of the bagpipes (page 510). We found Seton, like other thoughtful Highlanders, much concerned with the problem of depopulation. Skye's permanent population, he said, was three thousand down since the last census of more than eight thousand. For many young people cannot find employment at home. Tourists, though welcome and plentiful, are not a complete answer. What the Highlands and islands need are people—permanent residents.

"They are closing our Boreraig school for the lack of children to attend it," said a local lady, somewhat sorrowfully, but added brightly that a baby was born there last week! They need more than one baby to get that school to open again.

KODACHROME BY ROBERT F. SISSON © NATIONAL GEOGRAPHIC SOCIETY

North to the Outer Hebrides

It had been my plan to sail around Skye and among the small islands, and then to make for Oban and Loch Linnhe and so into the Caledonian Canal. That way would bring us to Loch Ness where we had, I hoped, a date with the famous monster reputed to live there.

But now here we were on Skye, and the wind set in southwest, with forecast of fresh westerlies to follow. Why not sail over the Minch to the romantic Isle of Lewis, and roam for a while among the Outer Hebrides (map, page 496).

So we used that favoring wind and sailed forthwith to visit them while the chance was with us, northbound from Skye toward the Isle of Lewis. The Vikings had sailed this way. The Picts and Scots had sailed here in flimsy craft, and the Irish in their curraghs. Where they could go,

Old Hands, Their Average Age 68, Man a Drifter in the Minch

Drifters earned their name by shutting off power and gliding with the current over herring grounds. They trail mile-long nets.

Radium was built in 1904, when that element's discovery was still news. The author, who met her crew at Stornoway, fished with them for a night. Recently *Radium* was sold to a navigation school in Aberdeen to teach recruits. "We are all finished with the sea," says her owner, William James Campbell, "and our lifelong time at the fishing."

Fresh winds, racing tides, and uneven bottom make sailing hazardous in the Minch, a tricky strait between Scotland and the Outer Hebrides.

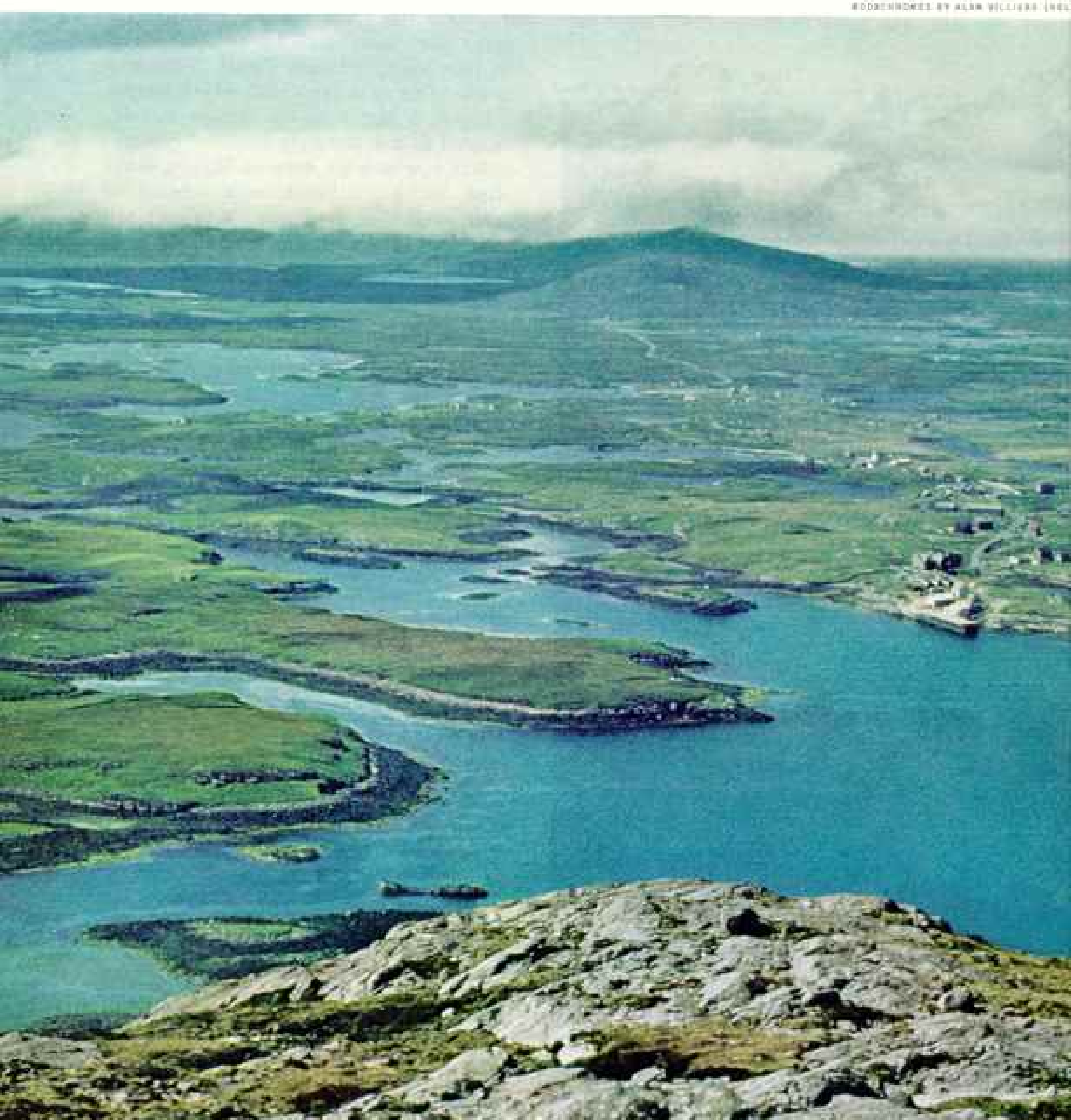
surely also could we, with a well-found and able vessel.

Our destination was Stornoway, chief town of Lewis. The rain was driving and visibility was poor. A thousand sea gulls, all fat and sleek, circled to meet us. In the harbor at the head of the inlet we could see all sorts of fishing vessels.

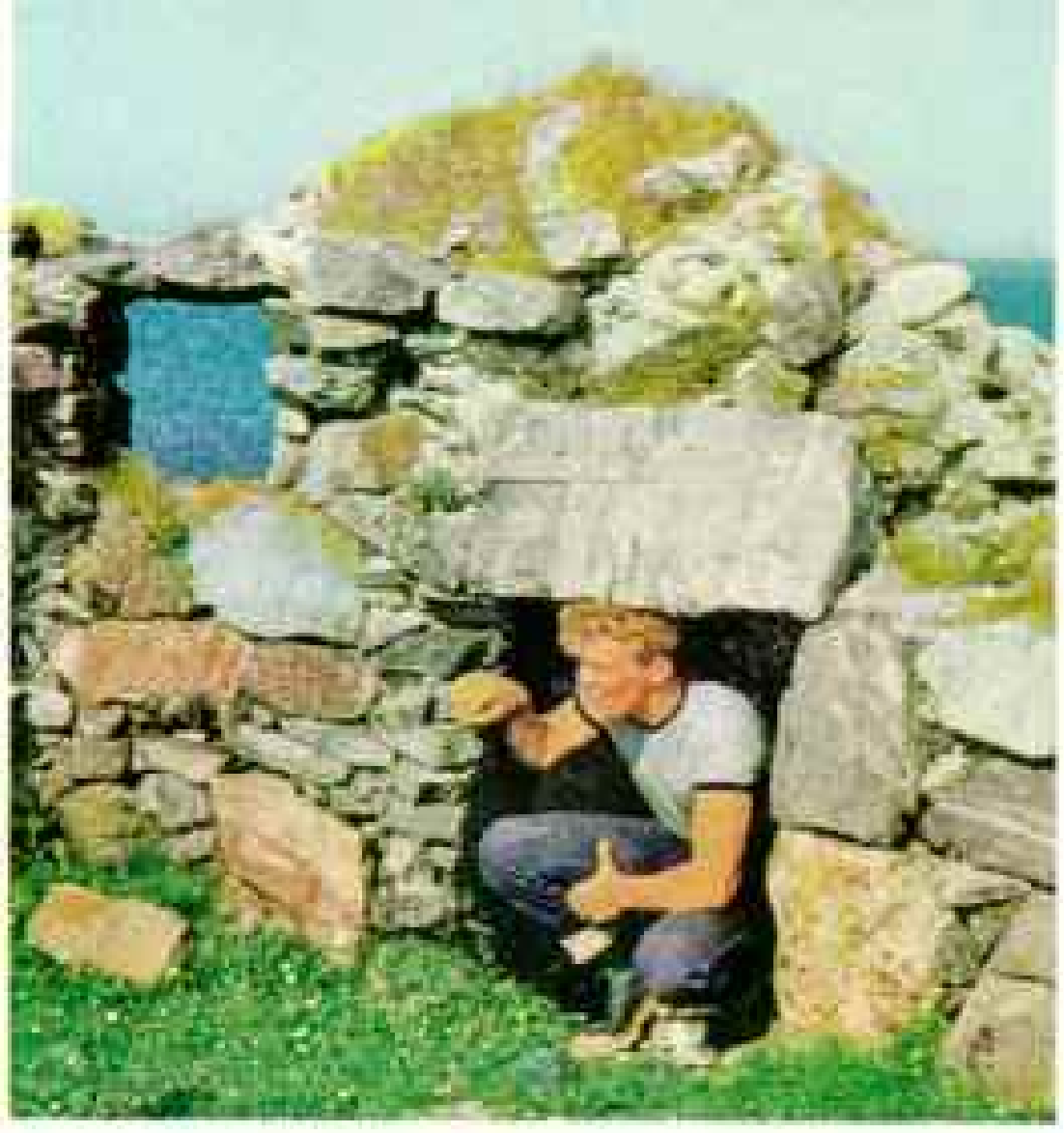
Radium Nightly Nets Herring

At Stornoway we met a wonderful old fishing ship called the *Radium*, from Findochty on the Moray Firth. The *Radium* looked a hundred years old, and her crew was a remarkable group of old boys, every one of them a pensioner. We berthed near this vessel and became friendly with the crew, whose average age was 68, and the youngest 65.

There was a lot of very bad weather while we were at Stornoway, but always the little old *Radium* made her nightly runs to sea to fish the wild Minch and bring back herring. She was a drifter, I learned, a fisherman 78 feet long that caught fish by the simple means of paying out a mile or so of nets and then lying to the lee end of them, drifting, while the shoals of fish impaled themselves by their gills, to be hauled in when dawn came. It seemed simple, but the trick was to put the net out where the fish were.

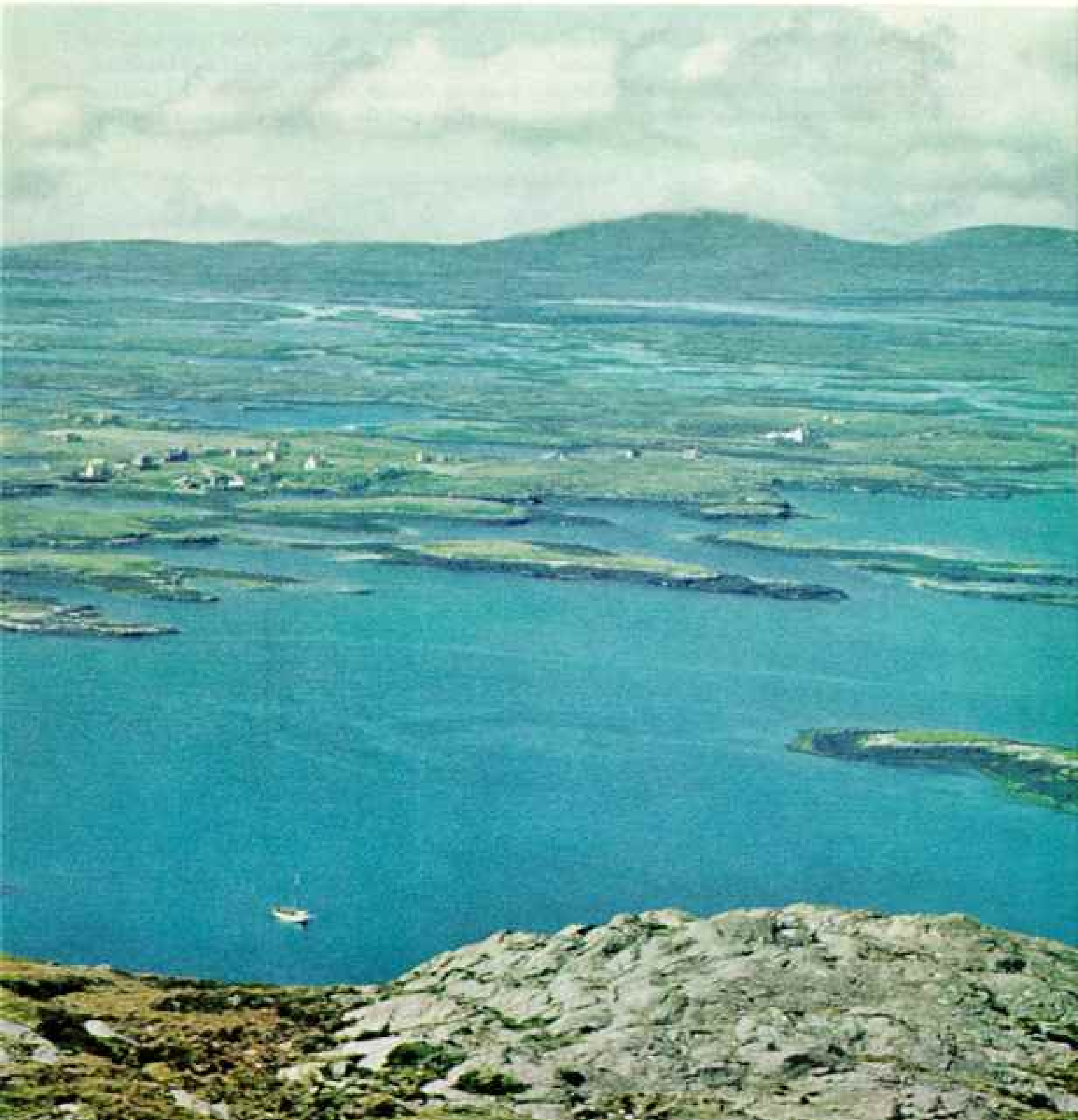


Ruined castle on Calvay sheltered Bonnie Prince Charlie—Charles Edward Stuart—in his wanderings after "the '45"—the Stuart attempt in 1745 to regain Britain's throne.



Loch Maddy's blue maze spreads beneath a vantage point on Ben Lee. Islanders say the area has a loch for each day of the year. The entire island of North Uist was for sale when the author visited it, including the township of Lochmaddy, clustered around its pier.

Cristoden waits at anchor below.



I made a trip out with the old boys.

"Our ship was built in '04," owner William James Campbell told me. "She was a sailing ship first, what we call a wherry. But we put an engine into her in 1910. Have to keep up with the times, you know. Can't call a ship the *Radium* and not be modern."

Campbell had been with her for 52 of her 55 years, and had owned her since 1914. But he didn't skipper her. He left that to young John Smith, aged 67, who had been in the ship only 30 years.

Old-timers Fish Without Gadgets

We sailed early one evening, going out quietly to sea as the day fishermen were coming in. We went well out in the Minch. I was invited into the wheelhouse and squeezed myself in, with some difficulty. It had a large wheel, an outsize and rather elderly compass swinging above the helmsman's head, and the smallest possible hatchway that led down to the dark depths where the ancient engine was noisily at work. Abaft that, in the pointed stern, was a bit of a cabin with some shelves for bunks, a small cooking stove, a table and two benches, and little else.

On deck a large lifeboat was stowed aft. It had a look of some permanency, as if it was not moved very often. There was one small mast carrying a bit of a gaff-and-boom mizzen, to which the ship would lie through the night while the nets were out.

I looked in vain for modern instruments.

"Got none," said Campbell. "Don't hold with all these gadgets."

Skipper Smith explained that they went out on bearings. When certain hills and headlands bore in certain directions, and the weather was right and the state of the moon and tide,

and all that sort of natural thing, why they knew they'd as good a chance of getting on fish there as anywhere else, and shot their nets in a businesslike and orderly manner. That was that.

There were several other drifters, very much more modern, hurrying here and there, and we could listen to them chattering on their radios while their electronic fish loops and so forth pinged and the screens gave off flashes of blue light, and showed no fish whatever.

I noticed that all these modern fellows fetched up close by the *Radium* and shot their nets there, as near as they could to the same ground.

Our 55 nets, each 60 yards long and about 20 feet deep, were all carried in the hold. The work of getting the long line of nets joined up and properly into the water went on for quite a while, but that crew of old men worked as a splendid team (page 512). Heavy work bothered them not at all, nor did the motion of the vessel, nor the fact that her bulwarks were only about a foot high. A slip on deck, and those heavily clothed old men would have little chance in the sea.

But they did not slip. None ever had.

"We work here with the Lord," said another Campbell, a septuagenarian with a son master in a liner, and he smiled toward the heaving Minch as if he were a man who knew peace.

Tea to Sterilize the Tonsils

Toward midnight, when the nets were all out the way that they should be and the little vessel lay more or less quietly under her smoky rag of a mizzen, the old boys trooped down below. Two kept the deck, one in the

KODACHROMES © NATIONAL GEOGRAPHIC SOCIETY

Red Hand of Ulster, symbol of descent from an Irish king, emblazons the standard of The Macneil of Barra. A New York architect, Robert Macneil became 45th chief of the clan in 1915 and repurchased the ancestral estate at Barra, sold a century before.

Thrusting from a rocky islet, Kisimul Castle commands Castlebay harbor, which sheltered Viking ships and Clan Macneil raiders. The Macneil, born in Michigan, bought the ruin in 1937 and began restoring it. Quiet Castlebay thrived as a herring port until the fleet moved to Oban some decades ago.

wheelhouse (whence controls of what looked like old bicycle chain led down to the engine), and one on deck. The others gathered round the little cabin table and helped themselves to crackers and large hunks of cheese, the lot washed down with plenty of extremely strong tea—the sort of tea that sterilizes the tonsils and leaves dark tannic stains on pots and mugs. They quaffed it like water.

At the head of the table was a text, "Bless the Lord, O My Soul, and Forget Not All His Benefits." It looked as if it had been up there since 1904, beneath a rack of smoke-stained and very elderly charts, and I learned that indeed it had. For an hour or two, old gray heads nodded around the table, and strong tobacco fumes won a battle with the fuggy air. There was plenty of fresh air outside for those who wanted it.

They gave me an hour or so in one of the shelflike bunks—cupboard would be a better word. The headroom was all of 15 inches, and the bunkboards were not 22 inches wide. To raise one's head was to bang a beam, and the timbers of the *Radium* were hard.

At dawn we hauled. It was dawning by 3 a.m., and the hauling of those joined-up nets went on for hours—hours and hours and hours. It was soon evident that there were few fish. Here and there a herring flapped feebly, but there were not two boxes in the lot. The little ship rolled peacefully to her nets while the capstan groaned and the long rope was hove in around it, bringing the nets. I helped a little. It was tough, cold work.

"You know," said William James Campbell to me, paying no attention to the paucity of fish, "there's many a one sleeping ashore just now has never seen the wonder of the sunrise. We're fortunate men, we are."

"Fortunate? What about no fish?" I asked.

"That's fishing," said he. "Always hoping. A couple of boxes tonight, and fifty last night. As for that, if there's not good fishing in this Minch, there's none on this side of Scotland, anywhere. We take it as it comes."

Nobody got on fish that night. The herring just weren't there.

I was tired as a hunting dog when I got back, but the wonderful old boys were as fresh as larks. They cleaned up the ship and cooked themselves a fish breakfast before climbing into their bunks, and they would be away again in the early evening—five nights a week, but never Sundays.

Causeway Links the Outer Hebrides

On the island of North Uist we met engineers busily joining two islands of the Outer Hebrides into one, at least to the extent of connecting them by causeway. Such a connection had been made between South

Fog-shrouded cliffs of Rhum loom off the bow of *Cristoden*. Mate Ike Marsh's horn sounds a warning as the botter gropes through the Inner Hebrides. Graham Nunn keeps a sharp lookout.

AN EXTACHROME BY NATIONAL GEOGRAPHIC PHOTOGRAPHER ROBERT F. SISSON © N.G.S.

Lobster pots piled high, a Canna islander rows past his isle's Presbyterian church. Canna's population dwindles; no children are left to attend its one schoolhouse.

Uist and Benbecula early in the second World War. Now another was almost ready to carry traffic from North Uist to the other end of Benbecula, thus joining these three islands.* Engineer MacDonald, of Inverness, told us the new causeway would be open soon. You could ford across at low tide now, walking or with a Jeep.

North Uist was an attractive island, much of it carpeted with little wild flowers, golden or white. It was for sale, the whole 70,000 acres of it, lochs and all, with its fishing, deer coverts, and everything. You had to buy the whole island. It was not divided into lots (page 514).

I meant to anchor in or off Loch Uskavagh on Benbecula for an hour or so to launch Nance in her folding canoe, so that she could sail over to Skye in the track of Flora MacDonald. Here that young heroine had rowed Prince Charlie to a hiding place on Skye, tradition said, with the redcoats hotfoot after him. But more reliable history books said she recruited five stout Highlanders to do the rowing, and dressed the prince as her maid.

As we approached the loch, the wind got up and the sea looked gray and horribly cold. Flora might have been grateful for the fog, but Nance wasn't. Anyway, she was cooking the dinner.

So, with a doff of the sou'wester to brave Flora and her Highlanders, we sailed on to Loch Boisdale, to anchor off yet another place where Prince Charlie had hidden (page 515). We'd seen many such places all round these outer islands, where the prince had been a hunted fugitive for many months. He must

*Isobel Wylie Hutchison wrote of roaming "From Barra to Butt in the Hebrides" in the October, 1954, NATIONAL GEOGRAPHIC.

have slept in almost as many spots as George Washington, but he slept a lot rougher.

As we anchored off Calvay Castle, a wobbly rocket scarred the Hebridean sky, for South Uist has been developed into a rocket range. We saw this range distantly and were pleased to notice that it also grazed some cows. The cows are driven off when a rocket is fired.

American Macneil Rebuilds a Castle

At Castlebay on Barra we met The Macneil, Macneil of Barra, chief of the clan, to find him an unusual chief indeed. Robert Macneil of Barra is a Michigan-born American, a former architect practicing in Washington and New York. Now, with his wife Elizabeth, he has a summer home at Kisimul Castle at Barra and a winter home in Vermont. Officially recognized in 1915 as hereditary chief of his clan, The Macneil acquired the estates more than 20 years ago.

Seagirt on all sides, set in the midst of a romantic bay beside a lovely island, the old home of his ancestors appealed to the American. Its restoration would involve a real rebuilding, for the castle was a ruin and many of its stones had been carried off years before for ballast in local fishing smacks.

But Kisimul had long been the stronghold of the Macneils of Barra, though the family had moved to a more convenient home ashore in 1759 and had lost their estates less than a century later. The present chief bought the castle in 1937. Under the guidance of the Ancient Monuments Board, he began its restoration the same year. The British Govern-

ment gave its stamp of approval by an award of 9,000 pounds. By June of 1959 the work had so far advanced that The Macneil and his wife could move in. His flag was raised, and it blew proudly in the breeze as we landed by the ancient gates (pages 516-7).

The Macneil himself, kilted and bonneted, welcomed us. His castle is a splendid example of the stronghold type. Kisimul is a low, old, gray stockade with a five-story tower, rapidly approaching the state it was in two centuries ago. Not even a freshly painted sign indicating a telephone-cable crossing could give it a modern look.

Barra is a fascinating island, with its beach of cockleshells that is its airport at low tide. We had been told of this unique airport where the manageress put up a wind sock on a broom handle to guide the airplanes in. But we found that Katherine Macpherson had been provided with a permanent wind

Cool drink on a hot day refreshes a bonnie participant in Highland Games on Mull. She hails from Glasgow.

Piper's skirl sets feet a-reel in Highland Games at Inveraray. Judges rate contestants on grace and exactitude in following traditional movements.

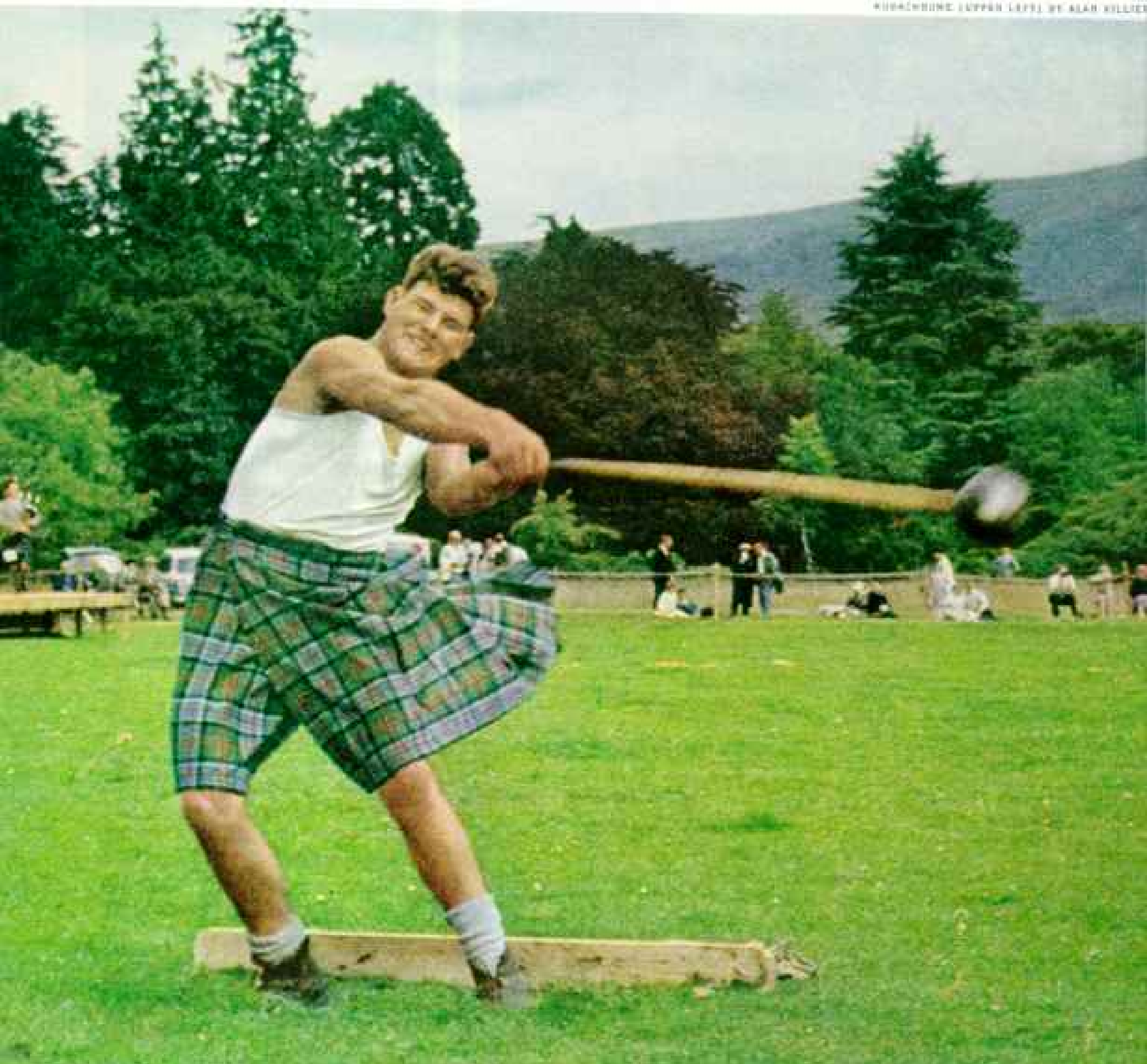
Purists frown on the wearing of the kilt and sporran, or tasseled purse, by women and children. Kilts, thought to have evolved from garb of the early Celts, have been worn by Highland warriors for centuries. The traditional full kilt was a 15-foot length of tartan that the owner spread on the ground and tucked into pleats; then he lay upon it and belted it around himself, pinning the upper part at the left shoulder. Today's *feile beag*, or little kilt, extends only from waist to kneecap.

sock, though she still had to test the surface of the beach with her fire truck half an hour before her airplane landed.

At Barra, too, we attended a local *ceilidh*, pronounced "cayley," a social gathering where the islanders follow one another singing songs and giving recitations in Gaelic.

It was a grand show in the village hall. Children and women sang strange songs, handed down through generations. Calum Johnston played the pipes and played them bravely, and Father MacMasters (I remembered him from my naval days) was a cheerful master of ceremonies. There was not a TV antenna in all Barra, and there was no electric power, either. Here were people who could amuse themselves in their own ways, by their own efforts.

HIGHLANDING (UPPER LEFT) BY ALAN ELLIOTT



Scots toss the caber, Gaelic for "pole" or "rafter," and throw the hammer, which the author describes as a "cannon ball on a stick." The Scottish hammer shank is stiff; in Olympic contests the hammer swings on a wire cable.

Size of a small telephone pole, the caber (right) must be balanced butt aloft and, after a short run, pitched to turn end over and fall with the tip pointing away. The feat may have originated in hurling logs to bridge a stream.

Tam-o'-shantered dancer at left came to Mull from California. Contestants below perform at Inveraray.

PHOTOGRAPHS BY ROBERT F. SISSON © N.G.S.

We sailed by Mingulay and headed eastward to look at the Small Isles—Canna, Rhum, Eigg, and Muck, none very large but all very mountainous.

In good visibility you can see them all at once. At Canna we spent the Fourth of July with John Lorne Campbell, the laird, and Margaret Shaw Campbell, his American wife. The harbor was beautiful but almost deserted. The one local school had long been closed for the lack of children to attend it.

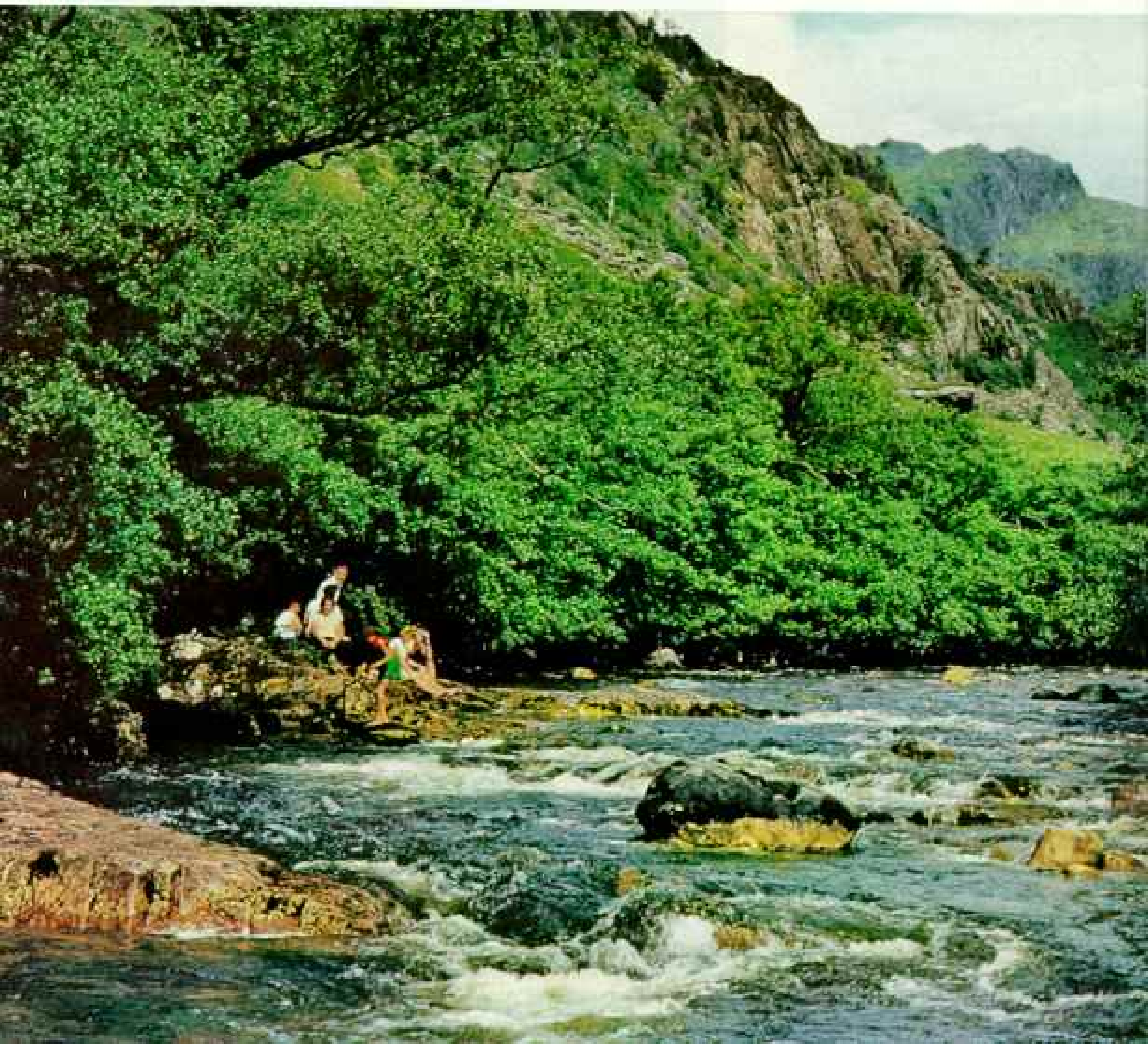
Ponies and Deer Roam Rhum

From Canna it is an hour or two's sail to the island curiously called Rhum, or Rum, where little birds flit along the bushes and come asking for crumbs, utterly fearless, and a thousand red deer run loose on the hills. We made a trip across a rough road to the far side of the island. Waterfalls abound, and ponies graze quietly in the hills.

The entire island, privately owned until 1957, now is maintained by Britain's Nature Conservancy as a wildlife reserve. Rhum's population once was 400, but these departed in the 1820's; today the island has a bare two dozen inhabitants.

I could not get into Eigg. The anchorage there is badly exposed in southwesterly winds, and I dared not go lest we be driven ashore. So I beat past the Point of Ardnamurchan and into the Sound of Mull to call at Tobermory.

Here were Highland Games in progress on part of the golf course outside the picturesque town. A band of pipers from the Glasgow police force came to pipe for the games, and lusty Highlanders and Islanders flung ham-



REDISCHROMES BY ALAN VILLIERS © NATIONAL GEOGRAPHIC SOCIETY

Ben Nevis, Britain's highest mountain, towers over *Cristoden* in the Caledonian Canal. Katherine Villiers, the author's daughter, stretches a clothesline.

In 1911 a Model T Ford astonished Scotsmen by climbing 4,406-foot Ben Nevis. Driver Henry Alexander, still a Ford dealer in Edinburgh today, threaded a precipitous path over bog, boulder, makeshift bridge, and hairpin turn in making the startling climb.

Picnickers enjoy the murmur of a burn tumbling through Glen Nevis beneath the mountain's wild crags.

mers, tossed small telegraph poles called cabers, blew pipes, ran races, threw half-hundredweights of iron over crossbars ten feet high, and generally had a wonderful time (pages 522-3).

These cabers are the whole trunks of young trees, trimmed roughly, about twenty feet long. I tried to pick one up, and found I could just about lift one end. It took Ike, Graham, and myself to lift the whole thing. Toss it? It would be simpler to toss a steer.

"It's all in the balance, laddie," said a whiskered onlooker.

At Tobermory lie the remains of a galleon of the Spanish Armada. There have been many searches made for it, all unsuccessful. I noticed when we anchored that

the soundings were a couple of fathoms deeper than the chart showed.

"They dredged the top ten feet away looking for that galleon last summer," Mr. Alexander Allan told me, "and they found nothing conclusive."

Graham went down in his skin-diving outfit to look. He found only dark water and mud. In Mr. Allan's family were some Spanish coins, brought up locally

Cristoden Scouts Loch Ness for Its Fabled Monster

"In waters steep-to with crags," says the author, "we almost raked the tumbled walls of Castle Urquhart [right]. Though the chart showed 80 feet, we hit something big where nothing should have been. Mate Godfrey Wicksteed [on ratlines] dived under the ship but found nothing."

Ike Marsh and Katherine Villiers keep lookout above. For fun, the crew made a "convincing beastie" (below) from sail cover, life jackets, and anchor shackles.

from an old ship. He showed them to us, but I saw no glint of gold in them.

Mull is a glorious place, beautiful in its own right and a fine center from which to visit western Highland lochs—places like Loch Sunart and Loch Aline, across the Sound of Mull—and a dozen more lovely lochs of its own. Here and there among the trees and hills were the shells of abandoned castles, and many a headland down the sound carried its grim ruins from the "good old days," when every laird and chieftain, and householder, too, had to fight for what he had—fight, and fight hard.

We sailed past these places, and I thought of wartime days when so many Atlantic convoys had passed this way. Nance was stationed at Oban then with a branch of the Royal Air Force known as Coastal Command. Now she wanted to have a look at Oban again (page 508), so we anchored off a slipway where once the flying boats had been hauled out for maintenance. Now it was all a wreck, a junk heap, a piece of war jetsam that looked as if it had been bombed. Our anchor picked up some wartime wreckage. It rained and rained as we sailed on up Loch Linnhe into the heart of the western Highlands, anchoring one night by another ruined castle standing on an island in the loch.

Forested Masts at Aberdeen Fish Market Make Boosts for Scavenging Gulls

Trawlers from Icelandic and Norwegian waters crowd against drifters and seine netters from the North Sea. Unloading begins at "skreigh o' day."

BOOKENDS BY ALAN VILLIERS © NATIONAL GEOGRAPHIC SOCIETY

Soon the auctioneer's chant sends boxed catches rumbling to markets throughout Great Britain or to kippering and canning plants close by. Famed as a port, Aberdeen also is a granite-quarrying center and a seaside resort with miles of sandy beaches on the city's edge.

All the region around Loch Linnhe is exceptionally rich in history, even for the fabled Highlands of Scotland. To leeward of us, as we sailed on north into the almost landbound upper loch, Ben Nevis, highest mountain in Britain, raised its great gaunt head, for once in clear and rainless sight. Here we came on in a welter of foam through the Corran Narrows, where the tide raced and the surface waters showed their torment over the foul rocks too close below. Tide rip met tide rip, all down the dark loch, and not for the first time in these waters tried to take our stout *Cristoden* for a plaything and hurl her around. Sometimes Nance and Ike had difficulty holding her on course.

This was the way to Glen Mòr and the Caledonian Canal, that rift right through the heart of the Highlands. A geologic fault and series of long lochs helped man to cut a way through for his ships to avoid the too-aptly-named Cape Wrath.

Entering the "Great Glen" near Fort William, we were in the canal. It was a splendid cruising ground, and we stayed there two weeks. The Caledonian is a gentleman's canal, big enough to take ships 160 feet long. Its canal links Loch Linnhe and the Moray Firth with the three narrow inland lochs of Lochy, Oich, and Ness. No stretch lies much higher than 100 feet above the sea. James Watt first surveyed it in 1773. Thomas Telford built it between 1804 and 1822.

About a mile from the canal's entrance, a set of eight locks raises ships some seventy feet quickly—a real stairway of locks called Neptune's Staircase.

Cattle Graze in the Great Glen

As we mounted lock after lock, taking all morning in the leisurely process (for everything was done by hand), we were treated to glorious views—old Inverlochy Castle by the River Lochy, Ben Nevis and all its associate hills (page 525), and new Inverlochy Castle, now the property of the enterprising Mr. Joseph Hobbs.

Mr. Hobbs is an unusual Highlander. Born in England, he spent much of his life in western Canada, and now near his seventieth year, he has organized a cattle ranch in the Great Glen, where much of the land had gone almost to ruin with bracken and lack of care.

It takes courage and considerable capital to restore such land, and Mr. Hobbs had been on the job for more than ten years. Lush green fields in which the sleek cattle ran, large cattle shelters, well-fenced and well-cared-for pasturage in all directions were evidence of his good work. We found him full of plans for the further development of the Great Glen.

A good road now passes up the glen, often close to the canal. We saw a constant stream of cars, many hauling trailers, and there were numerous caravan camps in farmers' fields. Instead of warring Highlanders, now there were holidaymakers everywhere.

Lair of the Loch Ness Monster

Since Loch Ness lay on our route, I was resolved to have a good look for its famous monster, or whatever might be found in those deep and very dark waters.

We found Loch Ness a remarkable loch, deep (more than 700 feet), 20 miles long, a fresh-water-filled crack in the mountains, and we stayed there many days. Sometimes the weather was clear and the loch mirrored its noble rim of protecting hills; more often rain or mist or wind made it easy to believe in monsters human or marine, for the dark heaviness of the Highland mountains then weighs upon the spirit, and black waters of the wind-tossed loch might hide anything.

"It is a fey place," Nance said.

So I sailed the loch up and down, and across and across again, skirting the steep-to sides. I concentrated on the waters off Drumnadrochit, where the monster—or something—had been most frequently reported. On a point here were the well-preserved ruins of Urquhart Castle, once a great stronghold of the Clan Grant. Loch Ness is more than 100 feet deep close beside the castle walls, and the waters of the bay off Drumnadrochit should be a fair haven for any monster. A busload of tourists had reported sight of the monster very recently. Where was he now?

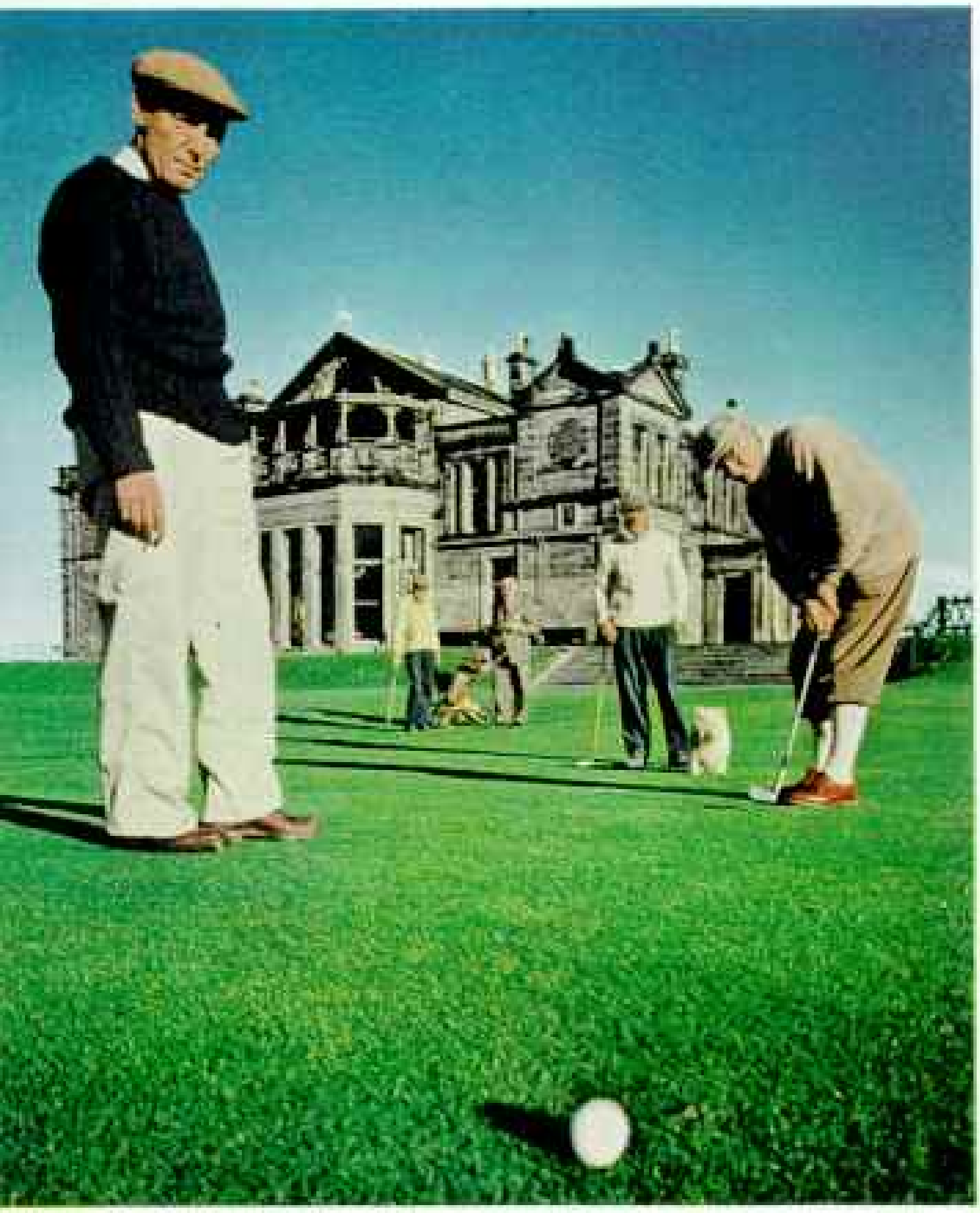
I cruised and beat about the loch exhaustively, closing the headlands by Castle Urquhart as near to as I dared (page 526).

Once we saw a long patch of curiously rippling black water, some upsurge from the rocky depths so far below. At a quick glance it might have been the wake of something large and bulky and long, swimming near the surface. I sailed over to this curious patch of rippling water, to find it nothing but that. I stayed there awhile, hove to. No monster. The wakelike patch gradually disappeared and did not form again.

(Continued on page 535)

ES BRYAN/ROWE BY ROBERT SISSMAN © NATIONAL GEOGRAPHIC SOCIETY

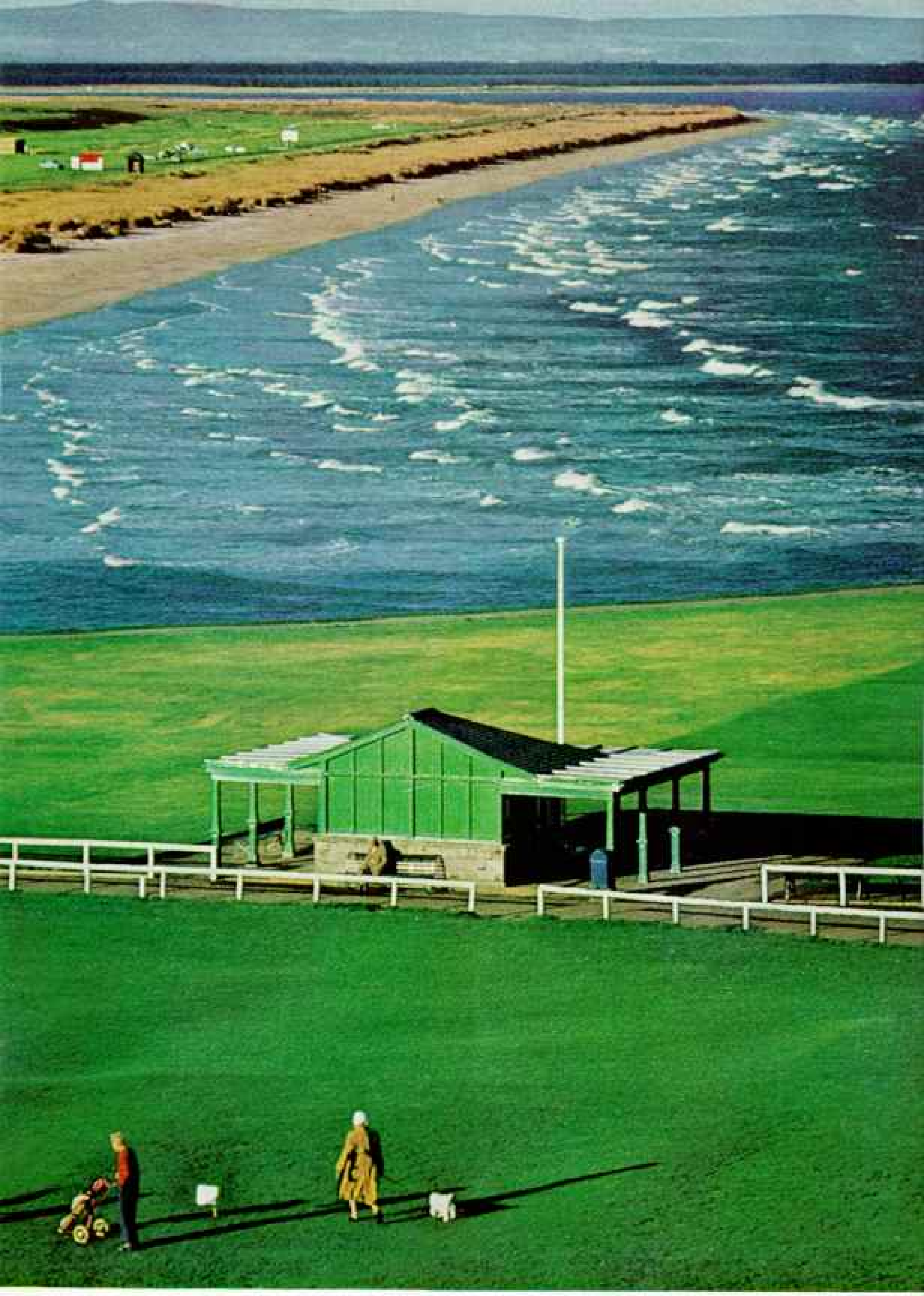
Scarlet-gowned students of St. Andrews University walk this weathered pier on Sundays after chapel, as generations have done before them. Situated in the town of St. Andrews, the mecca of golf (next page), the university was founded in 1411. Its freshmen are called bejants, from *bec jaune*—French for yellow beak, or fledgling.



Cup's-eye view of golfdom's most hallowed club, the Royal and Ancient at St. Andrews, takes in the 18th green of the Old Course and the 19th-century clubhouse.

Kilted youngsters try out a green.

Skirting a whitecapped inlet, the Old Course baits golfers with fiendish bunk-



PORCHERON BY ROBERT SCORAN © NATIONAL GEOGRAPHIC SOCIETY

ers, gusty breezes, and uneven lies. Here, in 1754, 22 "Noblemen and Gentlemen" agreed upon rules for "gowff." A 1457 law had banned it because Scots shirked archery to bat feather-stuffed balls. 533

On another day the appearance of something odd proved, on sailing over, to be five birds, alighted in line upon the water. When the eye strains in so eerie and romantic a place, it is easy to see significance in anything.

By night I anchored in the bay off Drumnadrochit, or secured alongside a crumbling jetty there which once had been used for pleasure steamers but now fell apart at the touch.

Near-by residents believed in the monster.

"I saw him the other day," Mrs. J. A. Menzies told us in the parlor of her pleasant green timbered home. "He's nothing new. My grandfather saw him too. Only the national publicity and all the fuss are new. They started in 1933, and we could do without them."

He was "like a big eel," she said, and he showed himself close under the castle, just across the bay from her house. Mrs. Menzies was a quiet Scotswoman and, like her kind, not given to idle rumor. And she was far from alone in her firm belief in the monster.

"There is something here," she said, "something in the loch, very odd indeed."

Sunken gardens line "the most beautiful thoroughfare in Europe" — Princes Street, Edinburgh. Sunny days see shoppers throng its length, while others doze on park benches (above).

Built on reclaimed marshland, Princes Street Gardens stretch half a mile from Gothic-spired St. John's Church (left) past the lofty tower monument to Sir Walter Scott (right).

Floral clock, operated by underground machinery, commemorates the 200th anniversary of Robert Burns's birth on January 25, 1759. Its face holds as many as 14,000 plants.

KODACHROMES BY NATIONAL GEOGRAPHIC PHOTOGRAPHER ROBERT F. SISSON © N.G.S.

Drums roll and bagpipes wail in the spectacular finale of the military tattoo at the International Festival. Under floodlighted battlements of Edinburgh Castle, where executioners' axes once flashed, crack drill teams salute to climax a program of precision maneuvers, martial music, and Highland dancing.

Edinburgh's gala International Festival draws visitors from all parts of the world for three weeks of dramatic performances, opera, ballet, music, art shows, and motion pictures. The glittering program ranks as one of Europe's outstanding cultural events.

In this revival of a 1540 morality play, actors in resplendent costume fill the stage of the Church of Scotland Assembly Hall. Sir David Lyndsay's *Ane Pleasant Satyre of the Thrie Estaites* pokes fun at the foibles of nobility, clergy, and common folk. Characters like the mitered prelate at right bear allegorical names such as "Divine Correction" and "Dame Sensualitie."

This certainly seemed the general view locally, and also in Inverness.

After Mrs. Menzies' report, I sailed again most carefully over the whole area of the bay and its adjacent waters. I had a lookout posted also ashore in the high keep of the castle, for you could see well from there. The summer wind blew softly all that day, and now and then the sun shone briefly through the clouds, touching the heather-clad hills to a warm loveliness of soft purple and quiet browns. But still we could find no sign of any monster.

Then suddenly, close in beside the castle where the chart showed 80 feet, we struck something! The centerboard grated, as it slipped over—not a grating as on rocks, but a gentler, softer noise. The ship shivered slightly, held in her stride a moment. *Something* was there, where nothing could be!

We were very close in. But we'd been there before on a dozen cross-loch runs, and the water was deep. What was this now?

Mate Wicksteed was over the side in a moment. We fell off a little from the land to be on a safe course and hauled up the centerboard to test its working. It seemed undamaged. We let it swiftly down again. Wicksteed swam our length below, coming up quickly for breath and going down again and again. There was no sign of anything—no monster, no whale, no rock.

We tacked, and sailed again over the place. This time we touched nothing. We saw nothing, either. No irate monster, his back dented by a steel center plate, broke the surface to glare at us or perhaps to rush upon us. What *had* we touched? There was a depth of 80 feet just there.

We will never know.

Does a Monster Really Exist?

Yet there are blurred photographs of some odd beast disporting himself in Loch Ness waters. At Inverness, when we were passing through the last Caledonian Canal locks on our way to the sea, we met Mrs. Constance Whyte, M.B., B.S., who has made an objective study of the evidence for the monster.

Mrs. Whyte is wife of the manager of the canal, and she has lived in the area for twenty years, with more than the usual facilities for studying the district and its records.

In a book which she titled *More Than a Legend*,* she has assembled quite a convincing case. Here the few authentic photographs (not very clear) are printed, and the local evidence is marshaled and sifted. Mrs. Whyte has dealt with nothing but fact, and her book is a sober work, quietly written and impressive.

Both Mr. and Mrs. Whyte, like many other intelligent citizens, believe that some strange denizen of the deep lives in Loch Ness.

"Reports of a monster of some sort, his wake seen when swimming, his splash when writhing on the surface, and the fantastic way he sinks vertically, are too persistent for the whole thing to be a concoction or a feat of the imagination," said Mrs. Whyte. "These reports aren't from sensation seekers but from local people, who often mention them with considerable reluctance."

Perhaps one day we shall know whether there is a Loch Ness monster, and what it is. Meantime we are left wondering just what our centerboard did touch in the deep and mysterious waters off Castle Urquhart.

Where Scottish Boys Learn Sea Skills

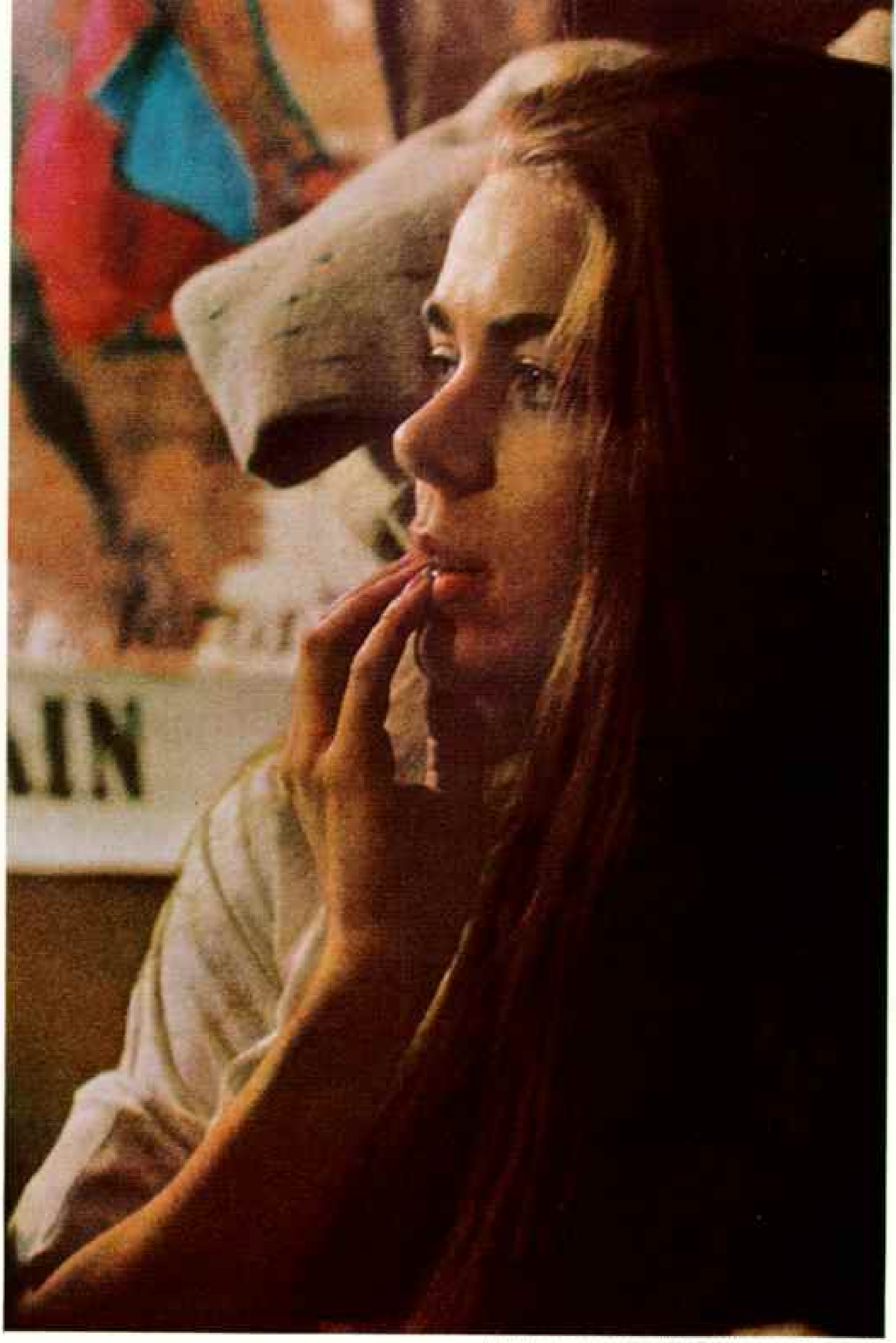
From Inverness, pleasant Paris of the north, "capital of the Highlands" as that fair city is often called, we sailed along that great bulge of Scotland which includes the shires of Nairn, Moray, Banff, and Aberdeen. This is the North Sea side of Scotland, and the 60 miles of the Caledonian Canal had shortened our route there by hundreds of miles. Moray Firth is studded with ports small and large, once considerable trading centers but now mainly used for fishing, and we visited all we could.

At Burghead, where the Outward Bound Trust runs a Scots sea school, we spent an absorbing couple of days and went inland a way to see the famous school of Gordonstoun, where Wicksteed had once been science and sailing master, with Prince Philip among the pupils. At Lossiemouth near by, the port was jam-pack full with fishing vessels, and the air with Navy jets. By Buckie, Cullen, Banff, Macduff we sped—all fishing towns, romantic, colorful, full of interest.

I wished that I could spend days in each, but we were bound south toward Edinburgh and festival time, and had no days to spare.

Aberdeen, city of granite and great shipyards, proved a surprise with its beaches, outdoor dancing, and indoor swimming pool, the best in Britain. Here we searched for the berth where the *Thermopylae* was built almost a hundred years ago, most glorious of the

*Published by Hamish Hamilton, London, 1957.



Shadowed Softness in a Cowshed Theater Fits the Mood of a Pensive Player

Steeped in the drama of their homeland's history, Scots support theater groups in many communities. One, the Byre Theatre in St. Andrews, stages plays in a 74-seat hall converted from the byre, or cowshed, of a dairy. Gifted Sarah Brackett, born in Lake Forest, Illinois, but reared in Scotland, appeared in the Byre's 1960 repertory.

sleek Scottish clippers. But the shipyard now was covered with ways for huge steel liners, tankers, ore carriers, and the like, and no one remembered exactly where the clipper ways had been.

Aberdeen is a great fishing port too: the fish docks there were a busy sight any morning (page 528). Trawlers of the latest type, from Iceland and from Greenland, jostled for berths with old-timers in from nearer waters, with salt-encrusted funnels and rusted but immensely seaworthy hulls. A hundred drifters came rushing in to disgorge herring by the ton.

"Best fishing port in Britain, captain!" yelled a smiling Aberdonian in my ear.

Anyone May Golf at St. Andrews

At St. Andrews (where we traveled in a fast new diesel train from Dundee), our seagoing children admired the donkeys and minute ponies on the beach beyond the Royal and Ancient Golf Club, while large men swung industriously at small white balls (page 532).

"Aye, anyone may play here," said an elderly official in a shelter in front of the clubhouse, "but you've got to book." *

I hadn't booked, couldn't play anyway. There was a putting green close by, not part of the holy course, and here the children tried out their lack of skill among kilted little boys and girls whose prowess was astonishing.

Then Edinburgh, in festival time! Pageantry, massed bands, the best massed pipers in the world and the best military tattoo, theater of world renown, music, ballet, films, exhibitions of art, the famous Murrayfield Highland Games—all this, and Edinburgh's unique charm, warm hospitality, and wonderful hinterland too: what a prospect!

We attended the games, saw the tattoo three times, watched a hundred pipers march stirringly along Princes Street, attended unusual Scots theater where splendid companies performed medieval and modern plays, sometimes on a stage placed amid the very audience (pages 536-7). We saw the ballet, masterpieces of Czech art, the Abraham Lincoln exhibition, international film shows.

We rubbed shoulders with people from the ends of the earth, all gathered together for the famed International Festival, and were glad, at the end of each long, busy day, of the haven of our ship in the port of Granton near by. Edinburgh at any time is a splendid city. At festival time, toward summer's end, it is unique.

*See "Playing 3,000 Golf Courses in Fourteen Lands," by Ralph A. Kennedy, NATIONAL GEOGRAPHIC, July, 1952.

Fog filters wan sun above the River Clyde

After the highlight of Edinburgh, there remained the passage of the Forth and Clyde Canal back to the Firth of Clyde. Everyone warned us that this could be a very low light indeed. It was silted up in part, friends said, and largely neglected.

"Forty miles, forty locks, and forty bridges," said the pessimists, "and you'll probably have to work half of them yourselves, if not the lot. You'll be lucky to get through."

In fact this last canal was a pleasure. It took two busy days—long days of opening and closing lock gates and bridges, swinging round sharp corners, dodging obstructions,

KODACHROME BY NATIONAL GEOGRAPHIC PHOTOGRAPHER ROBERT F. SISSON © N.G.S.

lighters and tugs, horns wailing, puff dark confusion into Glasgow's busy harbor

knocking the early autumn leaves off trees. In some stretches the water was a bit noisome, but there were lovely stretches of countryside where farmers were harvesting, and we passed some pretty towns.

We approached the great city of Glasgow by the back way, and skirted the Clyde a little to the north of it for miles and miles—miles of gasworks and factories, timber stacks and sawmills, the mighty Singer sewing-machine plant and, later, Clydebank shipyards where giant cranes dwarfed even the huge oil tankers and cargo liners building there.

Then we came to Bowling, at the canal's western end, within a mile or two of the Firth of Clyde where we had started. There was Dumbarton Rock, and, farther down, Arran and Ailsa Craig; past them the Atlantic Ocean, and to the north the beautiful Western Isles where we had been.

The log said we had sailed two and a half thousand miles in twenty colorful weeks. We felt that now we really had seen something of wonderful Scotland.

"That was a trip, that was!" said old Ike, who was not given to the use of many words. "I'm mighty glad I came."

So were we all.

Venice

TWILIGHTED SPLENDOR FLOATS SERENE AMID A TIDE OF CHANGE

By JOE ALEX MORRIS

Photographs by JOHN SCOFIELD
Assistant Editor, National Geographic

Condoliers' shrine sheds its glow on the shadowy waters of Venice as darkness descends over memory-haunted canals and courtyards, churches and campaniles, palaces and people. For centuries this city-state ruled the seas, a bridge between West and East. Today it remains the queen of romance that every traveler dreams of, but change threatens its medieval character. Bending to his oar, this boatman slips down the Canale della Giudecca after laying a flower before a statue of the Virgin. Her shrine crowns a gondola mooring.

OUR EXPRESS from the Italian mainland rolled across the 2½-mile causeway and glided to a halt.

"Venezia! Venezia!" The barrel-chested porter chucked our bags to the platform. "All out!"

We emerged into an airy waiting room of colorful murals, smooth bright walls, and a huge expanse of glass.

Surprised at the severely modern building, my wife remarked, "This doesn't look like Venice!" But the porter was already shouldering his way down broad steps to a marble landing. Casually, as if calling up a taxicab at any station curb in the world, he motioned us to a gondola that danced expectantly on a wide street of water, the Grand Canal. Then he turned and pointed across it.

"Over there, *signora*," he said. "That's Venice . . . ah, *bellissima!*"

Most beautiful indeed! "Over there" stood the fabulous old city of Venice—the *centro storico*, or historic center—rising magically from the rippling waters, as unreal as a fairy tale and as beautifully bizarre as the daydream of a drowsing schoolboy.

Across the canal the late morning sun drove the last cobwebs of mist from rusty roof tiles, glinted from the dome of the Church of San Simeone Piccolo, and scattered golden darts from the gilded carvings of 16th-century palaces. The city of a hundred islands glowed like a handful of old jewels against the velvet of the Adriatic Sea.

"Yes," we agreed. "Bellissima."

Not long afterward, I stood with Conte Andrea di Valmarana on the third-floor balcony of his 300-year-old *palazzo*. The count rested a fragile demitasse on the thick stone balustrade and gazed thoughtfully out over the canal-threaded maze.

"There has never been another city like Venice," he said with the confidence of a man repeating a familiar axiom. "It is unique. It may have its little faults, but when you have a great love for a city, it overcomes all else."

He waved his hand in a gesture that took in everything, from the elegant Palazzo Contarini-Fasan, built before Columbus discovered America, to crowded little streets where clothes fluttered damply on overhead lines and plants bloomed brightly in windows.

"But not even a Venetian can tell you how to understand our city," he said. "To know Venice, you must see it all for yourself."

When, with our friend and guide Umberto Tessarin, we set out to see for ourselves, we headed for the throbbing three-acre Piazza San Marco, through which pass literally millions of visitors a year.

"Everything begins and ends in the Piazza," Umberto remarked.

Picking our way through the throngs, we stopped to sip tiny cups of black, bitter coffee at Florian's. This delightfully ornate cafe has

been celebrated in painting and prose since it was founded in 1720. We took seats with other patrons amid a thousand brightly painted metal chairs and tables outside the cafe.

Orchestras Vie for an Audience

Across the sunny Piazza, rows of similar chairs stood before the Gran Caffè Quadri and the near-by Lavena. The square echoed to two outdoor orchestras playing for customers having late-morning coffee at 40 cents a cup. Ideally, the two take turns, but occasionally the light opera favored by Florian's blended in extravagant discord with the popular tunes bouncing from the orchestra stand outside the Quadri. Listeners moved back and forth to applaud first one group of musicians and then the other.

"That's how you can tell the Venetians from the tourists," our waiter volunteered as he put down a check for 500 lire—the equivalent of 80 cents. "The Venetians stand and listen for nothing. They've already had their coffee down at the corner for 40 lire."

I leaned back lazily in the warm sun. "I was here once in the winter," I remarked. "It was so foggy the pigeons must have used radar to fly across the square."

"Ah, the winter, yes!" the waiter continued. He wore the air, common to all Venetians, of being an authority on everything connected with the city.

"You should have been here last winter when we had the bora, the great wind. The tide rose into the streets. Water spurted up through the pavement right here. The police had to erect *passerelle*—elevated wooden walks—across the Piazza. Men wore high rubber boots to their offices.

"It happens every year. But soon every-

Gleaming cruise ship *Ariadne* moors beside the islet of San Giorgio Maggiore; lights mark

thing is the same again—or about the same."

Now, squinting into the sunlight on Piazza San Marco, I felt the waiter was right. All was the same or about the same. Venice remains uniquely Venice.

A thousand years of history have unrolled here since traveling merchant-adventurers stole the body of St. Mark in Alexandria and brought it to Venice, and the great cathedral was begun to serve as his tomb. Here, on the basilica's high façade, rear the magnificent bronze horses that Venice took from Constantinople in 1204 (page 551); here, carved in red porphyry, stand the statues of the tetrarchs—warriors or ancient emperors affectionately nicknamed "the Moors."

The cathedral's mosaics of gold and red and blue and green glass, glittering in the sun, were begun in the 13th century. Eventually there arose the adjacent clock tower, on which a winged lion disports against a star-speckled background of deep blue; the pink and white Palace of the Doges floating airily on Gothic arches; the arcaded palaces of the procurators; and the soaring, 323-foot bell tower that overlooks all Venice.

Birds Descend as Bell Strikes Hour

For ten centuries artisans from many lands labored on the Piazza San Marco, ringing it with a riot of stone angels, golden spires and cupolas, broad domes and lacy curlicues. Bedizened and fantastic beyond comparison, it became a hodgepodge of styles, a farrago of untidy ideas. Yet, under the steel-blue Venetian sky, it in some way holds together as one of the supremely beautiful things in the world, a great and lovely stage set in which the cafe chairs merely add the harmony of an abstract

(Continued on page 540)

the Lagoon's watery streets and ring the distant Lido, a sandy rampart between city and sea

Liquid Boulevard of Palaces and Churches, the Grand Canal Splits a City 1,000 Years Old

Fleeing from barbarian invaders on the mainland, the first Venetians settled on mud islands. Their thatched huts, mounted on stilts, resembled "sea birds' nests . . . scattered over the face of the waters," as the Roman Cassiodorus wrote in 523. Lacking land to farm, the settlers looked to the sea for a living, and their small boats fanned out in search of trade. When feudal Europe took refuge in cold, grim castles, the Republic of Venice grew without walls, enjoying a freedom of thought unique in the Middle Ages. Riches of the Orient poured in, and merchant princes vied in building sumptuous palaces.

Here a banner announcing the biennial International Exposition of Art hangs on the Accademia Bridge. Double-domed Church of Santa Maria della Salute commemorates deliverance from a 17th-century plague. Family colors on striped mooring poles proclaim ownership of the palazzos.

Booming an operatic aria, a merchant offers fresh *calamaretti*, bite-size squid from the Adriatic that gourmets fry and eat, head and all. His shirt echoes the pole stripes.


XXIX
IZIONE BIENNALE
AZIONALE D'ARTE
GIARDINI (9 ott.

Causeways
Railway, 1846
Highway, 1933
Railroad Station
Parking Garage
Scalzi Bridge, 1934
Accademia Bridge, 1930's
Santa Maria della Salute, 1687
LA GIUDECA

Grand Canal Forms an Inverted S: a Dutch Chart by an Unknown Artist

Published in the 1600's, the map might still serve as a guide to the city. Shown in black are a few of the changes three centuries have wrought: bridges, church, international art center, and causeways that carry automobiles and trains as far as wheels can go.

Twin pillars in the Piazzetta, at the near end of the canal, continue to mark the watery gateway to the Palace of the Doges and Piazza San Marco (pages 551-3). The Arsenale (right) is no longer the world's supreme shipyard, capable of turning out a galley a day as it did during 16th-century wars. Shakespeare's Shylock kept shop near the arching Rialto Bridge (center).

This view, drawn from a theoretical point above the Adriatic, looks to the Italian Alps.

(Continued from page 545)

painting. Even the hordes of pampered pigeons fit neatly into the composition.

The man most familiar with San Marco's famous pigeons is Giuseppe Milan, who even then was walking across the great square with a red bucket full of corn and bird seed.

"They are smart, these birds," he told me. "They know when the clock is about to strike."

Overhead the restless whistle of wings increased and the sky literally darkened. Then, as the bell of the clock tower boomed, the birds descended in a churning melee while Giuseppe poured grain in a circle on the stones. The pigeons, heirs of birds the doges long ago released on Palm Sundays, will eat from your hand or perch on your head in their greedy haste. They are perhaps the most photographed birds in the world (page 552).

Umberto and I made our way across the Piazza to the historic Porta della Carta. That doorway of stone flowers and statues framing the entrance to the Ducal Palace is one of Venice's outstanding examples of flamboyant Gothic architecture.

Usually a few guides wait idly for visitors at the Porta. Among them that day was a slight, scholarly Venetian who speaks four languages and makes a comfortable living by working only four months a year.

"There are only about fifty qualified guides in all Venice," he said. "You must pass a stiff examination to become one. You must know how Venice was founded by people fleeing from barbarians on the mainland to these islands some fifteen centuries ago; how it withstood attacks by hordes from the north; and how, as an independent city-state, it be-

came the greatest trading and cultural center of Europe, with a navy of 3,300 ships.

"You must know our great artists—Titian, Giovanni Bellini, Giorgione, Canaletto, Veronese. In such a treasure house as this, it takes years of study, let me tell you. And then you get some tourist in a hurry who must see in an hour what took centuries to create!"

Sighing for the lost days of Venice's glory, he left us abruptly when potential customers approached, guidebooks in hand.

Had he remained a few more minutes, our friend might have described how Venice entered upon her long decline in the 16th century. She could not survive the loss of her trade after Vasco da Gama found a new route to the Orient around Africa. She lost her land possessions in the eastern Mediterranean to the Turks. At the last, Napoleon Bonaparte brought the Republic down in 1797. Thereafter—save for a brief year and a half of revolt in 1848-49—she was ruled from the mainland, first by Austria, finally by Italy.

Today the modern city of Venice has expanded to the mainland and includes the fast-growing factory area and port of Marghera. The over-all Venetian population exceeds 300,000, but the old island bastion that the world still thinks of as Venice remains a water-ringed core of shops, theaters, churches, hotels, museums, and crowded dwellings, with a dwindling population of around 175,000.

To roam this watery realm where the 175,000 live and work, we hired a gondola near the famous Danieli Royal Excelsior Hotel, a remarkable blending of ancient palazzo and modern plumbing.

The gondolier's name was Pietro. When I looked at his blue eyes and reddish hair, I understood why Titian painted so many portraits of Venetians with light complexions. The city is surprisingly sprinkled with blonds, despite the traditional conception of dark-haired Italians; it has been so for centuries.

"Pietro," I asked, "are *you* a Venetian?"

"*Sì, signor,*" he replied, flipping his big oar

(Continued on page 555)

KODACHROME © NATIONAL GEOGRAPHIC SOCIETY

Mighty bronze Moor hammers out the hours on the 15th-century clock tower overlooking Piazza San Marco. His blows through the centuries dented the rim, so officials have rotated the bell to provide a fresh striking surface.

Captured Bronze Horses Ride St. Mark's, Crown Jewel in the City's Treasury

In 828, Venetian merchant-adventurers in Alexandria, Egypt, stole the body of St. Mark and carried it home. Venice set about building a church for her new patron saint. The labor required centuries; sea captains ransacked the Mediterranean for precious stones and sculptures. At last San Marco stood like "a vision out of the earth," as Ruskin wrote, "a multitude of pillars and white domes . . . a treasure heap . . . partly of gold, and partly of opal and mother-of-pearl."

Four horses above the main portal were cast in the time of Alexander the Great and taken from Constantinople during the Fourth Crusade.

Marble Palace of the Doges stands between the church and the winged lion of Venice on its pedestal. The Church of San Giorgio Maggiore rests on its island beside the Giudecca Canal.

OVERLEAF: Wings crackling like a flutter of applause, pigeons alight before St. Mark's

Mirrored in a serene canal, a venerable home appears as in a dream—a haunt of silence broken only by the whisper of water cradling a boat and the echo of a boy's footsteps on paving stones. Its shuttered windows seem to blink like eyes closing in sleep.

skillfully. "Only Venetians who are sons of gondoliers can belong to our union."

Pietro sculled us gracefully through narrow canals—Venetian "back streets" average about 12 feet wide and three or four deep at low tide—and past buildings that recalled famous names of other days. In this house, Lord Byron fell in love with the wife of an aging nobleman. In that one, marked with a plaque, Browning breathed his last. Here, Marco Polo stepped ashore from 24 years of travel to Cathay, a bronzed figure "greatly changed in aspect," wearing a cheap robe in which he had sewed a king's ransom in gems. His tales of wondrously rich lands, of gilded palaces of the khan, of hunting parties of 10,000 men and 5,000 dogs made him the laughingstock of the Rialto.

Also the subject of gossip and sometimes of ridicule was another, later Venetian, a self-proclaimed great lover and adventurer of the 18th century named Casanova.

Expelled from a religious school on charges of immorality, Giacomo Girolamo Casanova de Seingalt fled Venice to begin his heady career in Rome. He became the terror of European boudoirs, "always involved in some affair of the cabala, or of gambling . . . or of love."

Returning to Venice in the 1750's, he made the mistake of trifling with the favorite mistress of one of the powerful city fathers. Promptly condemned to the supposedly escape-proof state prison, he escaped 15 months later and returned to France to direct a lottery and make a fortune.

Yes, many famous ghosts haunt the liquid streets of Venice!

Many Woods Make Up a Gondola

Pietro rowed on skillfully, and we came to the shipyard of the Cooperativa Daniele Manin. There half a dozen workmen had two gondolas under construction.

Uniquely Venetian, and built nowhere else, 500 gondolas serve the city today—there were 10,000 of them in the 1500's. So exactly do they match the needs of this water-threaded metropolis that they can go anywhere in its hundreds of miles of narrow canals.

Each 1,300-pound craft is 36 feet long and 4 feet wide, and the right side is 10 inches shorter than the left to counteract the sweep of the gondolier's oar. The bows invariably end in a steel *ferro*, shaped somewhat like a huge musical clef, that helps balance the weight of the gondolier at his stern position.

"Look," one of the workmen said, pointing to a narrow strip of wood running along the side of one craft. "This is cherry wood. Over here, mahogany, and there, *abete*—spruce or fir." He pointed to the *forcola*, the oddly shaped fork against which the oar is maneuvered. "Carved by hand from a single block of walnut," he said. "It takes time and money to build a good gondola.

"How much? Well, with brass fittings, leather seats, carpets, a canopy—and maybe a vase for flowers—you pay about $1,700.

"In the old days, a good gondola lasted thirty years. Today, no. You are lucky if it lasts twenty, because of the motorboats in the canals. They kick up waves that batter your gondola." Theoretically, he told me, the speed limit is nine kilometers—roughly five miles—an hour. But everyone seems to go as fast as he cares to, which gives the power boats a distinct edge.

Mooring Poles Bear Family Colors

These days, gondolas are largely for visitors. Many hire them to go on moonlight serenades, preceded by a brilliantly lighted barge carrying musicians and singers along the Grand Canal. The Venetians, who should be blasé about such things by now, gather on bridges to cheer or perhaps to jeer if the music is not to their taste.

Venice's ornate palazzos were built in the days when everybody rode in gondolas, instead of in the prosaic water buses that ply the Grand Canal today. Palace entrances are still marked by graceful mooring poles striped with the family colors (page 546). Anyone wishing to install a new mooring pole must obtain a special license from the city.

Guidebooks usually list 70 to 100 notable structures among a total of at least 500 palazzos. The majority have proved so costly to maintain that they have become museums, government offices, antique shops, or apartments. But a few still shelter the descendants of the families that built them. Others have been purchased as homes by foreigners. Years ago a wealthy American secured a firm place in the hearts of the Venetians by willing a house to each of her gondoliers.

Today's Veneto-American is typified by Peggy Guggenheim, American heiress and art expert, who owns an 18th-century palazzo nicknamed Incompiuto, or "unfinished," because it never progressed above the first floor.

Sidewalk Cafe Offers Ringside Seats to the Grand Canal's Passing Show

In this oldest section of Venice, the Rialto, medieval merchants ruled the European market with fortunes founded on a monopoly of the Oriental

FOTOCHROME © NATIONAL GEOGRAPHIC SOCIETY

trade. When news came in 1499 that Vasco da Gama had sailed around the Cape of Good Hope, opening a sea route to India, several banks failed instantly. Here water-borne produce trucks set out from the main market. Like black swallows, gondolas flit to and fro with passengers.

The going price for Grand Canal palazzos, incidentally, ranges from $80,000 to $100,000; rentals average $400 to $500 a month.

Our guide to the palazzos was Contessa Emanuela Lovatelli, a Florentine by birth, who prefers to live in a modern apartment, but who persuaded friends to open the big carved doors of their canalside homes for me in the interest of research into Venetian life.

Except for the addition of modern conveniences, few changes have been made in the venerable palazzo of Conte Alvise Giustiniani. The forty-room mansion follows the classic Venetian tradition, with a long barn-like hallway on the first floor and with entries from land and canal.

"They were merchants, you know," the contessa explained. "Here is where they stored their goods."

A majestic stairway led to a vast second-floor hall. Off it opened big, square living rooms, libraries, salons, and bedrooms, with walls of gold brocade, handsomely painted ceilings, and tall windows overlooking the Canale della Giudecca, where transatlantic liners anchor almost at the palazzo doorstep.

The conte plugged in a spotlight with a long cord and carried it from wall to wall to provide better illumination for paintings by Tintoretto, Tiepolo, and Canaletto.

"Have to be careful not to overheat these rooms," he said, "because some of the paintings are on wood."

"How did they keep these big rooms warm in the old days?" I asked.

"They didn't," the contessa said. "They wore more clothes then, but they also froze."

Wheels Rare in a City of Bridges

Where there are canals, there must be bridges. In our wanderings, I am sure Umberto led us over most of Venice's 400 or so spans, from the Bridge of Sighs and the shop-lined Ponte di Rialto to modest little arches so low the gondoliers must crouch and doff their hats to get under them.

Another thing: Venetian bridges, unlike their counterparts elsewhere, invariably have steps. Garbage collectors and delivery boys with pushcarts solve the problem of these ubiquitous stairs by using a projecting set of small wheels with which they jockey their vehicles up and down. Once, I was told, the city tried building a bridge without steps, but the first rain made it so slippery that it had to be rebuilt in traditional style.

Venice has another and more baffling peculiarity: The houses are numbered not by streets but in numerical order within each of the six *sestieri*, or city districts. A stranger finds it all but impossible to find his destination without a guide. I knew, for example, that 5199 Corte della Carità lay within a hundred yards of a certain bridge. But when I tried to go there, I had to ask directions from 12 different persons, including a woman who had lived near by for 17 years but didn't know. A wine dealer at the corner had never heard of the number, although I eventually found it only a hundred feet away.

One day my wife and I visited the home of our gondolier. Pietro and his wife live in two small rooms on the first floor of a two-

Movie and music advertisements paper a wall in a city famed for its arts. Titian, Tintoretto, Giorgione, and the Bellinis made Venice their studio. Byron, Browning, Dickens, Ruskin, Mann, and Hemingway came here to write; Dufy and Winston Churchill to paint, and Wagner to compose.

story house on a clean and peaceful street. His grown daughter, a brother-in-law, his wife, and their small daughter occupy the second floor. The kitchen boasts a tap with running water, a coal stove that heats the whole house, and a two-burner stove for cooking. The toilet is outside.

Pietro's wife walks once a week to the market near the Rialto Bridge. There, in small stands behind the main thoroughfare, she finds bargains. Meat appears only occasionally on her stone-topped kitchen table; beef, for example, costs about $1.40 a pound.

"But look!" said Pietro, setting down his glass of vermouth and opening a small closet to reveal a setting hen. "We have five hens in the back yard. We'll have chicken for supper next winter."

All the adults in the family work. The signora showed us how she strings bright-colored shells into souvenir necklaces.

"I get only a few lire," she said, "but I can string a necklace in ten minutes."

The income of most Venetians depends, in one way or another, on the tourist trade, although many from the old city go each day to factories in Mestre, on the mainland, where they earn $90 or more a month.

Perhaps the best-paid workers in all Venice are the master glass blowers on the neighboring island of Murano, who may get $50 a week or more. Ten of them work around the big furnace at the Venini glass factory, each of them twirling and blowing and cutting colored lumps of molten glass with unbelievable speed and skill.

Each is an individualist—Boboli specializes in statuettes,

Homeless cats bask in a sunlit alley. Thousands swarm through the city, living vagabond lives on handouts. Venetians appear to love them all, for municipal drives to round up strays usually fail.


SEMPIONE

Ermete in graceful vases. Each spent a decade or more earning his title as master.

Glass blowers must begin at an early age. Lino Rossi, who passed the simple tools that Ermete needed to shape a goblet, became an apprentice at 14, as soon as he had finished his legally required schooling. Watching Lino as he obeyed Ermete's commands, I sensed that this boy with tousled curls and angelic face had the soul of an artist.

"Lino," I said, "what made you decide to become a master?"

The big, star-filled eyes looked at me with surprise, and perhaps pity.

"Money!" he answered. "What else?"

Venice is famed, too, for its handmade laces, including the exquisite Point de Venise. Women and girls do most of the work, either at home on near-by Burano or at that island's lacemaking school. Sixty girls may work on one tablecloth, which will sell for $5,000.

Other skills still flourish in small city shops. Giuseppe Orio laughed with self-contained delight when Umberto and I peered into his small, smoke-blackened smithy.

"More tourists!" he roared as he pounded a red-hot piece of iron on an anvil. "Always snapping their cameras. They think I'm picturesque!"

Advice to Diners: Go to the Market

Followed by Giuseppe's laughter and a hungry yellow cat, we walked on to the big public market near the Rialto Bridge.

Some of the best restaurants in Venice—but by no means the most expensive—lie near the market. We trailed two merchants in white aprons to a narrow street dotted with cafes, and found a sidewalk table shaded by a red-and-white-striped awning and a cluster of tall yellow flowers. The *calamaretti*, bite-size fried squid, arrived crisp and hot with a sliver of lemon. We sampled *bisato*—eel grilled on a wood fire—and finished with thin, crisp pancakes sprinkled with sugar, called *galani*, and a glass of white wine.

Half an hour later Umberto and I pushed on through streets now crowded and dripping under a sudden shower.

"Don't go too fast," he warned. "When people meet in the rain in these narrow passageways, they have to agree on who raises his umbrella and who lowers it, or there's a collision. Here, go right."

I turned ahead of him into a two-foot-wide space between buildings. This was Ramo Salizzada Zusto, just wide enough for a single file to the next thoroughfare, 55 feet away.

"I used to go through here every morning to school," Umberto said. "I was late half the time, because I had to wait here for a break in the traffic coming toward me before I could duck through."

Traffic Stops Where Canals Begin

Past the Church of San Simeone Grande we emerged onto a wide curb of the Grand Canal. A small boy sat crying. He had dropped his huge red ball into the water. Now he watched helplessly as it floated away.

As we looked, the pilot of a big water bus skillfully swerved his craft toward us, so that the waves from his bow carried the ball back into the boy's outstretched hands. Bystanders cheered, and the driver doffed his cap.

Opposite us stood the railroad station that links Venice to the mainland. Not far away rose the Autorimessa, the city's huge canal-side bus terminal and parking garage. Beyond there, wheels may not go. I was reminded of Robert Benchley's classic reaction to his first glimpse of the Queen of the Adriatic. "STREETS FULL OF WATER," he cabled home. "PLEASE ADVISE."

In a concrete way these two structures represent a serious dilemma facing the city. The problem is this: Plans have been advanced for building a modern business center—a "little Manhattan"—in an unattractive area alongside the bus and railroad terminals. The center would provide much-needed office space. But the idea was torpedoed, at least temporarily, by protests of Venetians opposed to anything that might change the character of their city.

Still another plan stems from the undeniable fact that Venice, far from being dead commercially, ranks as Italy's third greatest port, after Genoa and Naples. Its proponents see their city as standing midway between the pipeline terminals of Syria and Lebanon and the insatiable appetite for oil of, say, West Germany. To make their dream a reality, they have already planned a huge new

Gondola beneath a crowded bridge shatters an image on wine-dark water. Rush-hour traffic goes by foot. Vines cover the iron balconies of a restaurant. Some 150 canals twist through the city; more than 400 bridges tack it together.

SUPER ANSCOCHROME BY JOHN SCOFIELD, NATIONAL GEOGRAPHIC STAFF © N.G.S.

Flower shops brighten the city's treeless ways. Byron called Venice "the greenest island of my imagination," but he wrote more in fancy than in fact. The city appears all wall and water; its gardens lie hidden from the man in the street. As if to compensate, flower shops spill their bright-petaled wares onto sidewalks. Thousands of housewives, denied a plot of ground, turn their windowsills into fragrant bowers.

Gondolier in straw hat feasts on rich Venetian ice cream. Member of an honored profession, the boatman inherited his position from his father; he plies his long sweep with the grace of a ballet dancer.

RODCHROMES © NATIONAL GEOGRAPHIC SOCIETY

petroleum terminal south of Mestre, on the near-by mainland.

But the problem of modernization remains, as does the controversy over the city's entire future. Venice perches on countless thousands of wooden piles, 12-foot-long oak and larch trunks driven into the mud islands and topped by thick planks and stone foundations. These proved satisfactorily sturdy until the arrival of the gasoline engine; since then, the steady pounding of waves kicked up by motorboats in the canals has damaged many fine buildings.

Draining canals and repairing foundations —the average canal must be dammed and drained every decade to relieve it of accumulated filth—costs close to half a million dollars a year. One canal, on which is located the only traffic light in Venice, recently was closed for more than two years because of the slowness of repairs.

And Venice has maintenance problems other than watery. Every visitor discovers for himself at least one rakishly leaning tower among the many campaniles of the city, but few stop to ask if any of them eventually topple. They do. Thirty of the two hundred or so brick bell towers that have spiked the Venetian skyline at one time or another have ended by collapsing dramatically.

When a particularly large tower crumbled into the Grand Canal a couple of hundred years ago, the crash kicked up such a wave that an entire flotilla of gondolas came to rest

With Courtly Flourish, a Gondolier Helps a Bride Into Her Wedding Coach

Venice breathes romance; lovers for centuries have grown intoxicated on its air. Byron no sooner arrived than he confessed: "I have fallen in love, which, next to falling into the canal . . . is the best or the worst thing I could do." This young woman in her wedding finery boards a richly carved gondola. On the following pages she and her bridegroom glide beneath a bridge adorned with the shields of noble Venetian families.

in a neighboring square. And the solidly built bell tower of San Marco came apart gently but completely one July day in 1902—at ten in the morning, solemnly declares an inscription on the famous tower, which was rebuilt within ten years "as it was and where it was."

Nor are toppling towers the only large-scale perils with which harassed city engineers must contend. The centro storico sinks a tenth to a twelfth of an inch every year. Venetians are apt to blame this on a variety of illogical causes: earthquakes; industrial activities on the mainland; deepening of channels in the Lagoon, which brings in more water and raises rather than lowers levels of the canals. The real answer probably lies in the simple fact that buildings perched on wooden pilings, which rest in turn on a layer of soft mud, are apt to sink slowly of their own weight.

But these are long-range problems. In the meantime there remains the immediate question: Shall Venice be a museum or a modern city?

"Once you start to fix some of these old buildings," a city technical expert remarked, "you spend millions and millions of lire. Everybody agrees that our art treasures must be preserved as they are, but how can the entire city remain unchanged?"

An active advocate of maintaining Venice's ancient character is the local chapter of Italia Nostra, a society dedicated to preserving the nation's artistic treasures. It believes the city's future is an international problem.

"Venice belongs to the world," the society proclaimed recently. "People everywhere should help in preserving it."

Lanfranco Caniato, the society's slight, intense secretary, led me to the balcony of his law office overlooking the stone pavements of Campo Sant' Angelo.

"Right there," he said, pointing to the opposite side of the square, "was once a 15th-century bell tower, an old church, and a unique little house with beam supports, leaning over the street. In 1810 Napoleon decided the Church of St. Angelo should be razed to make the campo more spacious.

SUPER ANSCOCHROME © NATIONAL GEOGRAPHIC SOCIETY

Children Play in Square and Street Without Fear of Automobiles

Behind the marbled palaces of the Grand Canal and the splendors of St. Mark's Square lies a Venice of villages, each centered around a small *campo*, or square, with its own church, cafes, shops, and open-air market. Here a man can sip wine with his friends while watching his children frolic on the paving stones. And housewives can swap news with neighbors as they pinch the vegetables or select a fresh fish for dinner.

Balanced by her parasol, the girl at left walks a chalk line. Youngsters opposite romp beneath clotheslines strung from house to house.

Like scattered pieces of a jigsaw puzzle, the islands of Venice dot the blue Adriatic.

The Austrians finally carried out his plan in 1837, and Venice lost a treasure."

Caniato believes the Italian Government should declare Venice a national monument, so that exterior changes in any building, even for the addition of a bathroom, would have to be approved by the Department of Antiquities and Fine Arts.

Arturo Deana, who arrived in Venice in 1916 as a waiter and now owns the well-known Colomba restaurant, speaks for a more moderate viewpoint.

"The city missed a great opportunity a few years ago when it refused to permit Frank Lloyd Wright to design a new building in the Venetian spirit on the Grand Canal," Signor Deana told me. "But I don't want to see the character of the city changed. I'm opposed to

KODACHROME BY JOHN SCOFIELD, NATIONAL GEOGRAPHIC STAFF © N.G.S.

Marble Church of Santa Maria della Salute divides the Grand and Giudecca Canals

these plans for floodlighting the Piazza San Marco and for erecting modern office buildings. In Milan, it is okay. In Venice, no!"

To which Dr. Romeo Parisotto, vice-director of the central tourist office, added: "Visitors spend some $33,000,000 here each year. If we become just another modern city, there will be no tourists."

The controversy over a minimum of modernization or no modernization at all is likely to be a long one. When I went to say goodbye to Conte Valmarana, I asked him how he stood on the question of the city's future.

"If modernization means automobiles and tall office buildings — no," Valmarana replied firmly. "But to be a museum is to die. We must always be a unique, living city in the modern world."

How Bats Hunt With Sound

By J. J. G. McCUE, Ph.D.
Lincoln Laboratory, Massachusetts Institute of Technology

TAIL MEMBRANE CUPPED, mouth open and emitting a steady stream of beeps, the brown bat opposite swoops in on a juicy meal worm tossed to him by scientists. Like a plane snatching a nose cone fallen from space, he sweeps the meal worm into his tail scoop, then dips head to tail and takes the tidbit in his mouth (below).

These rare high-speed photographs, made during studies by the Lincoln Laboratory of the Massachusetts Institute of Technology, show how a bat can catch his prey on the wing. Although scientists have been aware that the silklike tail membrane is used in the act of feeding, they assumed that the prey was caught in the bat's mouth. But the Lincoln Laboratory pictures—without exception—show brown bats while in flight fielding meal worms with their catcher's-mitt tail structures.

Bats, basically unchanged in the last 50 million years, navigate and hunt as man's radar- or sonar-equipped craft do: They send out high-pitched signals and evaluate the echoes to find the direction and distance of each near-by object. Free from dependence on their eyes, they can hunt at night, when insect food is plentiful and predatory birds are few.

So effective has the bat's sound equipment become over millions of generations that M. I. T. scientists are studying it in search of new concepts for man's electronic devices.

This insect-eating bat satisfies a voracious appetite while serving the extraordinary research project. With the help of high-speed cameras and devices for recording and analyzing high-frequency sound, biophysicists hope to fathom the secret of how the bat recognizes his own echo in a cave teeming with thousands of other bats and their calls, and how he distinguishes food from obstacles.

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U.S. PATENT DRAWINGS BY DAVID CHYLANSKY AND FREDERIC WEBSTER, LINCOLN LABORATORY, M.I.T.

Bat's beeps are pitched too high for human ears. To trace the signals, instrument specialist David Cahlander adjusts an oscilloscope.

Warmth from the hand rouses a bat from the torpid sleep that helps to conserve his energy. Macbeth, a star performer, takes water from an eye dropper. A daily weighing checks on his physical welfare.

KODACHROMES (ABOVE) AND NO EXTACHROME BY W. E. GARRETT, NATIONAL GEOGRAPHIC STAFF © N.G.S.

Gun Tosses a Meal Worm, Bat Senses a Food Echo, and Camera Records the Action

BATS used in the M. I. T. project find their dinner by flying an orbit above the mealworm gun. To capture fluttering movements too fast for the human eye, the photographer lines up his camera with the gun at the bottom of the picture (left). As the gun fires a worm straight up and the bat swoops, Frederic Webster starts the motor-driven Hulcher sequence camera. Simultaneously, a super-high-fidelity tape recorder registers each beep.

Mr. Webster, a dedicated amateur scientist, initiated this photo-acoustic study. The work, carried out in his backyard quonset hut, employs a high-speed electronic flash; its controls are beside him on the platform.

David Cahlander lobs a meal worm into the camera's focus with his magnet-powered "mortar." He holds a Lincoln Laboratory fellowship for graduate study at M. I. T., where, as an undergraduate, he worked with Prof. Harold E. Edgerton, inventor of the electronic flash. In 1937 Dr. Edgerton and Donald R. Griffin of Harvard University, using the new flash, made a series of remarkable photographs of bats in flight.*

Much of the present photography is done with a movie camera running at 768 frames a second in synchronism with a tape recorder. When shown at a normal 24 frames a second, the film slows the bat's motion to one thirty-second of the true rate, and his sounds become audible to human ears. Detailed study of film and tape shows how the bat varies his beeps as he closes on a target.

Under a U. S. Air Force contract, Lincoln Laboratory's study of bat signals is supported by all three Armed Forces.

*See "Mystery Mammals of the Twilight," by Donald R. Griffin, in the July, 1946, GEOGRAPHIC, and his book *Listening in the Dark*, Yale University Press, 1958.

Unbelievable! Bat catches a moth in his wingtip and folds it in, all while in flight.

WHETHER the horseshoe bat above *(Rhinolophus ferrum-equinum)* misjudged his approach or preferred the use of wing instead of tail to catch his meal remains a question. The Lincoln project has but this one extraordinary picture of his feeding technique. Only *Myotis lucifugus*, the little brown bat, has been extensively studied with high-speed photography.

This double-exposure picture was made with multiple flash. In the first exposure, a wing covered the white line, which is a marker on the background. The whole line shows in the next exposure, taken a fifth of a second later, when the bat had moved to the right and had the moth in his jaws. Tissue-thin sails between each wing's elongated fingers are controlled as if by a hand. Stubby thumbs jut from the wings' forward edges.

Science's first hint that sound guides bats came from Lazaro Spallanzani and Louis Jurine, 18th-century European experimenters, who learned that blinded bats performed normally but deafened ones could not find

FREDERIC WEBSTER AND DONALD R. GRIFFIN

One-fifth of a second later, the moth is clenched in the bat's jaws

their way about. Biologists belittled, then forgot, the experiments; they were inclined to credit the bat with some sixth sense or with a highly developed sense of touch. The role of the ears was not understood, because there seemed to be nothing for the bat to hear. But in 1938 Donald Griffin, then an undergraduate at Harvard, showed with electronic equipment that bats emit short ultrasonic cries and guide themselves by means of the echoes.

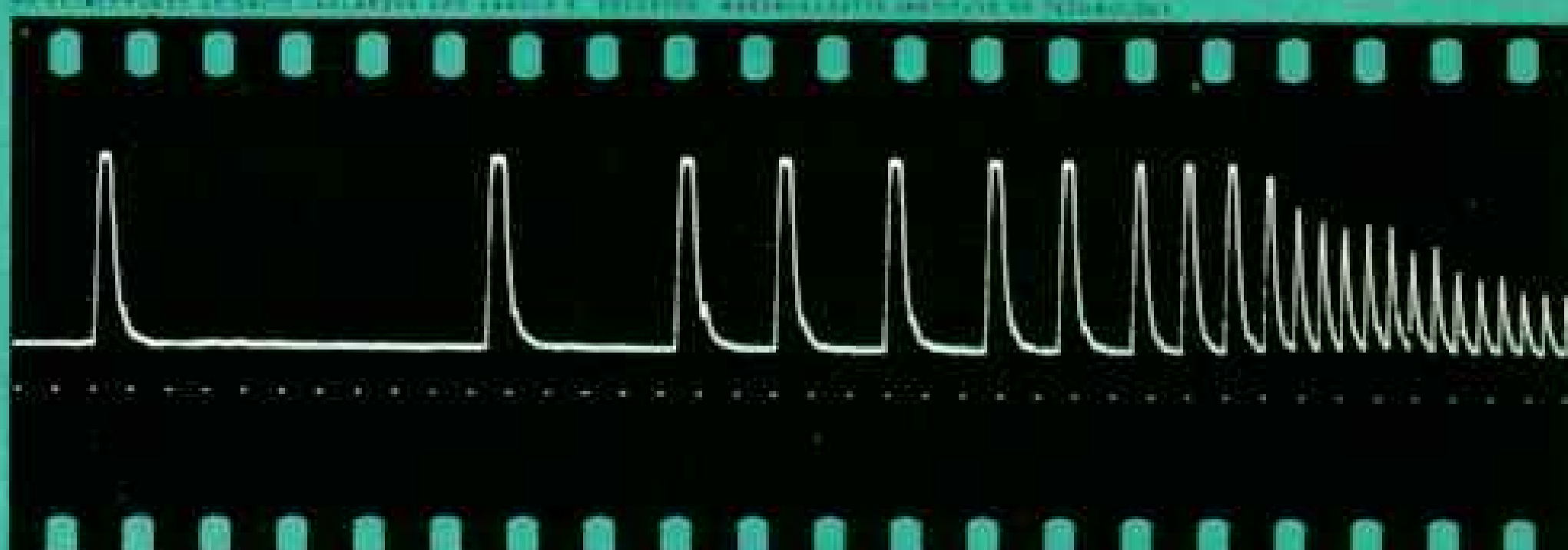
Since then, tests for the U. S. Navy have shown that porpoises are skilled at echolocation. Cornell University experiments have proved that even humans sense obstructions by means of echoes—the blind more expertly than those who can see.

So, too, modern man-made echo sounders detect submarines, schools of fish, and seamounts. But the bat's sonar is much more discriminating than these instruments. In laboratory tests, bats have successfully dodged hanging wires only a few times thicker than a human hair.

Amazing agility and high-precision «sonar direct the bat to his prey and guard him from collisions, even in utter darkness. This montage, composed of pictures from three separate flights, reveals the deft maneuvers by which he intercepts a target. In half a second the bat scoops the meal worm into his tail membrane, transfers it to his mouth, changes direction, and dives away to enjoy the morsel.

To make these studies, experimenters used the equipment on page 572, taking 10 pictures a second and firing flashes that last only 1/10,000 of a second.

Seemingly erratic flight of bats against the evening sky is actually their skillful pursuit of darting insects. Slow-motion films have shown a bat catching two fruit flies in half a second. Another gobbled as many as 220 in 15 minutes.

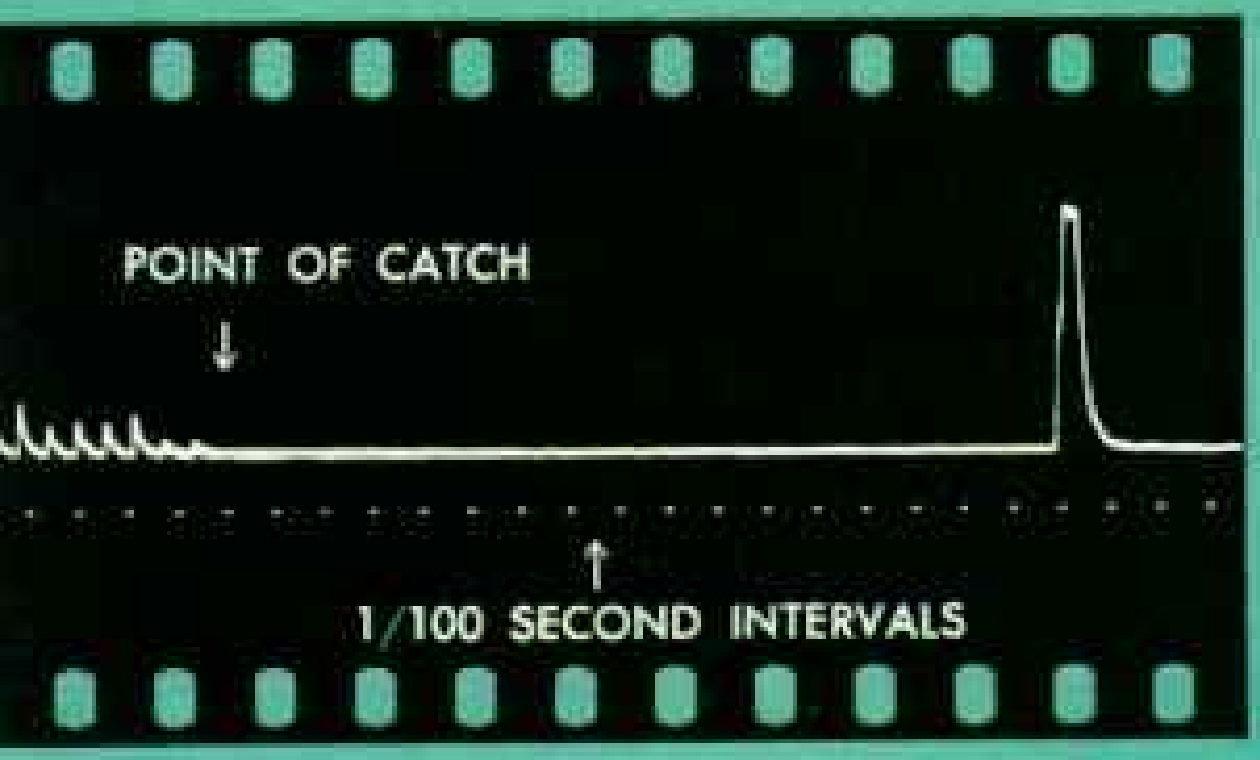


Oscillogram records an electronic picture of the timing of the bat's pulses.

First two peaks in the graph depict cruising beeps used to avoid obstacles and detect food. At an undetermined point on the chart, the bat hears an echo that his tiny brain interprets as food—a recognition process that intrigues the investigators. Then his rhythmic ten clicks a second quicken to a buzz of nearly 200 a second, improving his accuracy as he homes in on the target.

Mouth muffled by tail membrane, he flies silently, as shown by the smooth line. Less than one-fifth of a second later, prey now in his mouth, he resumes navigational pulsing (single peak at right).

Sound recordings synchronized with high-speed movies allow study of the bat's methods that may help to explain his phenomenal success with sonar.



LINCOLN LABORATORY, M.I.T.

Hungry bat broadcasts signals that bounce back from target

TINY LARYNX emits up to 200 beeps a second as the brown bat homes in on an insect. Big ears detect the returning echoes, and a brain weighing a few hundredths of an ounce computes the data and controls the hunter's speed and direction.

Like an FM radio station, the bat modulates the frequency of his signals. In each cruising beep, he starts broadcasting at 100,000 cycles per second but quickly slides down to 40,000. Near the target, he starts at 30,000 and slides to 20,000, approximately the shrillest pitch heard by humans. Individual variations in sliding frequencies may explain how he recognizes his own echo in a caveful of bats.

He judges direction by comparing the echo at one ear with that at the other. Brown bats deprived of hearing in one ear can avoid large obstacles, but they are unable to catch small insects.

Range to a target or barrier is judged by a bat as it is by a radar set, by sensing the time delay between the outgoing pulse and the echo. For a target six inches from the bat's mouth, the time delay for the round trip is about a thousandth of a second.

Though undetected by human ears, a bat's beeps measured a few inches from his mouth register as much sound intensity as the roar of a four-jet airliner a mile away. He can hear an echo from a target as tiny as a mosquito, recognize it in a split second, and swoop to the attack—a feat of nature that man, with all his electronic skill, must still hold in awe.

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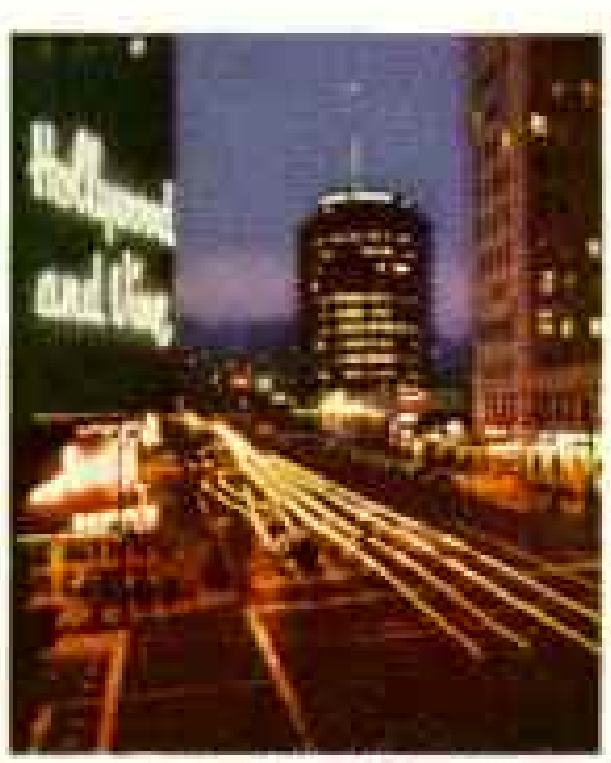

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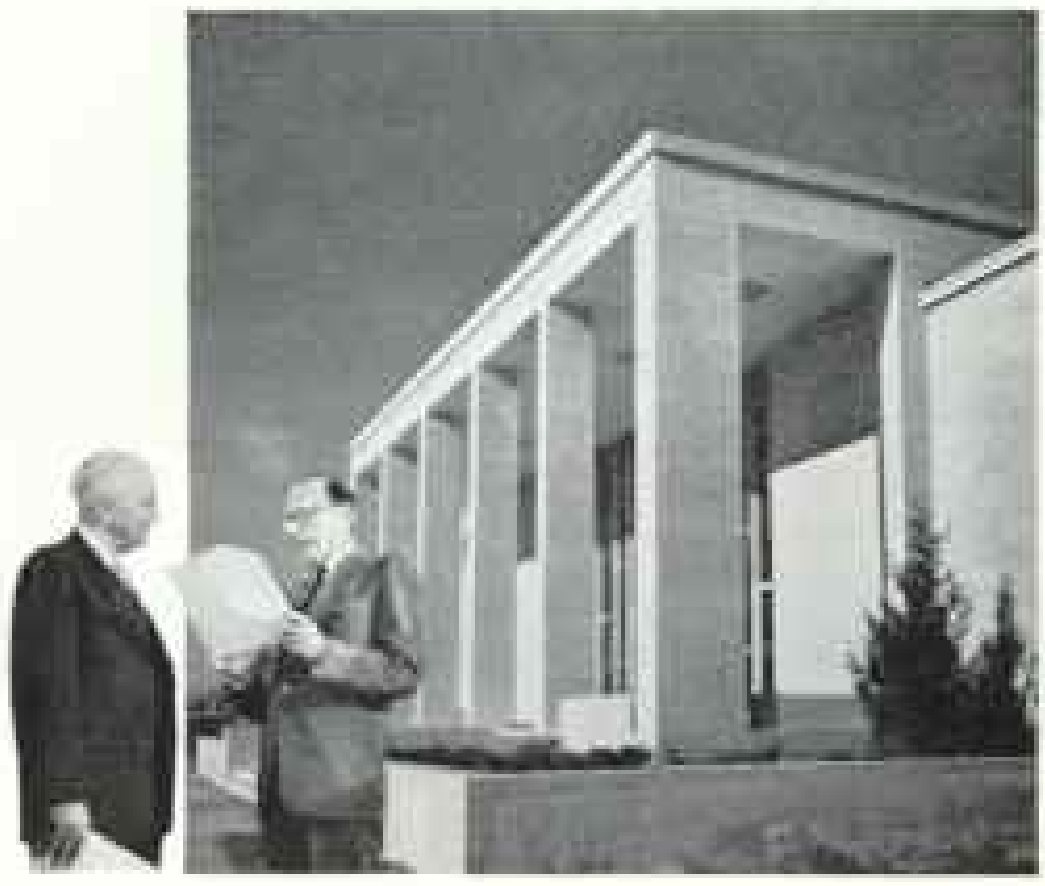

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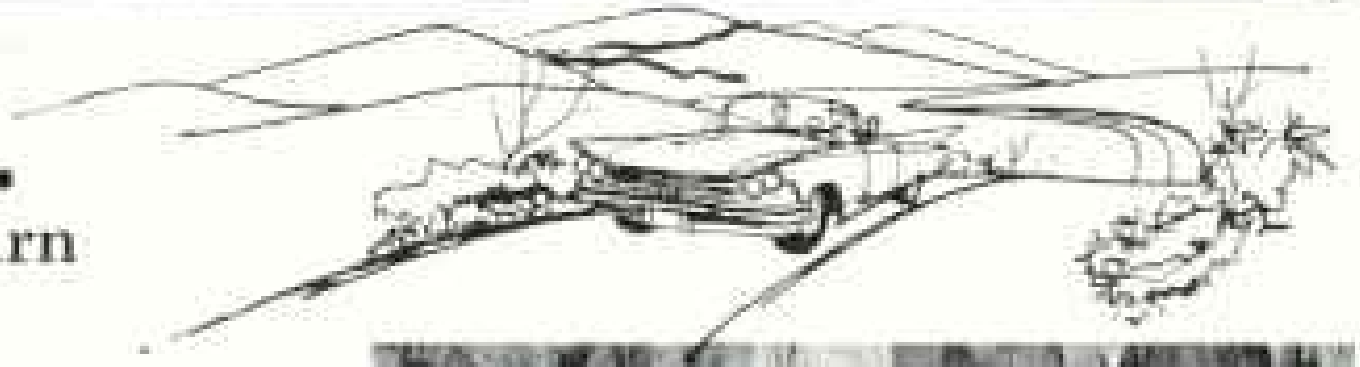

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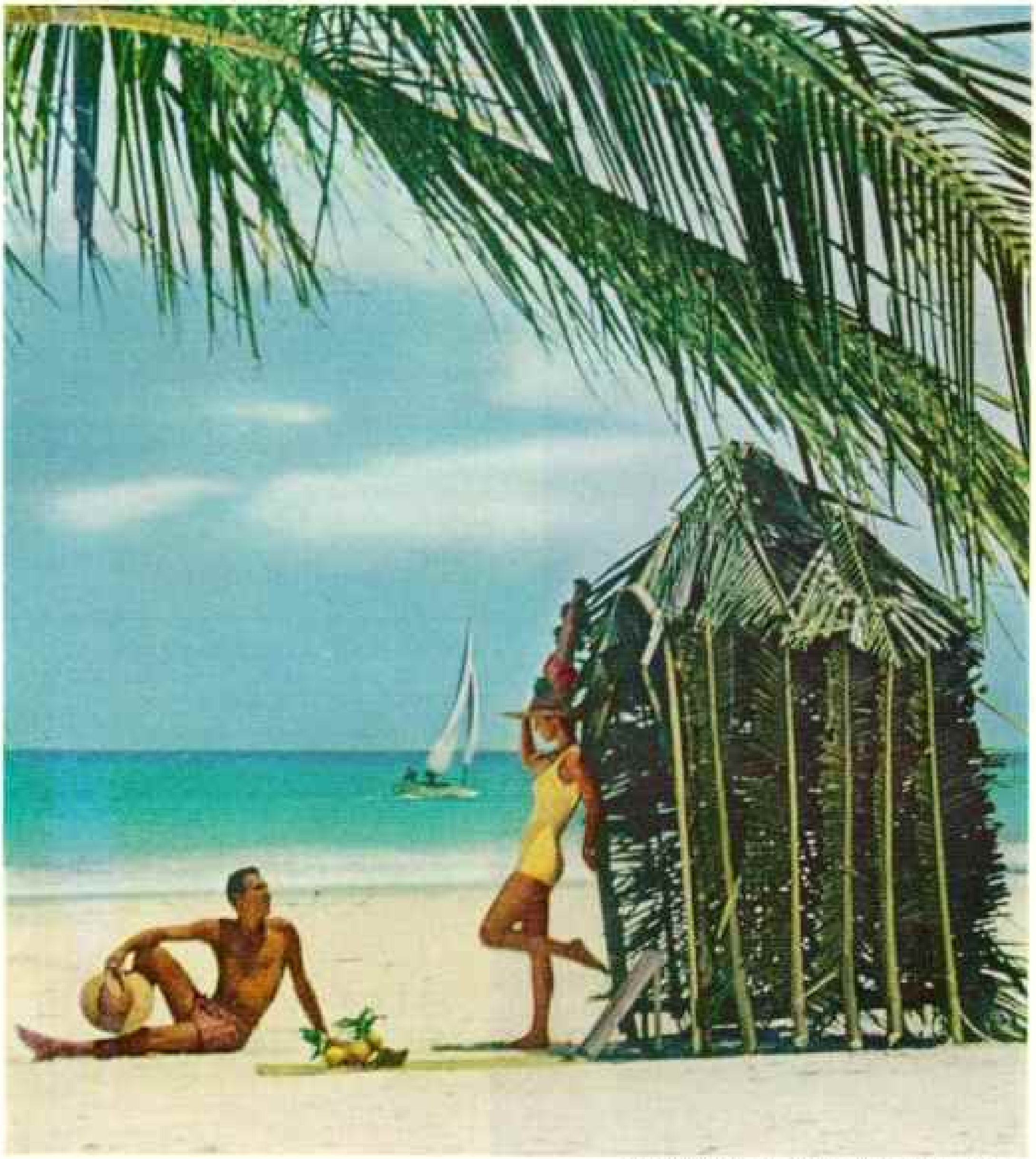

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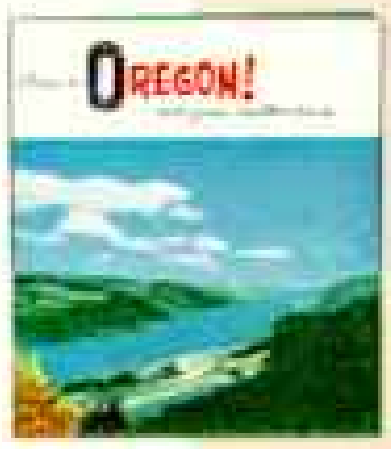

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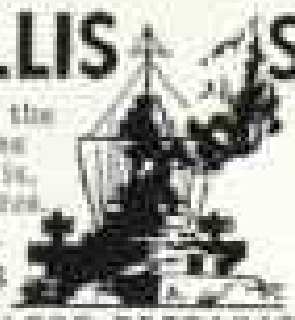

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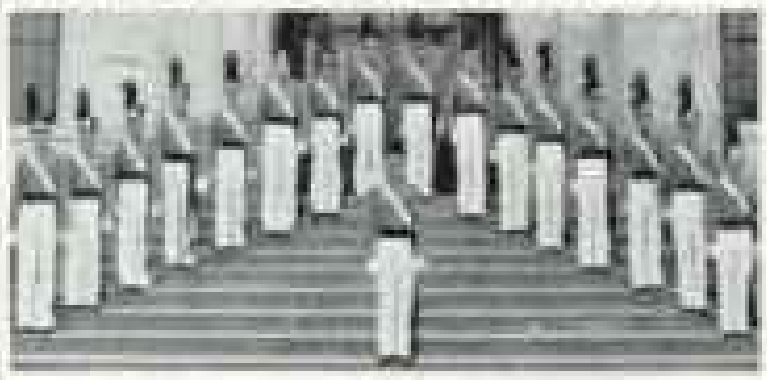

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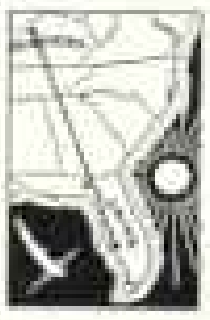

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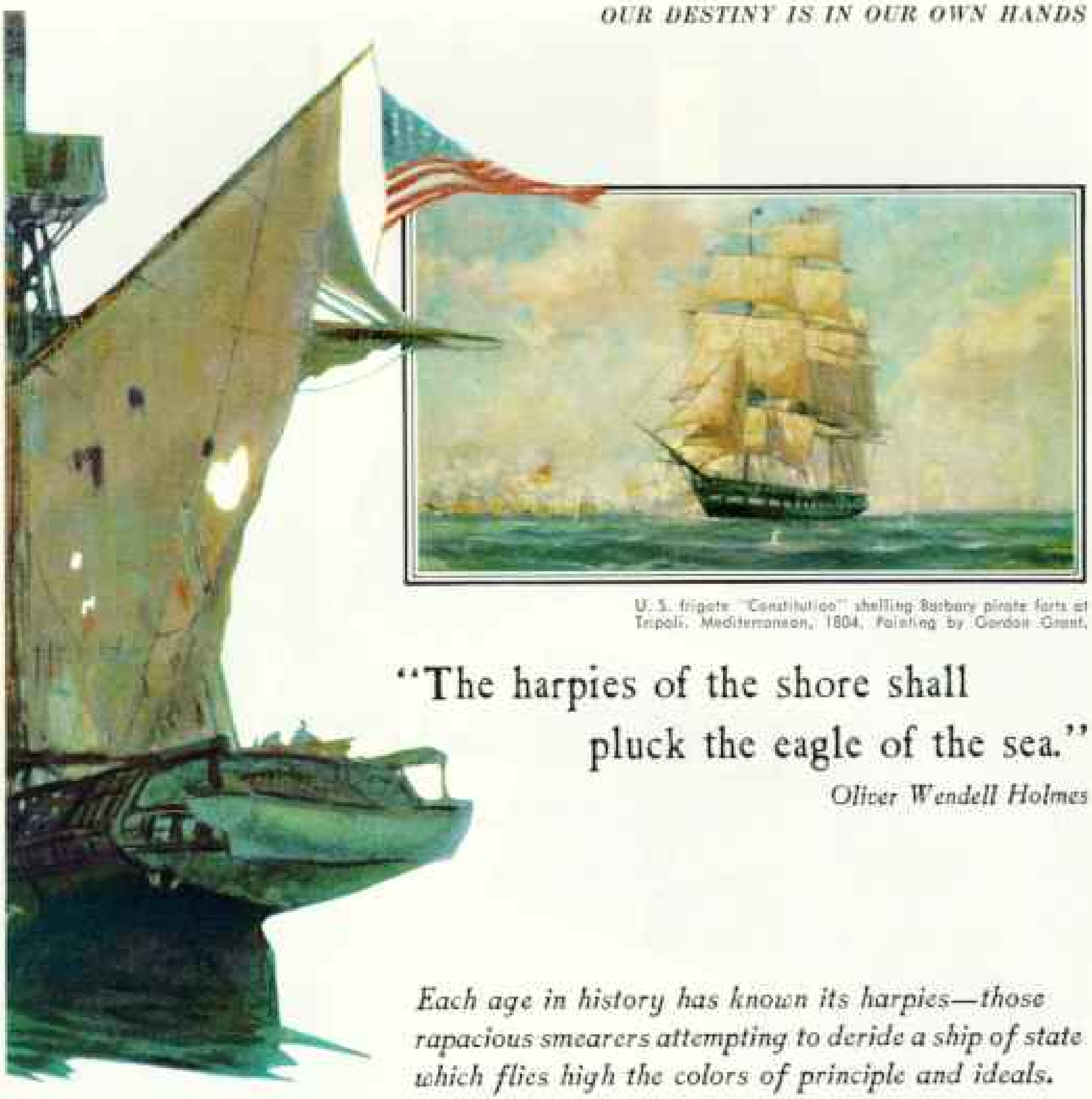

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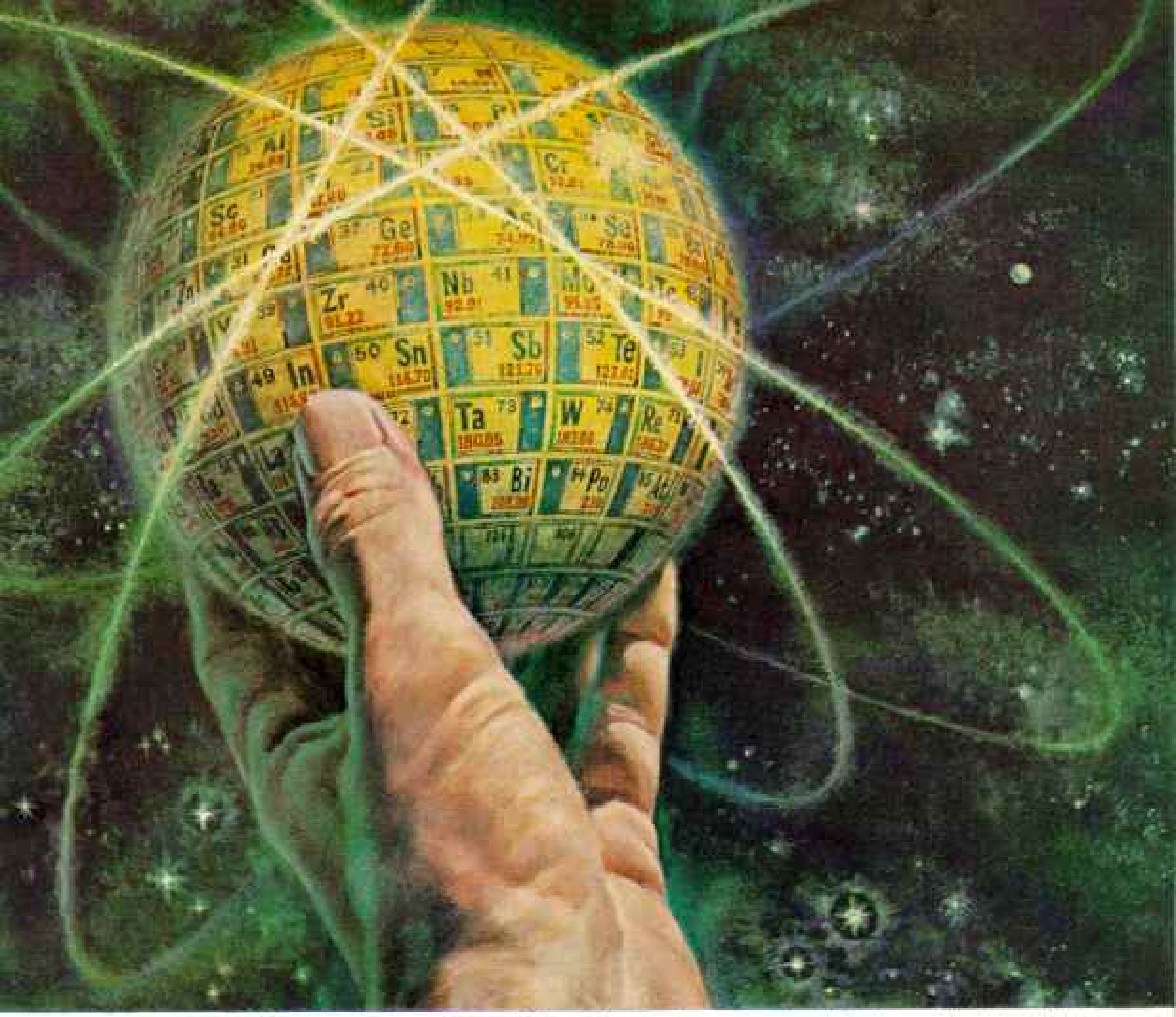

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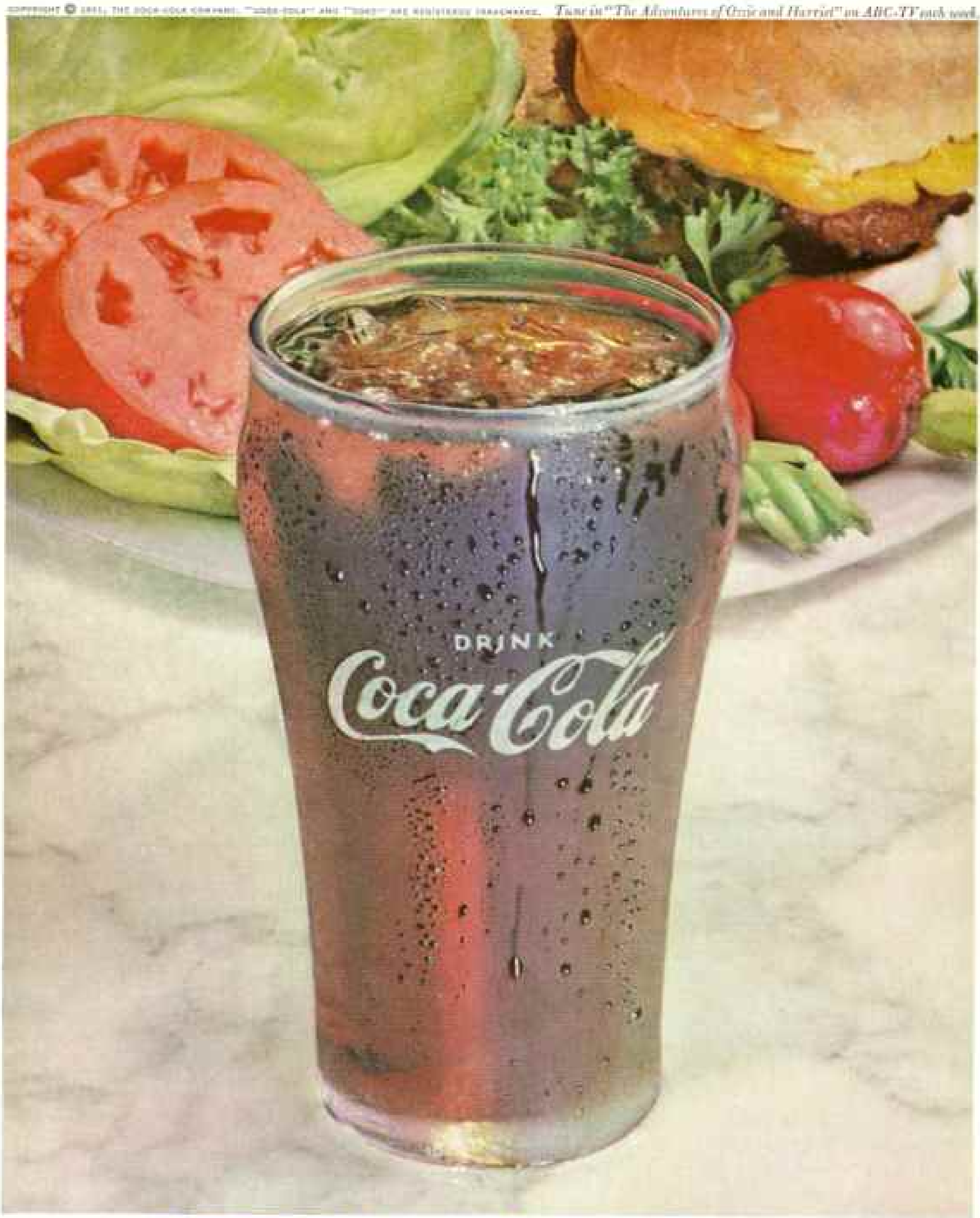

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