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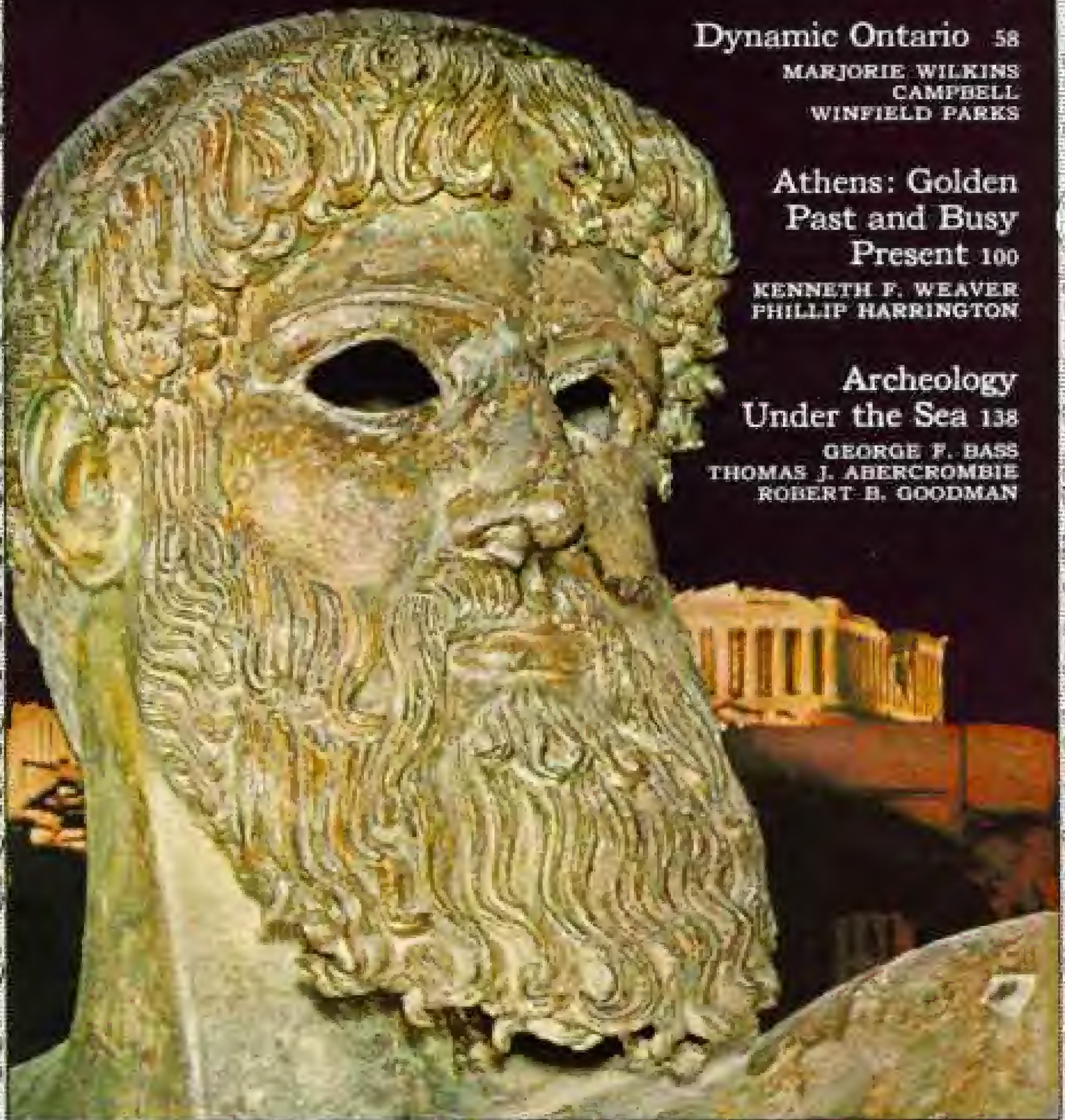

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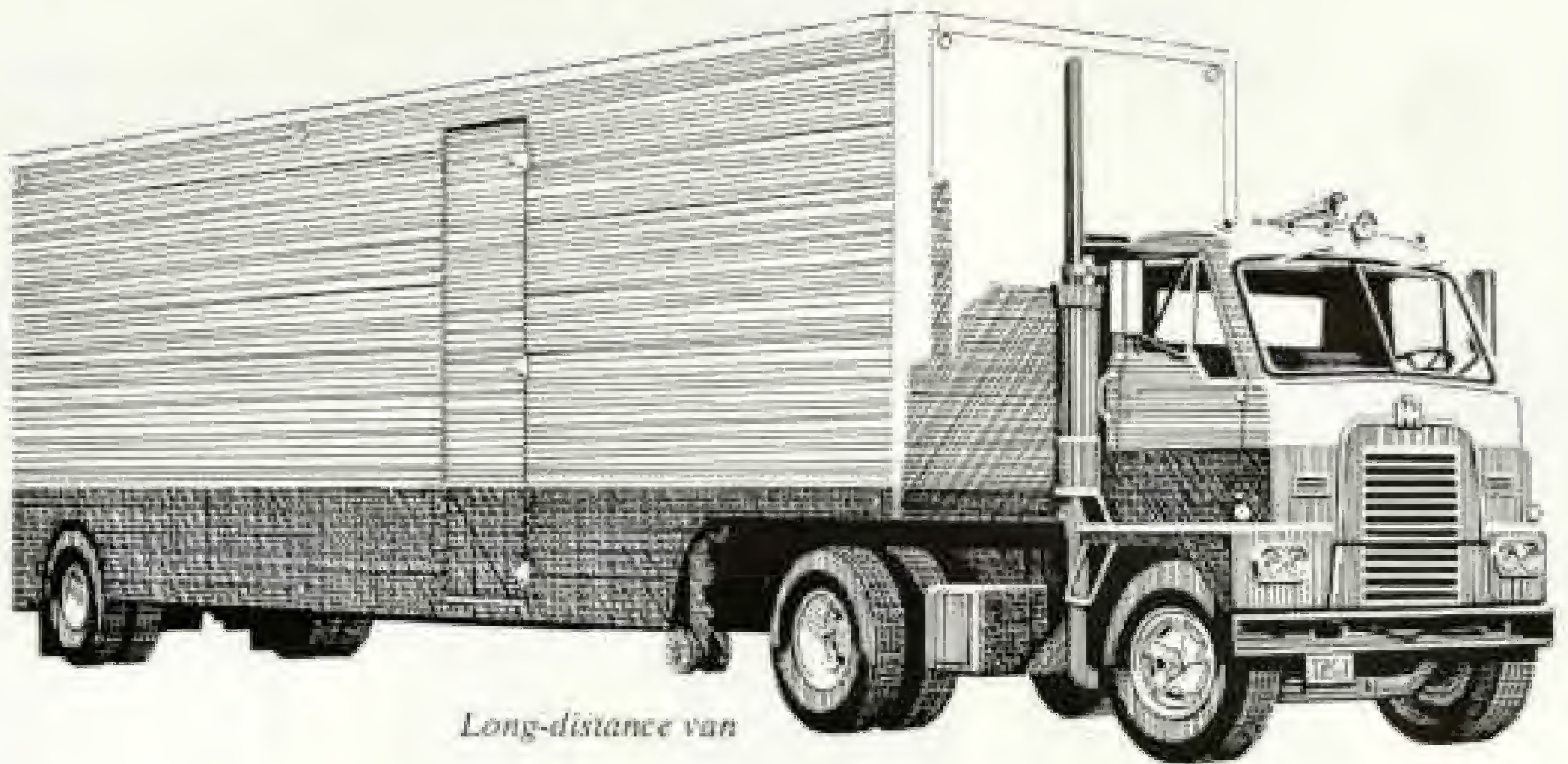

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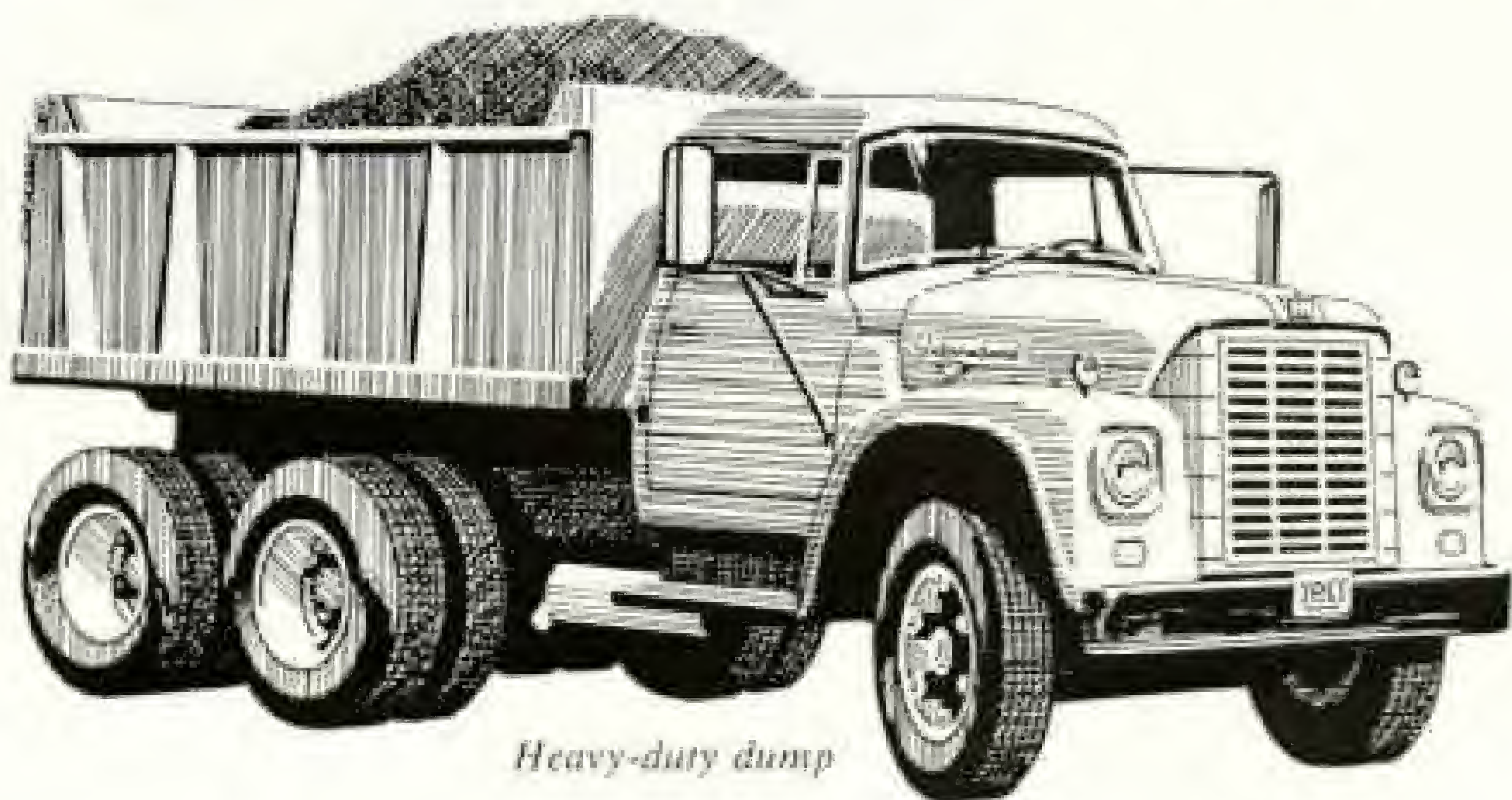

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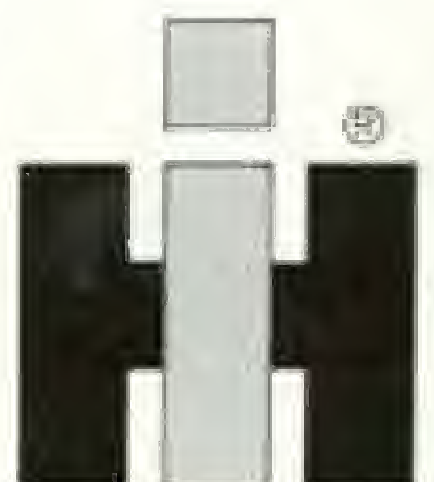

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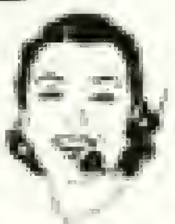

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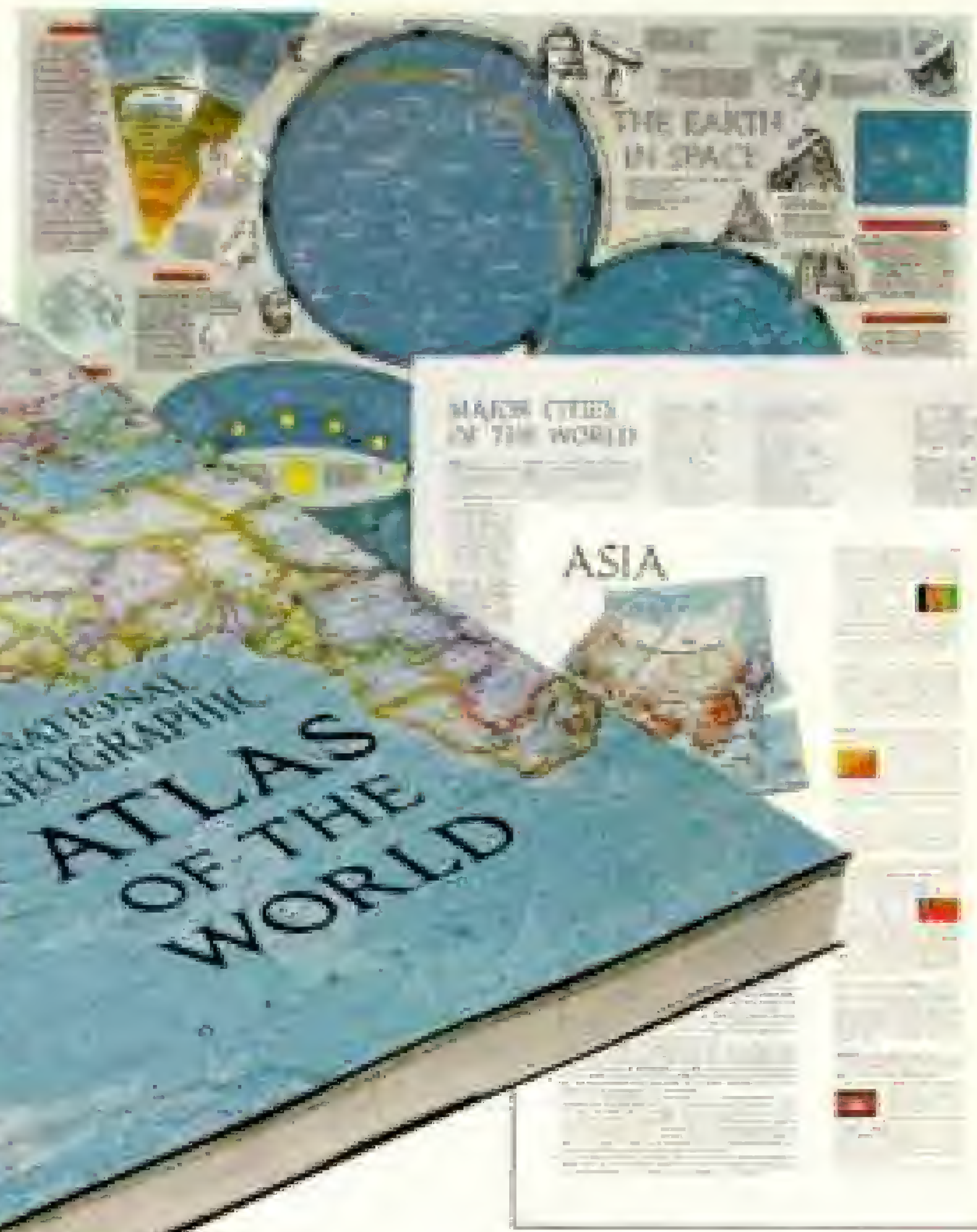

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YELLOWSTONE
where Nature has outdone the Wizard of Oz

Not even the Emerald City of Oz had such wonders as Yellowstone National Park in Wyoming. This is Castle Geyser

Yellowstone National Park in Wyoming is so unbelievable that when C. W. Cook wrote of his explorations there in 1869, *Lippincott's Magazine* refused such "fiction." Who could believe things like hot water spurting 200 feet high, glass cliffs and rivers that leaped off mountain tops? Or forests whose trees had turned into jewels?

Falls and Grand Canyon of the Yellowstone

But this Land of Oz is real. This wonderland, unique in all the world, has been forever set aside so that Americans may enjoy its strange beauty. There are 3,000 geysers and hot springs; "Old Faithful" hisses, snorts and blasts tons of water into the air on regular schedule. There's a cliff of black volcanic glass. The falls of the Yellowstone River are twice as high as Niagara. There are more than 24 layers of petrified trees whose wood has become opaline veined with amethyst.

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Yellowstone is our National Park masterpiece, *a shining example of conservation's worth to both man and Nature.* Take pride in this island in time, in this part of the past set aside for the future. Come see it to appreciate its wonders and its meaning.

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Petrified forest—now columns of amethyst-veined opaline

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NATIONAL GEOGRAPHIC

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Just a Hundred Years Ago

By Carl Sandburg

TWO LITTLE AMERICAN BURGS named for long-forgotten settlers, Gettys and Vick. . . . Two towns with no special claim to be noted or long remembered, till events wrote them red for all time as the turning point in the Civil War, just a hundred years ago this July. . . .

Two towns, one turning point, for on the same day in 1863—the Fourth of July—Grant took Vicksburg on the Mississippi and Lee ordered a retreat to the Potomac after failing to win the terrible three-day Battle of Gettysburg. A heavy rain fell as the long gray columns turned south that night from their zenith.

Lee's Union opponent, General Meade, issued a congratulatory order

to the Army of the Potomac calling for even "greater efforts to drive from our soil every vestige of the presence of the invader."

"My God!" exclaimed Lincoln in anguish at the word "invader." These were Americans all. That's what this war was all about.

As days passed without vigorous pursuit, the commander in chief wrote the general a long, bitter letter: "... I do not believe you appreciate the magnitude of the misfortune involved in Lee's escape. He was within your easy grasp, and to have closed upon him would, in connection with our other late successes, have ended the war...."

This letter, written July 14, never reached Meade. Lincoln scribbled on the envelope "never sent, or signed." He may have decided, as he later remarked, "Why should we censure a man who has done so much for his country because he did not do a little more?"

To Grant, victor on the great river where Lincoln had navigated flatboats, he wrote, on July 13, a letter like a tender handshake:

"... I write this now as a grateful acknowledgment for the almost inestimable service you have done the country.... I never had any faith, except a general hope that you knew better than I, that the Yazoo Pass expedition, and the like, could succeed.... I now wish to make the personal acknowledgment that you were right, and I was wrong."

Grant was an odd number. Here he was, a long way from home, bagging an entire army, winning the greatest Union victory of the war thus far, clearing the Mississippi River of its last major Confederate hold, yet apparently failing to send word to Washington. [Actually, Grant's message was delayed; its bearer missed a boat, found a telegraph line dead.]

The electrifying word that Vicksburg had fallen did not reach Washington on that especially glorious Fourth—nor on the fifth—nor yet the sixth. On July 7, Secretary of the Navy Welles was handed a dispatch with news from Admiral Porter at Vicksburg: that city, its defenses, and Pemberton's army of 30,000 had surrendered to Grant and the Union Army.

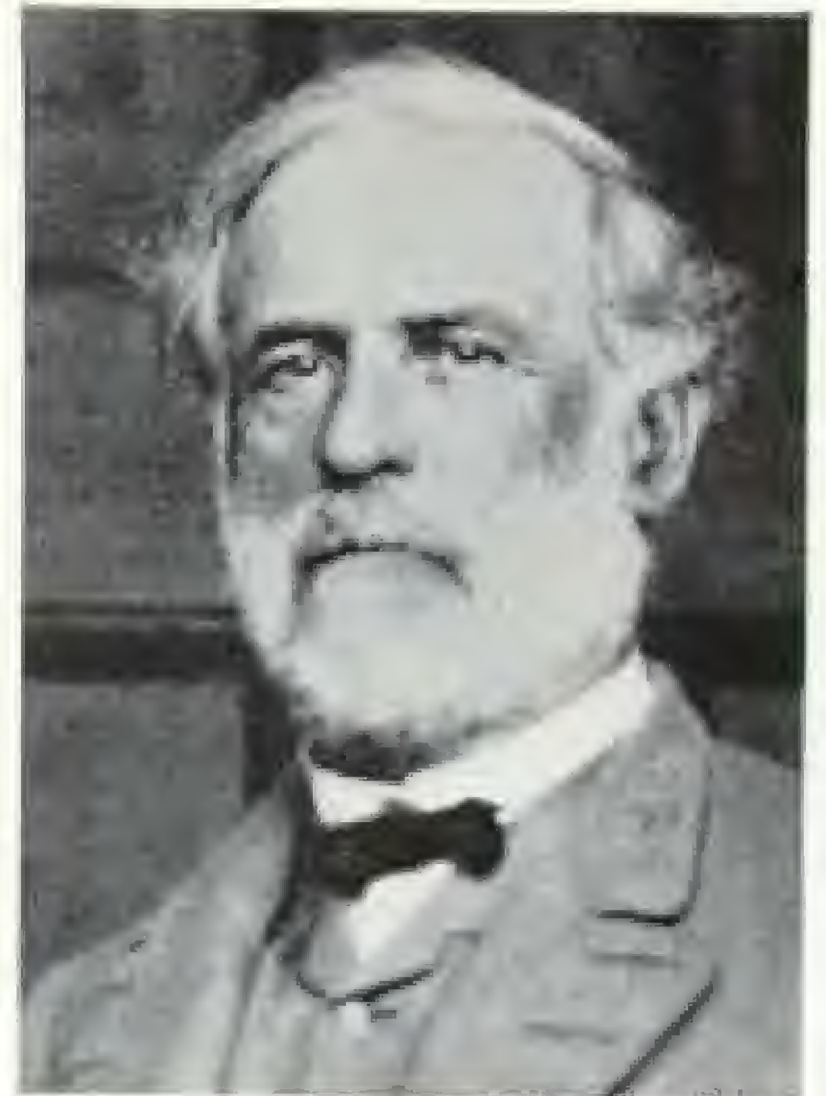
When Welles hurried to the White House and gave the news of the telegram, Lincoln looked down with shining face and said:

"What can we do for the Secretary of the Navy for this glorious intelligence? He is always giving us good news. I cannot, in words, tell you my joy over this result. It is great, Mr. Welles, it is great!"

All across the North the news brought forth mass meetings and speeches, rejoicing, firing of guns, ringing of bells. In hundreds of cities large and small were celebrations with torchlight processions, songs, jubilation, refreshments. A brass band and a big crowd serenaded the President at the White House. He spoke to the crowd: "... in a succession of battles in Pennsylvania, near to us, through three days, so rapidly fought that they might be called one great battle on the 1st, 2d, and 3d of the month of July; and on the 4th the cohorts of those who opposed the declaration that all men are created equal 'turned tail' and run."

The colloquial phrase "'turned tail' and run" was as old to him as his boyhood and had the graphic edge he wished to convey.

The same man who spoke in the idiom of the prairie could think and speak too in the diapasons of Old Testament prose.



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◀ **Silent cannon** reflects the blush of dawn on fog-wreathed Gettysburg battlefield.

"I have felt he was a man I could tie to, though I had never seen him," said Lincoln of Grant during the Vicksburg campaign. Victor in the west, Gen. U. S. Grant had come east to take command of all the Union Armies when this photograph was made. His eyes reflect the intense strain of the fighting he had undergone.

"A man . . . both steel and velvet, who is as hard as rock and soft as drifting fog, who holds in his heart and mind the paradox of terrible storm and peace unspeakable and perfect," wrote Carl Sandburg of President Abraham Lincoln.

"The very best soldier I ever saw in the field," Lt. Gen. Winfield Scott said of Col. Robert E. Lee shortly before the Southerner submitted his resignation from the United States Army. "I hope," wrote Lee at that time, "I may never be called on to draw my sword" except "in defence of my native state." A day later Virginia called him to command its armed forces.

"It has pleased Almighty God to hearken to the supplications and prayers of an afflicted people," ran the opening chords of a Presidential Proclamation of Thanksgiving July 15, "and to vouchsafe to the army and the navy of the United States victories on land and on the sea so signal and so effective as to furnish reasonable grounds for augmented confidence that the Union of these States will be maintained, their constitution preserved, and their peace and prosperity permanently restored. . . . It is meet and right to recognize and confess the presence of the Almighty Father and the power of His Hand equally in these triumphs and in these sorrows. . . ."

There is yet another kind of eloquence in a letter Lincoln wrote to James C. Conkling, a letter read at an immense mass meeting in Springfield, Illinois:

"The signs look better. The Father of Waters again goes unvexed to the sea. . . . And while those who have cleared the great river may well be proud, even that is not all. It is hard to say that anything has been more bravely, and well done, than at Antietam, Murfreesboro, Gettysburg, and on many fields of lesser note.

"Nor must Uncle Sam's Web-feet be forgotten. At all the watery margins they have been present. Not only on the deep sea, the broad bay, and the rapid river, but also up the narrow muddy bayou, and wherever the ground was a little damp, they have been, and made their tracks.

"Thanks to all. For the great republic—for the principle it lives by, and keeps alive—for man's vast future,—thanks to all."

No wonder that—100 years later—we honor the great events that made us not a parcel of quarreling states, but a united Nation.

Gettysburg and Vicksburg: the Battle Towns Today

Converging roads in Pennsylvania and heights above the Father of Waters reveal their meaning to America in the light of history's hundred years

By ROBERT PAUL JORDAN

National Geographic Staff

GETTYSBURG... VICKSBURG...

Down the long passage of a hundred years the names still boom like cannon. On both battlefields, amid the quiet of today's green grass and still monuments, I have stood and felt the century dwindle away, and heard echoes of the guns and hoofbeats of that terrible first week in July, 1863.

In the rolling Pennsylvania countryside I looked first for the answer to the question: Why did the war come to Gettysburg?

Because all roads led to it.

They did then. They still do, ten of them. Gettysburg happened because those roads curl down out of the South Mountain range of the Blue Ridge to the west. They roll up from Washington to the south and Baltimore to the southeast. They cut across the gentle swell of the land southwest from the Susquehanna River. Gen. Robert E. Lee used some of them; Maj. Gen. George G. Meade others.

Past Still Lives for Gettysburg Residents

In our time, when spring at last stirs after the long Pennsylvania winter, tourists by the thousands begin taking to those highways. They ride them all the way to Gettysburg's Lincoln Square and there, converging, ask where the traffic came from.

I did this, too. But I began bridging the century while driving the 70-odd miles from my home near Washington. It must be a privilege, I thought, to live in Gettysburg. Surely, there I could find one of the great statements of what this Nation stands for.

Then the billboards started making their own statements, miles before the monuments of Gettysburg National Military Park came into view: See this tourist attraction, take this tour, patronize this "admirably located" motel. I saw the motel presently, spread-eagled among the battlefield's granite tributes to brave men and their deeds.

A little later I stood on the steps of the Hotel Gettysburg with its

"**BRING THEM UP** *on the double-quick," shouted Maj. Gen. G. K. Warren on the second day of the Battle of Gettysburg. His call for Union troops saved Little Round Top, where a guide at the National Military Park explains its strategic importance beside a memorial to the general in bronze.*

Rings of light encircle Lincoln Square, marking the passage of cars in a time exposure. Highway signs proclaim Gettysburg's center a hub of many roads.

Train-borne excursionists pour into traffic-clogged streets as Gettysburg policeman Paul B. "Curly" Shealer keeps order. Both Mr. Shealer's grandfathers left nearby farms to join Pennsylvania's emergency forces before the Battle of Gettysburg.

Riddled by rifle fire, this fence once ran along the Union's route of retreat through Gettysburg on the first day of the battle. Moved in the 1920's, it now edges the yard of the Jennie Thompson house, a cottage that stood near the tent headquarters of Gen. Robert E. Lee. A descendant claims that on July 1, 1863, Mrs. Thompson served dinner in the home to Lee and his staff.

Toy cannon on a news-agency stand aims at the railroad station where Lincoln arrived on November 18, 1863, to dedicate Soldiers' National Cemetery. Depot now houses the Gettysburg Travel Council

Roads focus on Gettysburg today as they did in 1863 when armies of the North and South marched down them to clash in a three-day battle. Grave markers dot wooded Cemetery Hill (right), a key point in the Union defense; Lincoln dedicated the national cemetery of battle dead adjoining the civilian burial ground. In this view looking north, the circular

manager, Henry M. Scharf, watching the tourists ebb and flow at Lincoln Square. He gestured toward bustling Chambersburg Street, a westerly spoke.

"You know," he said, "the wagon train that carried Lee's wounded back to Virginia headed out that road before turning south. The train was 17 miles long."

What, I wondered, was the *real* Gettysburg? Henry Scharf could see Lee's mauled legions falling back to Virginia; I could see only automobiles, sport shirts, dark glasses.

I moved on, a man of the city enjoying the bustle of a small town on a Saturday afternoon. Then I fell to chatting with an old-timer. Was there, perhaps, a saying that characterized the town?

"Well," he replied, "there is the one that goes, 'The bullet that killed General Reynolds has been sold half a million times.'"

I turned down Carlisle Street to the old Western Maryland Railway Depot, a block from the square. You and I can't take a regular train to Gettysburg any more, although freights rumble through now and then, but President Lincoln came up from Washington by train November 18, 1863, to dedicate the Soldiers' National Cemetery. This was where he arrived and whence he departed.

The depot now houses the office of the

crown of the Visitor Center at Gettysburg National Military Park rises atop Cemetery Ridge near the center of the Union's fishhook line.

Union Veterans Relive Moments of Glory on a 1929 Visit to Little Round Top

During early decades of the century, Gettysburg's battlefield saw a special kind of sightseer. "I stood here during the attack," one would say. "We charged there," another would recall as memory peopled a quiet wood with shouting, cursing soldiers. As the years passed, such veteran visitors began to dwindle. The last Civil War soldier died in 1959.

Gettysburg Travel Council. I went inside; it was clean and tidy—if you overlooked the shattered window glass on the floor.

"What happened?" I inquired. And got a laughing explanation.

Earlier that day, the young lady said, there had been a Civil War Centennial observance. Naturally, cannon had to be fired. An artillery piece had been rolled onto the railroad tracks beside the depot.

When it was discharged, glass tinkled to the floor from the concussion.

I began to think I was getting to know the real Gettysburg. I roamed town and field for days after that, and slowly I came to understand how Henry Scharf could see a wagon train that had not existed for a hundred years. The long century *does* fall away there before one's eyes.

The borough dates back to Revolutionary days, but the visitor soon sees that today's Gettysburg draws its inspiration from June 30, 1863. On that day, the points of Meade's Army of the Potomac and Lee's Army of Northern Virginia first touched a mile to the west. On July 1 began the three-day battle that saved the Union and forever altered this hub of a town.

Ninety-seven thousand Federals fought 75,000 Confederates west and north of town,

down through it, and beyond. Three days and it was done, and 51,000 men of North and South were dead, wounded, or missing.

Late on the fourth day—Independence Day—hindered by a driving rainstorm, Lee started his retreat, knowing that the South had lost in the North, perhaps knowing in his heart that as of July 4, 1863, the end had begun for the Confederacy.

Lee's effectives moved south by way of the Hagerstown Road; his wounded, guarded by Brig. Gen. John D. Imboden's cavalry, went out Chambersburg Pike. Many of the wounded had been without food for 36 hours; many had received no medical attention. The wagons had no springs. General Imboden later said that he witnessed the most heartrending scenes of the war during the retreat.

Hardship Stalked Both Blue and Gray

What, you may ask, were the Confederates doing in Pennsylvania? No one is better qualified to answer than Frederick Tilberg of the National Park Service, Research Historian at Gettysburg. The South, Dr. Tilberg explained to me, was carrying the war to the North—even as Union Maj. Gen. Ulysses S. Grant was drawing the noose ever tighter around Vicksburg, 900 miles away in Mississippi.*

Lee's army marched westward from Fredericksburg and up through the Shenandoah Valley, hidden from Union forces moving north on the other side of the Blue Ridge. More and more, Lee menaced Washington and Baltimore (map, page 14).

Confederate troops went through Gettysburg on June 26; they lacked money, food, and shoes. Some were barefoot. (Outside Vicksburg, in the Union trenches, there were shoeless Northern soldiers, too.)

Lee was out of touch at this time with his cavalry—his eyes and ears. Only on June 28, while near Chambersburg, Pennsylvania, did he learn that the Union Army was in the vicinity of Frederick, Maryland, about 40 miles away. He decided to await the Federals in a good defensive position at Cashtown, eight miles northwest of Gettysburg. Neither Meade nor Lee foresaw Gettysburg as the field of battle, but there the advance units of their armies came together June 30, 1863.

All roads had converged on a ridged plain, a land of wheat fields and orchards and meadows, with a town of 2,400 souls at its heart. It was a thriving market place, this

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Running to the attack, an infantryman of the 1st Minnesota Volunteers heads for Trostle Woods to counter a Confederate breakthrough on July 2, 1863. During some 15 minutes of furious action the regiment suffered 82 percent casualties.

* NATIONAL GEOGRAPHIC Civil War coverage includes "Witness to a War," by Robert T. Cochran, Jr., April, 1961. See also *Battlefields of the Civil War*, a map supplement with that issue.

town, and a carriage maker and cobbler. It was a center of culture, too, with a college and seminary.

All roads had led to Gettysburg.

I drove to the northern edge of the battleground. Except that the town has grown to 8,000 residents, the sweep of that storied field, I had been told, is largely unchanged.

I could believe it, standing on Oak Ridge and looking south toward Seminary Ridge on my right, Cemetery Ridge on my left, all the way to the dark, rocky hills called Big Round Top and Little Round Top.

The first day's fighting swirled in from the west of where I stood, and down through the town whose houses began half a mile south of me. Just beyond the town were Culp's Hill, Cemetery Hill, and Cemetery Ridge—the heights to which the Rebels drove the Yankees that first day. Had the South kept going up those hills, it might have won the battle then and there.

In town, citizens hid in cellars, but soon emerged to care for the wounded. Churches, public buildings, and homes became hospitals. Only one civilian was killed all through

Riding through redbud, Maj. Gen. John Sedgwick represents the reserves who came up to protect the Union's left flank on the battle's second day. Nearly a year later he died in action at Spotsylvania Court House. Picnickers play on ground adjacent to the park.

the battle. A bullet tore through two doors and struck 20-year-old Jennie Wade as she was kneading dough in a kitchen.

The Confederacy won the first day, but in winning it pushed the Union into defensive strongholds. For two days more the South strove mightily against those positions, and more than once victory was near. There was no want of courage and valor on either side at the Peach Orchard and the Wheat Field and all the other bloody places.

Strung along Cemetery Ridge, the Union Army battled from a natural citadel against which the South, in one of warfare's greatest assaults, could not prevail. I could see why, on the face of it. One could no more hide from rain than evade the terrible fire that spewed down that open slope.

I could also see—looking from Oak Ridge—the continuing story of Gettysburg, the eternal blending of past into present. Scores of new homes had edged into this most famous of American battlefields. Was more of this blooded terrain to be scooped out for the basements of suburbia?

Back to town I went to discuss this with Robert L. Bloom, secretary-treasurer of the Gettysburg Battlefield Preservation Association and chairman of Gettysburg College's history department. The National Military Park, he explained, occupies 3,162 acres in a great arc around the town. The problem is that within the park lie several parcels of privately owned land.

"We are trying to help buy this land," he said, "before—well, before it's too late."

Here and there, he went on, it was already too late: those new homes I had seen on the battlefield, for instance.

Contributions have come from all over the United States and from foreign lands; the association has bought 55 acres, deeding them to the Federal Government, and is negotiating for more of the 600 acres remaining.

There is another side to this story. Some persons oppose the association. Land it buys, they point out, no longer pays taxes; land that cannot be developed precludes growth.

"Certainly, go ahead and build on it," a third-generation Gettysburgian said to me.

Exploring Devil's Den, a boy can imagine himself either a Union or a Confederate soldier. Each side held the fortress of boulders for a few hours on July 2, 1863.

KODACHROME BY NATIONAL GEOGRAPHIC PHOTOGRAPHER BATES LITTLEHALES © N.G.S.

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Rebel sharpshooter's last sleep. Shortly after the battle, Alexander Gardner, one of Mathew Brady's photographers, made this picture at the same Devil's Den stronghold shown on opposite page. Revisiting the spot four months later, he found a bleaching skeleton within the moldering uniform, the U. S. rifle-musket still propped against the rock.

"It would make jobs, wouldn't it? Many of our young people leave when they get out of school. There is not enough work for all of them here. I earn *my* living in Baltimore."

It is a round trip of more than 100 miles to Baltimore, and my friend commutes five times a week. Other Gettysburgians work in York, Carlisle, Frederick, and elsewhere.

On the other hand, Gettysburg is becoming something of a retirement town—not only, I was told, because of the beauty of the countryside or because it is a historic shrine but because former President and Mrs. Eisenhower live there (pages 26-7).

Gettysburg thus is a unique compromise between yesterday and today.

As I drove about town, I saw the modern Eisenhower Elementary School with its thousand glassy eyes; Rebel and Yank fought where it stands on the battle's first day. I also admired, on the outskirts, the trim nine-hole golf course—General Eisenhower often plays here—and I thought idly that one of its golfers might take a divot and turn up a Minié ball, for bullets once whined here, too.

Walking the old streets, I noted the parking meters, the traffic lights, the television antennas. The Junior Chamber of Commerce, however, is heightening the flavor of Civil War times; "Campaign Gettysburg" is its project's name.

The idea is to create a "historic image" for the main business section. This is being

(Continued on page 23)

PRELUDE TO Gettysburg

MAP NOTES BY CAROLYN BENNETT PATTERSON, SENIOR EDITORIAL STAFF

THE three-day Battle of Gettysburg stands as the high-water mark of the Confederacy. Thereafter the surge of the South receded, though the war dragged on for two more years. Before Gettysburg, Gen. Robert E. Lee walked in an aura of victory. From June, 1862, when he assumed command of the Army of Northern Virginia, Lee prevailed through 12 months of battle. To Stonewall Jackson, Lee made suggestions that the intuitive tactician brilliantly carried to success. But Lee's masterpiece, the Battle of Chancellorsville, cost him much: Jackson fell, an accidental victim of his own men's fire.

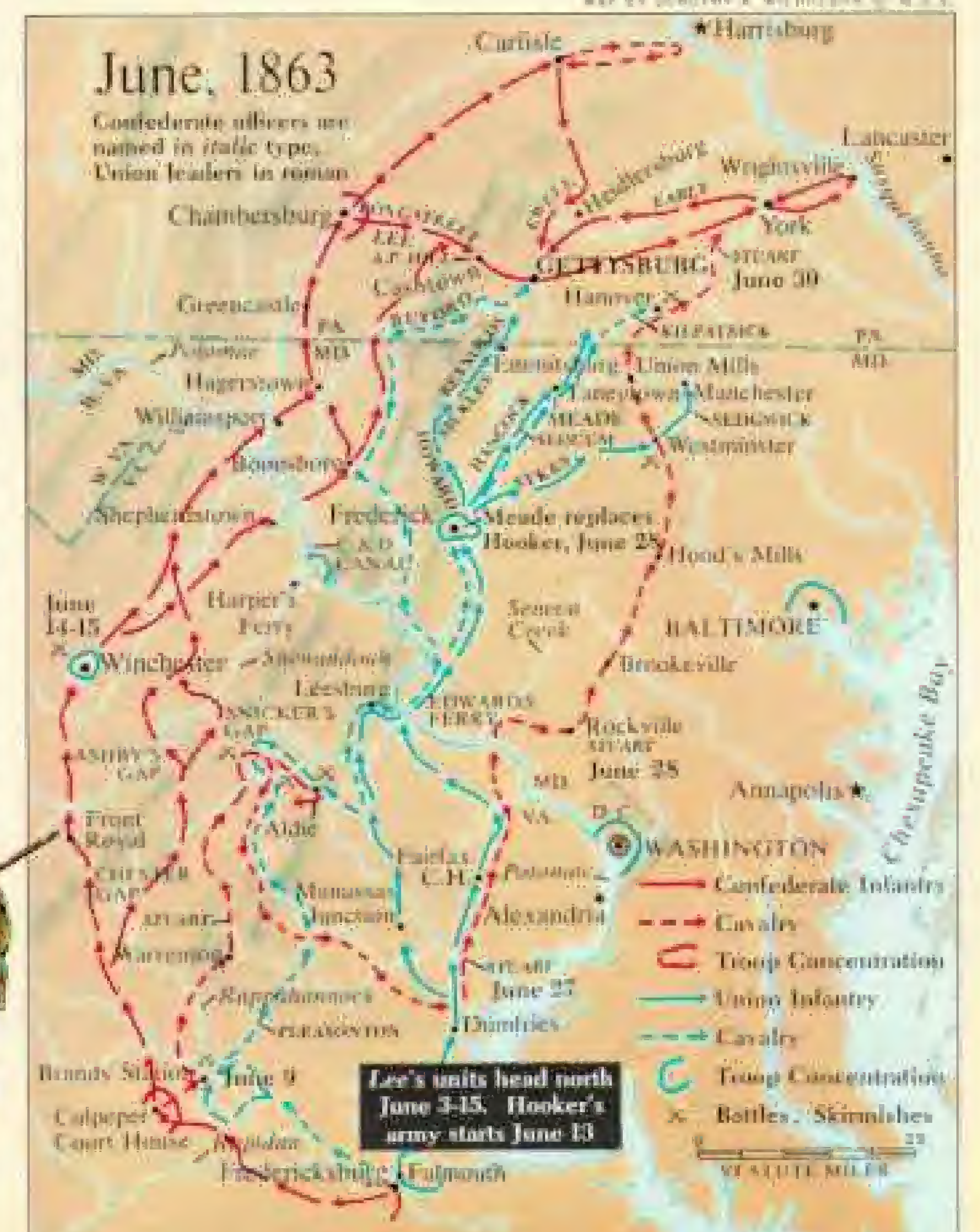
Now as the summer of 1863 neared, Lee needed a victory beyond and above the others. He wanted to carry the war to the North, where success might encourage the peace party to agitate for a negotiated settlement. And some historians believe he hoped to offset the threatened loss of Vicksburg, even then on the eve of desperate siege. A Union victory at Vicksburg would split the South in two along the Mississippi River.

In Virginia, Lee would have to fight on his own soil, where supplies were running low. Rich Pennsylvania farm and industrial centers would offer relief. Gathering his gray host, Lee moved north.

To the gaunt, lonely man in the White House, the war had become an agonizing search for a fighting general. Lincoln had appointed commander after commander, but none had battled with both heart and brilliance. When Confederate John S. Mosby captured a brigadier general and 58 horses on a raid at Fairfax Court House, Virginia, the President appeared to regret loss of the horses more than the general.

"Fighting Joe" Hooker had disappointed him at Chancellorsville. Eventually the only thing Lincoln wanted from Hooker was his resignation. He got it, finally, and June 27, 1863, appointed Maj. Gen. George G. Meade commander at the very moment the Army of the Potomac was marching to its destiny at Gettysburg. The curtain was rising.

Marching blind to each other, Lee's invading forces and the defending Army of the Potomac push north. The Blue Ridge screens Lee, whose line is so long Lincoln feels "the animal must be very slim somewhere" and suggests that the Federals "break him." Lee's eyes and ears, Maj. Gen. J. E. B. Stuart's cavalrymen, swing east of Union forces, lose touch with Lee, and fail to provide vital reports. Knowing the long march must lead to battle, Lee writes: "All must remember us in their prayers." Meade fears too. "Pray for me," he writes.



The battle of GETTYSBURG JULY 1, 1863

8:00 a.m. BATTLE BEGINS: Buford, a bold fighter, marshals 3,000 cavalrymen to hold off Confederate skirmishers approaching along the Chambersburg Pike. Buford's battery on McPherson Ridge fires the first cannon shot of the battle. *Pegram's* artillery on Herr Ridge answers.

9:00 a.m. *Archer* and *Davis*, the latter a nephew of the Confederate President, send a strong force of skirmishers to charge Buford's line.

10:00 a.m. Meredith and Cutler come to Buford's aid. A fife-and-drum corps playing "The Campbells Are Coming" pipes Meredith's Iron Brigade into battle. Reynolds, commander of the left wing, is killed by a sharpshooter and Doubleday takes his corps. An hour later Stone and Biddle join in the fight.

11:00 a.m. Federals push remnants of the *Archer* and *Davis* brigades back to Herr Ridge. Captured, *Archer* goes to the Union rear and runs into Doubleday, a friend before the war. "Archer, I'm glad to see you!" cries Doubleday, but *Archer* refuses to shake hands, saying, "Well, I'm not glad to see you by a damn sight."

1:00 p.m. *Rodes* with four brigades rushes down Oak Ridge and charges the Union flank. Cutler wheels to meet the attack. Baxter and Paul come out of the reserves to join him. A fifth *Rodes* brigade, under *Doles*, swings left to engage Von Amsberg.

2:00 p.m. *Brockenbrough* and *Pettigrew* go into action from Herr Ridge; their superior force cuts the Meredith and Stone brigades to ribbons.

2:30 p.m. *Early*, arriving on the Harrisburg Road, sees *Rodes* striking on Oak Ridge and attacks Howard's corps in the plain, crushing it in half an hour. Closely pursued, the corps flees through Gettysburg. Confederate Brig. Gen. *John B. Gordon* comes upon wounded Union Brig. Gen. Francis C. Barlow lying in the hot sun. *Gordon* gives him water and arranges for Barlow's wife to come and nurse him. Years later the two men meet again at a dinner party and become friends.

3:00 p.m. *Thomas*, *Scales*, *Perrin*, and *Lane*, supported by *McIntosh's* artillery, overwhelm Union remnants, which fall back to Seminary Ridge and then to Cemetery Hill. Confederates stop on Seminary Ridge.

3:30 p.m. Baxter and Paul, their right flank threatened by *Early*, fall back.

5:00 p.m. Doubleday and Howard rally Union brigades on Cemetery Hill, and men take positions among the gravestones. Soon after dusk, Wadsworth, a kindly, gray-haired gentleman farmer from New York, occupies Culp's Hill.

6:00 p.m. *Hays* and *Hoke* of *Early's* division stand ready to attack East Cemetery Hill, but *Ewell* decides to wait for reinforcements. While *Ewell* studies the hill from horseback, a Minié ball hits his wooden leg. "You see," *Ewell* remarks to a companion, "how much better fixed for a fight I am than you are!"

DAY OF PROBING. When the prospect of a major conflict looms, *Lee* plans to fight at Cashtown, Meade near Taneytown. But the fingers of their armies chance to touch at Gettysburg, a hub of roads. And the race to bring up reinforcements is on.

Lee's units arrive opportunely, and his skirmishers aim for Union artillerymen, already firing on them. But as Union Capt. J. V. Pierce, who witnessed the engagement, remarked, "Artillery against skirmishers is like shooting mosquitoes with a rifle."

The fight seesaws at first, then the Confederates sweep Meade's men from the western ridges and northern plain. Retreating Federals stream across fields and through the streets of Gettysburg, fighting a desperate rear-guard action. They rally on Cemetery Hill and Ridge.

Lee sees a chance to destroy the disorganized enemy. He advises Lt. Gen. *Richard S. Ewell*

Paintings by ROBERT W. NICHOLSON
Assisted by J. E. Barrett
with Lisa Biganzoli *and* Snejinka Stefanoff
National Geographic Society Staff

Historical documentation
by DR. FREDERICK H. TILBERG, *Historian*
Gettysburg National Military Park

Through the afternoon and night, Federal reinforcements move up along four roads.

Confederate officers are named in *italic* type; Union leaders in roman. Times are approximate.

to press "those people," adding, "if practicable." But *Lee's* discretionary order, once so effective with *Stonewall Jackson*, fails to move this corps commander, who awaits a division en route down the Chambersburg Pike. At 11 p.m. the fresh Confederates make a reconnaissance of Culp's Hill, but it is too late for a successful attack. The Federals now occupy the hill in strength.

Arriving after midnight, Meade finds two corps in tatters. Of 18,000 who fought during the day, only a third remain. The commander meets his generals near the graveyard gate on Cemetery Hill. "Is this the place to fight the battle?" he asks.

The fateful answer: yes.

Throughout the night fresh Union troops and supply trains pour in. By morning Meade has consolidated a fishhook line from Spangler's Spring, Culp's and Cemetery Hills, along Cemetery Ridge to Little Round Top.

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JULY 2, 1863

DAY OF TURMOIL. For *Lee* it is a time of opportunity: to break Meade's line before the entire Union Army arrives. He plans to strike hard along the Emmitsburg Road and roll up the enemy's flank while attacks on Cemetery and Culp's Hills pin down Union brigades there.

But *Lee*'s army fails to coordinate. Not until 11 a.m. does Lt. Gen. *James Longstreet* get the order to move to his attack position on Warfield Ridge. After an hour's delay, *Longstreet* marches off, but loses another two hours retracing his steps to conceal his march from Union lookouts on Little Round Top.

Meade, too, has troubles. His left flank, held by Maj. Gen. Daniel Sickles, occupies undesirable low ground. About noon Sickles sends an exploratory force forward and finds Confederates moving up on Warfield Ridge. Fearing an attack, Sickles quits his place on Cemetery Ridge to

6:00 p.m. Ruger and Geary, who wait out the day at Spangler's Spring, march off to Sickles's aid. Geary takes the wrong road; Ruger arrives too late. Sickles, a leg shot off, is carried to the rear nonchalantly smoking a cigar.

6:00 p.m.

4:00 p.m. Sykes races to the support of Sickles and fights in the Wheat Field. On the same mission, Caldwell moves in from the reserve an hour later. Sedgwick protects the rear.

4:30 p.m. Warren, one of Meade's staff officers, having found Little Round Top unguarded, intercepts Vincent's march to support Sickles. Sacrificing his life, Vincent halts *Law*'s drive to possess the hill. Weed rushes up to repel *Robertson*'s attack.

4:00 p.m.

4:30 p.m.

PEACH ORCHARD

5:00 p.m.

WARFIELD RIDGE

4:15 p.m.

4:00 p.m.

5:00 p.m. *Kershaw* and *Semmes* on Warfield Ridge head for the Wheat Field, where Burling and De Trobriand counterattack.

3:30 p.m.

4:15 p.m. *Benning* charges for Devil's Den; *Anderson* follows. Their attack against Ward rages until nightfall, when Union troops drop back, "whipped to death," as one Federal said.

4:00 p.m. MAJOR ATTACK BEGINS: *Law* and *Robertson* move forward. Their objective: Little Round Top, momentarily undefended. In pairs, brigades down the line go into action.

occupy higher ground at the Emmitsburg Road. His left is at Devil's Den, a knoll of boulders. Little Round Top is exposed to Southern attack.

Finally aligned at 4 p.m., Confederate brigades peel off in pairs after a half-hour artillery barrage. They meet Sickles's corps face on. Desperate fighting rages through the Peach Orchard, the Wheat Field, and Devil's Den. Men in gray come within yards of taking Little Round Top, a key to the Federal line. By sundown, riddled Union brigades struggle back to Cemetery Ridge. Confederates briefly pierce the enemy's center before they, too, fall back. The attack on Cemetery Hill—late in coming—fails as well, but *Lee* gets a toehold near Culp's Hill.

When the bright moon sails over the bloody fields, the moans of thousands of wounded make a pitiful chorus. Hundreds more rest in the silence of death.

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4:00 a.m. Three brigades of reinforcements join *Johnson* for an attack on Culp's Hill, where *Lee* hopes to win an anchor on the Federal right.

5:00 a.m. Geary and Ruger take the initiative and strike *Johnson* first. Artillery fire from Winegar, Rigby, and Muhlenberg opens their attack.

10:00 a.m. Union troops break through the Confederate line above Spangler's Spring and in an hour force the enemy back across Rock Creek and out of firing range.

3:20 p.m. Final surge carries *Armistead* and 150 men over the stone wall protecting the Union's center. Twenty minutes later *Armistead* lies mortally wounded, his men surrounded. Beaten survivors outside the wall—a scant 6,000—fall back to the protection of their guns.

3:15 p.m. Gray units converge as they reach the Emmitsburg Road. Union artillery pours volleys into the charging ranks. Vermont regiments under Stannard pick off men on the Confederate right flank; the 8th Ohio attacks on the left. One observer who saw the attack on *Pettigrew* wrote: "A moan went up from the field, distinctly to be heard amid the roar of battle, but on they went . . . more like a cloud of moving smoke and dust than a column of troops."

3:00 p.m. *Alexander*, in charge of the engaged Confederate artillery, informs *Pickett* that the time has come for the infantry attack that he and his fresh troops will lead. *Pickett* rides over to *Longstreet*, who appears "like a great lion at bay." The lion merely nods. *Pickett* and his men, supported by *Wilcox* and *Lang*, sweep forward on the right; *Pettigrew* and *Trimble* on the left.

JULY 3, 1863

DAY OF DECISION. "The enemy is there," says *Lee*, "and I am going to strike him." His brief breakthrough at the Union center on July 2 gives him hope that a massive frontal attack may succeed.

About 1 p.m. 140 Confederate guns loose the war's most devastating cannonade, the prelude to *Pickett's* Charge. Meade's guns answer, and for two hours the lines endure a thundering hell. A pall of smoke hanging over the valley between Cemetery and Seminary Ridges suddenly lifts, and the Federals gasp at the spectacle. Marching as on parade, battle flags flying, almost 15,000 Confederates in ranks a mile wide move out from Seminary Ridge and drive toward a stone wall and clump of trees at the Union center.

On and on they stride across the open fields, never faltering. Union artillery cuts gaping holes in the line, but men step over their dead and wounded, close up, and dress ranks. Union in-

2:00 p.m. *J. E. B. Stuart*, three miles down the Hanover Road (out of picture at top), plans to harass the Union rear with his cavalry, but is intercepted by Brig. Gen. D. M. Gregg's horsemen, along with Brig. Gen. George A. Custer, who, years later, dies in a stand against the Sioux Indians.

3:00 p.m. Farnsworth, acting under protest, launches an unsuccessful cavalry attack against the Confederate right flank and is killed.

Night. A comrade hears *Lee* groan, "Too bad! Too bad! Oh, too bad!" The Battle of Gettysburg is over after claiming 28,000 Confederates killed, wounded, and captured. The Union has lost 23,000.

1:00 p.m.

5:00 p.m.

Early morning: *Longstreet* observes the Union left and convinces *Lee* of its strength. *Lee* then orders an attack on the Union center.

1:00 p.m. **SOFTENING UP FOR ATTACK:** One hundred-forty Confederate guns massed along Seminary Ridge open a two-hour cannonade. Meade's guns respond with deliberate fire. The Confederate barrage creates the "most infernal pandemonium" inside the Federal line, as one officer reports.

fantrymen fire point-blank into the gray mass. Brigades crumble and reform. Now the carnage is unbelievable, but 150 men, led by Brig. Gen. *Lewis Armistead*, leap the wall nearly a mile from their base. Defiantly shouting the Rebel yell, the valiant 150 fight hand to hand against an overwhelming force of men in blue. Within 20 minutes, all is lost, and the gray-clad band falls to death or capture.

Tried beyond endurance, Confederates short of the wall fade back or wave handkerchiefs in surrender. *Pickett's* Charge, like that of the Light Brigade "into the valley of death," becomes an epic of lost-cause gallantry. *Lee* takes all blame, saying, "It is I that have lost this fight."

On July 4 the Army of Northern Virginia wearily pulls out and heads for home. When news of *Lee's* escape reaches Lincoln, the President grieves, "We had them within our grasp. . . . We had only to stretch forth our hands and they were ours."

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done by minor alterations—mullions, shutters, decorative ironwork, flower boxes, discreet awnings, smaller signs.

"With more and more tourists coming in," said Donald H. Becker, campaign chairman, "we think we should look the way people expect us to look."

Yet as I wandered about Gettysburg, I found reminders of a century ago almost everywhere. Numerous Civil War houses still wear the scars of conflict. One dwelling, now a tourist home, has a sign boasting "Bullet Holes in House." Others get along without advertising: shells buried half in, half out of their walls speak for themselves.

Gettysburg College, a few blocks from Lincoln Square, has made its compromise with today. Its old buildings have their time-honored place among the new; its 100-acre campus is guarded by ancient oaks and pines, and here and there a cannon. "Old Dorm" was an observation post, later a hospital.

Nearby stands the Lutheran Theological Seminary. Its buildings ride Seminary Ridge as they did when the Confederates swarmed among them.

There is the Wills House on Lincoln Square, too, where Abraham Lincoln stayed the night of November 18, 1863, and polished the brief address he was to make the next day. His speech, he

Gun Butts Clash With Bayonets in the Climax of Pickett's Charge

About 1 p.m. on July 3, 1863, Confederate artillery began the war's mightiest cannonade. Shells exploded around the headquarters of Maj. Gen. George G. Meade, commander of the Army of the Potomac; one shot missed him by inches. Then men of Pickett's Charge stepped off on an agonizing march toward a clump of trees at the Union's center. Only a few attained the goal.

In this portion of the Gettysburg Cyclorama, 150 men in gray fight on to death or capture. Their leader, Brig. Gen. Lewis A. Armistead (mistakenly shown on a horse), falls mortally wounded. Moments later, Armistead asks a Union officer for a favor: deliver his watch and spurs to Union Maj. Gen. Winfield Scott Hancock, a prewar friend and comrade-in-arms. Unknown to Armistead, Hancock, too, lay wounded yards away.

The Cyclorama, on display in the Gettysburg National Military Park, was painted by Paul Philippoteaux from sketches and photographs made of the battlefield in 1881.

said afterward, hadn't been successful. The Wills House today is a busy center of commerce on the street floor; on the second floor it is the Lincoln Room Museum.

I filed one day with a dozen other visitors into the dim, stern room where Lincoln slept. The furniture was original, the guide said; the rug had been rewoven, the room rewallpapered (page 30). Then he flicked on a tape recording and we heard an emotional saga of the Gettysburg Address.

I left the Wills House and crossed the square to the offices of the Gettysburg *Times* to talk with editor Paul Roy. Gettysburg, I said, must be proud to have been so intimately associated with Lincoln.

"Lincoln," replied Paul Roy, "didn't make the Gettysburg Address in Gettysburg."

"Lincoln didn't *what?*"

"No," said Paul, "he made it in Cumberland Township, which borders the Borough of Gettysburg. That's where most of the fighting took place. Lincoln rode a horse in the procession from the Wills House to the national cemetery in the township a mile away."

No U.S. shrine has more monuments and markers than Gettysburg National Military Park. There are statues wherever the eye falls. But of Lincoln, Paul said, there is merely one figure on a monument and a small bust in the cemetery—"the 'only memorial to a speech in the world,' as the guides say."

I had admired that memorial. Near it, I recalled, was the Soldiers' National Monument. This gray granite shaft rises 60 feet above a plot of weathered Union grave markers—for there are no Confederate dead at Gettysburg; after the war they were reburied in Southern cemeteries. It was on this spot that Lincoln spoke. His words are inscribed on a tablet in front of the monument.

Thus Gettysburg keeps faith with yesteryear. But it must also live with today. Gettysburg is no monument to the past, nor does it want to be. The town has 14 churches, one movie house, four bowling alleys; it is administered by a mayor and town council; there are no zoning laws. Nearly $4 million has been spent on new schools and school additions in the past few years.

Floor Drilled to Drain off Blood

Gettysburg has its share of modern architecture, and also of signs like "This restaurant run by public opinion," and "If you can't stop in, smile as you go by." It is strong on souvenirs. You can purchase "Real Civil War Bullets—30 cents" and "Real Civil War Relics—Union Blouse Buttons—75 cents each."

I paused one Sunday morning to examine the bullets and buttons and then walked up Baltimore Street to the beautiful old Presbyterian church. It was soon to be torn down and rebuilt. Time had weakened its walls and foundations; there was danger of collapse.

I was a bit tardy that Sunday, and I stood with other latecomers in the vestibule during the service. Outside, I could hear the big

KODACHROMES BY ROBERT F. SISSON (UPPER) AND BATES LITTLEHALES © N.G.S.

"I will give them one more shot," cried Union Lt. Alonzo H. Cushing before he died here defending the Federal center against Pickett's Charge. A plaque on the granite marker at left memorializes the action.

Morning sun outlines the figure of Brig. Gen. Alexander Webb, commander of the Union brigade that fought at this spot; wounded in the fight, he won the Medal of Honor "for distinguished personal gallantry."

One man falls but others drive forward in a relief depicting the 106th Pennsylvania Infantry's counterattack toward the Emmitsburg Road on July 2, 1863.

highway trucks gearing down at the stop light and then revving up again. In a few months a new bypass would route them around town.

Gettysburg's churches echoed with the cries of the wounded during and after the battle. Holes were drilled in the floor of one of them to drain off the blood. Down the aisle from me was the pew where Abraham Lincoln sat during a patriotic meeting after dedicating the national cemetery. Nearby was the pew reserved for General and Mrs. Eisenhower.

A few minutes' walk took me to the National Military Park, and to James B. Myers, then Park Superintendent.

"Gettysburg," he said, "is something special in the minds of a great many Americans." Superintendent Myers confessed that, like those who merely visit the park, he finds it eerie to contemplate the boulders and crevices of Devil's Den, where a Confederate sharpshooter lay still unburied four months after the battle (page 13).

But then, like most of us, Myers looks about him and sees the good land. He sees the earth renewing itself in early spring, and he speaks of redbud and dogwood spreading soft beauty among woodlands still stark with winter.

More than 2¼ million persons, Myers told me, will tour the park this year. To give them a better understanding, the new Visitor Center offers exhibits and lectures,

Peaceful Farm of Gen. Dwight D. Eisenhower Spreads Toward Slopes Where Battle Raged

Noted authority on the battle, the former President lives within its shadow. Longstreet's Confederates maneuvered across these fields before attacking Little Round Top (upper left) from War-

and the huge Gettysburg Cyclorama painted by Paul Philippoteaux (page 22).

The Battle of Gettysburg is complex; Superintendent Myers discussed its complexity with me in terms of the park itself. There are 32 entrances and 31 miles of avenues; many of the avenues run along the battle lines. There are 414 cannon on the field. They are painted every three years, as are the pyramids of cannon balls beside the guns. Some 93 miles of fences preserve the scene and trace the battle lines. And there are markers and tablets everywhere.

Many of the old farm buildings still stand on the field; the National Park Service maintains them, from corncribs to houses. Farmers till the land, and some of them lease the old houses and live in them. They raise the same crops that grew during the battle: wheat, corn, hay, peaches.

KODACHROME BY NATIONAL GEOGRAPHIC PHOTOGRAPHER BATES LITTLEHALES © N.G.S.

field Ridge (wooded area in center). Earlier in the day Southerners scouted Big Round Top (upper right). Part of the Eisenhower home served the South as a behind-the-lines field hospital. The general first visited here as a West Point cadet in 1914 to study the battle on the ground itself. The Eisenhowers bought the farm in 1950 and moved here from the White House in 1961.

How best to see the battlefield? It depends on how much time you have. A helicopter skimming takes only 8 to 12 minutes. If you have a couple of hours you can make the trip in your own car. The Visitor Center offers literature mapping your tour point by point.

If you'd like a guide, there are 55 of them, licensed by the National Park Service. Or ask a Gettysburgian; it can be a bonus, for Gettysburgians are bound to the battle.

I got a large bonus: three guides, each with special knowledge.

One was Gettysburg *Times* editor Paul Roy, who more than any other person brought about the last reunion of the Blue and Gray, from June 29 to July 6, 1938. Paul was the State of Pennsylvania's agent for the reunion; Gettysburg took on added meaning for me when he described the ceremonies.

Half a million Americans were there—in-

Host to visiting Governors at his farm last summer, General Eisenhower welcomes (from left) New York's Nelson Rockefeller, Ohio's Michael DiSalle; California's Edmund Brown, and Rhode Island's John A. Notte, Jr. (right).

Bearing flowers and flags to adorn soldiers' graves, Mary Jean Eisenhower, granddaughter of the former President, visits Gettysburg's national cemetery with other school children on Memorial Day, 1962.

cluding 1,359 Union veterans and 486 Confederate—as President Franklin D. Roosevelt dedicated the Eternal Light Peace Memorial. A veteran from each side, Paul said, caught the huge United States flag as it came down, revealing the monument and these words:

PEACE ETERNAL IN A NATION UNITED

Gettysburg also is particularly meaningful to Mrs. Roy, the former Marie Codori, for near her great-grandfather's farm the hopes of the South died. She pointed out the old Codori farm buildings to me as we drove along the Union lines on Cemetery Ridge. There Confederate Maj. Gen. George E. Pickett led the charge that failed. Of the 15,000 who set out, perhaps 6,000 got back.

"My brothers," said Mrs. Roy, "used to look for bullets turned up by the plow on our farm years ago. We had cigar boxes stacked on boxes, full of bullets. Whenever there was a parade, they'd go out and sell them."

My third guide was Jacob "Met" Sheads, who teaches at Gettysburg Area High School and who for more than 25 years has been a summer ranger-historian at the park. Met's people were in Gettysburg long before the Civil War; you can't be with him five minutes without knowing that the battle is his life.

Met took me to the little-known monument that bespeaks the great lesson of Gettysburg. It rests on a slope half a mile from Devil's Den; the tourist, driving past, sees only its front, and notices perhaps that it is dedicated to the "66th New York Infantry, 3rd Brigade, 1st Division, 2nd Corps." Gray-green lichens

clothe its base. Violets and dewdrops peep from the grassy mat around it. Behind it down the slope rise aged spires of oak, hickory, poplar, cedar, pine—many carrying century-old bullets deep within.

Met Sheads led me around the monument. There I saw a tableau in bronze for all time. A Union and a Confederate soldier stand face to face, shaking hands. With his free hand, the Northern soldier holds a canteen to the wounded Southerner's lips.

I asked Met if there had been much fraternization between Yank and Rebel at Gettysburg. He doubted it. At Vicksburg, at night, pickets of North and South often exchanged news, traded coffee for tobacco. But that, said Met, was during the siege; at Gettysburg they fought three brief, brutal days.

The South won on July 1, and on July 2 it pounded at both flanks of the Northern forces. That night Meade told his commanders that if another attack came it would be at the center of the Union line.

You can stand today at that silent center on Cemetery Ridge, as Met Sheads and I did. Stand near the clump of trees which the attacking troops used as their guide; stand and look the scant mile west to Seminary Ridge. The silence becomes a living thing.

Out of the trees on the ridge the ghostly motion of men breaks the silence: Men form into line, banners high, bayonets gleaming. Someone cries, "Forward!" and off they go, the men of Pickett's Charge.

Now they reach the Emmitsburg Road, pause to remove fence rails, press on, and the Union fire is a scythe sweeping through them. And now up the slow rise of Cemetery Ridge, into the double-quick, and over the low stone wall and into the hand-to-hand.

And then the Southerners, shattered, turn back; back, those who can, to Seminary Ridge.

Next morning orders were issued for a retreat to Virginia. Thus, on July 4, the men of the South were on their way home, to a way of life that no longer could be, though it would be nearly two more years before all the proof was in at Appomattox.

In Vicksburg, that July 4, Grant had won the key to cutting the South in two. Why had not Meade pounced on the retreating Army of Northern Virginia? Perhaps the war would

Dress of yesteryear identifies a participant in Remembrance Day, November 19, 1961, commemorating the anniversary of Lincoln's famous address.

PHOTOGRAPHS BY BATES LITTLEHALES (CENTER) AND GEORGE F. MOBLEY © N.G.S.

Bearded Yank, J. Norman Hollar, parades on Remembrance Day. He is a member of Company D, Sixth Regiment, Pennsylvania Reserve Volunteer Corps.

Beshawled Abe, portrayed by Paul H. Uibel of Lancaster County, greets Congressman George A. Goodling of Pennsylvania in Lincoln Square, assembly point of the parade.

NATIONAL ARCHIVES (ABOVE AND RIGHT)

Lincoln at Gettysburg: Painstaking detective work reveals what may be the only photograph of the President at the dedication of Soldiers' National Cemetery on November 19, 1863.

Enlargement at right of the rectangular area of the photograph above discloses the hatless figure (circled). The glass-plate negative lay unnoticed in the National Archives until 1953 when a 200-times enlargement of the picture permitted identification.

In the Wills House, Lincoln in wax broods over his Gettysburg Address. The second draft (opposite) shows presidential editing.

"We are met here

KODACHROME BY NATIONAL GEOGRAPHIC PHOTOGRAPHER BATES LITTLEHALES © N.G.S.

on a great battlefield . . . to dedicate a portion of it . . ." said Lincoln at this spot

ROBERT L. [illegible], NATIONAL GEOGRAPHIC STAFF © N.G.S.

Four score and seven years ago our fathers brought forth, upon this continent, a new nation, conceived in Liberty, and dedicated to the proposition that all men are created equal.

Now we are engaged in a great civil war, testing whether that nation, or any nation, so conceived, and so dedicated, can long endure. We are met here on a great battle-field of that war. We have come to dedicate a portion of it as the final resting place for those who here gave their lives, that that nation might live. It is altogether fitting and proper that we should do this.

But in a larger sense we can not dedicate—we can not consecrate—we can not hallow this ground. The brave men, living and dead, who struggled here, have consecrated it far above our poor power to add or detract. The world will little note, nor long remember, what we say here, but can never forget what they did here. It is for us, the living, rather to be dedicated here to the unfinished work which they have, thus far, so nobly carried on. It is rather for us to be here dedicated to the great task remaining before us—that from these honored dead we take increased devotion to that cause for which they here gave the last full measure of devotion—that we here highly resolve that these dead shall not have died in vain; that the nation shall have a new birth of freedom, and that this government of the people, by the people, for the people, shall not perish from the earth.

have been ended then. Abraham Lincoln said as much himself.

"Gettysburg was a battle of 'ifs,'" Dr. Tilberg summed up for me. "Meade finally *did* pursue; he was getting set to attack Lee at the Potomac, where rain had swollen the river and kept the Southerners from crossing. But the river fell before Meade was ready, and Lee got across safely into Virginia."

With such things in mind, I drove down the Emmitsburg Road one moonlit night on my way back to Washington and stopped near the high-water mark of the Confederacy, there by the copse of trees. Dim to the west were the rounded rims of the mountains; dark across the hollow was the line of Seminary Ridge. I thought of Lincoln's words in the national cemetery: "It is rather for us to be here dedicated to the great task remaining before us. . . ."

Those words, it came to me, mean more than ever—and so does Gettysburg.

Vicksburg: Challenge on the Bluffs

What then, I wondered, are the words for Vicksburg?

Vicksburg was not, as Gettysburg was, an innocent victim trapped between two mighty armies. No, Fortress Vicksburg had asked for it. This bastion on the Mississippi's bluffs commanded a three-mile sweep, thus keeping the Union from control of the river. War *had* to come to it.

I began seeking the meaning of Vicksburg on a rainy summer afternoon in Vicksburg National Military Park, whose 1,648 acres curve behind the city in a crescent from north to south. The rain had delayed Louisiana-Mississippi Day ceremonies; only the diehards remained, steaming in their sealed cars.

Finally the downpour ended and the loudspeaker announced our reward: The program would go on. Out came the sun; then the invocation. "We come to thank Thee," said the Reverend Dr. John G. McCall, "for the greatness of our Nation."

Lieutenant Governor C. C. Aycock of Loui-

Fortress Vicksburg still commands riverside bluffs, but the Mississippi no longer flows past its front door. In 1876 the river cut the new course at upper center, shaving off a loop that had slowed currents and made Vicksburg a safe harbor. Engineers later diverted the Yazoo River into the old channel at right. A century ago Union gunboats on the river lobbed shells into the town; Confederate cannon returned fire from Fort Hill (foreground).

KODACHROME BY NATIONAL GEOGRAPHIC PHOTOGRAPHER JAMES P. BLAIR © N.G.S.

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Winsome belle, Susy Bradway, strolls walkways of McRaven, a 166-year-old Vicksburg home built in three styles—frontier, Creole, and Greek Revival. McRaven still wears scars of shelling. After the surrender, owner John Bobb so angered occupation troops that they shot and killed him in this garden. General Grant court-martialed the guilty men, and the army hanged them.

siana was the main speaker. "The South still fights on," he said. "But . . . we fight for higher and higher levels of prosperity and for more and more economic progress. . . ."

Then the Tallulah, Louisiana, High School Band swung into "Dixie," and everyone stood at attention and it was all over. On the crest of the hill above, a hill the massed Federals couldn't win a century earlier, men in Confederate gray yipped the Rebel yell and fired cannon.

I climbed up that frowning Mississippi incline, taking evasive action as a squad of infantry charged over the brow, and halted beside a young lieutenant. Sword at side, smoking pistol in hand, he peered across the deep ravine to the ridge 500 yards east where the blue-clad Yankees had dug in those many years ago.

His gun, he said, was a reproduction of a Confederate copy of a Colt revolver. His sword was the real thing: an 1861 product of Macon, Georgia. What, I asked, was the material of his uniform.

"Cotton, suh!" he said. "What else?"

What else indeed. Some things will never change, though cotton is no longer king. My education resumed that night at a ball, a Confederate ball, in the Vicksburg Municipal Auditorium. There was a grand march; never were hoop-skirted ladies lovelier or men in the gray of the South more gallant.

"Dixie," Then "Star-Spangled Banner"

There had been a ball like this on an April night a century ago, and the moon hid its light for the North's benefit while Union Rear Adm. David D. Porter ran his gunboats and Army transports down the river below the town. The end was beginning for Vicksburg and the Confederacy.

Now these fair ladies and their fine officers were singing the gay old songs like "Goober Peas" and "Camptown Races," doing the good old dances like the Virginia reel.

It was fun. It was beautiful. And it was haunting, poignant.

"Right out of *Gone With the Wind,*" I said, "and everybody here knows it."

A Vicksburg friend was sitting with me. He stirred; he sat a bit straighter in his Confederate uniform. I plunged on.

"Some people," I said, "might think you're still fighting the war."

"It's not that at all," my friend answered softly. "It's just that we want to retain a certain part of our heritage. In Vicksburg, we say that those who forget their past have no future."

I began to come to terms with him and Vicksburg then and there. But I understood even better when the ball ended. The band played "Dixie" and everyone stood at attention and that, I thought, was that. I was wrong. Then came "The Star-Spangled Banner." Vicksburg has made its peace with the past, though it has not forgotten.

Vicksburg was born of the river. It almost died of the river, too; that and the enemy-held ground behind it. From the Mississippi, over 14 months, the Union Navy fired more than 22,000 shells into the town and its defenses on the bluffs above. From the ridges and dells north, east, and south of Vicksburg,

Hoop Skirts Swing in a Virginia Reel as Dancers Re-create the Balfour Ball

At a Christmas Eve ball in 1862, laughter died when a muddy messenger burst in with news that Union Maj. Gen. William T. Sherman was approaching Chickasaw Bayou. "This ball is at an end," a Confederate officer announced. "The enemy are coming."

the Union Army poured in an estimated 2,800 shells a day for 47 days.

Vicksburg's citizens—miraculously, few of them were killed—subsisted on mule meat and drank from mudholes as the siege wore on. Many lived in caves and cellars; daily prayer meetings were held, and white man and Negro alike participated. Vicksburg's people believed almost to the last that the forces of Gen. Joseph E. Johnston were coming to their rescue. Of history's great siege towns, Vicksburg bows to none.

I could find little sign of all this. Most of the caves are filled in. Nearly all the old buildings have been replaced. Some 30,000 persons, half of them white, half Negro, now live where 4,600 went about their business before Grant came to call.

A few reminders of the Civil War town remain. One is the old courthouse, begun with slave labor in 1858, now a museum. Only one shell struck the building—Union prisoners were kept in it—and on July 4, 1863, the Stars and Stripes was first run up there (pages 54-5).

After that, dyed-in-the-wool Vicksburgers didn't observe Independence Day—the day the town surrendered—until 1945.

Eva W. Davis, museum director and a fifth-generation Mississippian, showed me around. "I'd guess half of our visitors had parents or grandparents who fought here on one side or the other during the siege," she remarked. "We had nearly 30,000 come here last year, from all parts of the country. You don't think of them as Northerners or Southerners now. Just Americans."

But a museum is a museum. Mrs. Davis let me inspect a fragile treasure: the "Black List" of one J. W. Resor, Chief of United States Police—a Federal force sent in to maintain

order after the fall of Vicksburg. Written in it in a fine hand are such notes as:

Miss Mary Boroff-Phillips. Cor Jackson & Walnut Sts. She has made two trips to the Confederacy—suspicious.

I also saw history come to life at magnolia-shaded McRaven. The first section of this home is a frontier cottage built in 1797 when Vicksburg was a settlement called Walnut Hills. The middle section, built in 1836, reflects with its gallery the Creole, or Louisiana, influence. The last section, added in 1849, is Greek Revival, and the spacious upstairs and downstairs porches are typical of plantation mansions (page 34).

McRaven caught many a shell during the siege; they have left their marks in the hall and parlor walls. Mr. and Mrs. O. E. Bradway, who own the old house and have painstakingly restored it and its lovely grounds, showed me pounds of bullets and shell fragments they have found there.

But I couldn't find Civil War Vicksburg from the river—for the roiling brown Mississippi, which once carried paddle-wheelers in every day, cut a new channel in 1876; it now washes only the southern part of the city. Barges hauling pulpwood, grain, and petroleum are pushed up to city docks on the Yazoo Diversion Canal, which uses part of the old river channel (page 33).

My National Geographic photographer colleague James P. Blair and I went out on the canal one day to view the city as sailors on Union gunboats had seen it a century ear-

lier. But times had changed more than we thought. Hydroplanes screeched up and down the canal past our small boat; we nearly capsized in the wake of one.

Jim and I decided that the best way to understand what happened when Grant approached Vicksburg was to follow his route all the way. We did just that. Our guide was Edwin C. Bearss, National Park Service Historian. Bearss is the author of *Decision in Mississippi*, in which he maintains that the Civil War's decisive battle—one that is almost forgotten—was fought at Champion Hill as part of the Vicksburg campaign.

As we jolted over the same roads the Federals used, Ed Bearss—he pronounces it "Barse"—recounted what led to the Siege of Vicksburg. In 1862, he said, the Union's west-

Paddle-wheeler at Twilight Evokes a Mood of Long Ago

Slapping rippled waters in the Mississippi's old bed, *Kanawha* sails on a voyage back in time. Last spring willows at bankside sprouted feathery green, and haze shrouded the tangled Louisiana swamplands with an air of mystery (background). Passengers on the sightseeing boat looked up at the cannon bristling from heights in Vicksburg National Military Park (foreground).

A century ago Confederate-held Vicksburg enjoyed a brief lull following almost a year of sporadic attacks (page 45). Filled with foreboding, the city bided its time as the enemy undertook a campaign of encirclement.

Threading swamplands on the Louisiana side of the Mississippi (above), General Grant took his army from Milliken's Bend to the river shore 28 miles below Vicksburg. From there transports ferried him across to Bruinsburg, Mississippi, and in early May, 1863, he launched his successful campaign to take Vicksburg from the rear.

ern armies began moving south from Illinois, Missouri, and Kentucky. The great objective was to split the Confederacy by gaining control of the Mississippi.

The Union won at Forts Henry and Donelson, won at bloody Shiloh; it occupied Memphis and looked south, and the Union's gunboats rode on down the Mississippi. Up the river, too, came Union Flag Officer David G. Farragut and his ocean-going ships.

Farragut took New Orleans and Baton Rouge. Natchez, a city with Union sympathies, could muster only 14 men to defend itself. That's why Natchez has those beautiful ante bellum homes today—it was never burned and only lightly shelled.

Then came Fortress Vicksburg, the South's last great center for west-east movement of men and supplies. Vicksburg, said Abraham Lincoln, was the key, and the war could not be won "until that key is in our pocket."

But the Union Navy couldn't bombard the town into submission, and General Sherman was roundly whipped in December, 1862, at the base of the bluffs east of Chickasaw Bayou and five miles north of Vicksburg. January arrived and with it General Grant.

Back Door Route Shapes a City's Fall

Months of fruitless effort to take Vicksburg followed. Expeditions through the bayou country to the north bogged down. An attempt to cut a canal below Vicksburg failed; through the cut ships could have bypassed the river loop commanded by the city's guns.

The city could not be conquered from the north; it was impregnable head on and to the south. It had to be taken from the rear, from the east. Grant had to get his army across the Mississippi well below the town and circle around to the back.

He tried first to land his transports at Grand Gulf, 24 miles south. Rebel batteries on the heights repulsed him. He moved eight miles farther down and put his troops across at Bruinsburg. It was April 30, 1863.

Ed Bearss took Jim Blair and me to Grand Gulf, once a thriving cotton port of 76 city blocks, now dead and largely buried. The rampaging river had swallowed two-thirds of it by 1860. The Union Army and Navy later burned what was left.

You can still see how Grand Gulf was laid out—corn doesn't grow as high in the old streets as it does in the squares between them. A cemetery crumbles on the hillside; tall cedars stand darkly over it, and Spanish moss hangs from the crape myrtle.

Silent Cannon Stand Guard on Fort Hill

Shortly before midnight on April 16, 1863, Fort Hill guns joined riverside batteries in a fearsome chorus: their object, to destroy Federal gunboats steaming past Vicksburg.

Shell answers shell in this Currier & Ives conception of Rear Adm. David D. Porter's fleet running the Confederate gantlet. Transports make the passage sheltered by gunboats. Enemy batteries belch iron from shoreline and bluff-top. Below Vicksburg, the boats met Grant's army and took it across the river.

Golden hand points toward heaven from the steeple of the First Presbyterian Church, a sanctuary that stood in Port Gibson when Grant's men occupied the town May 2, 1863, following a fierce, day-long battle nearby. The community itself was spared conflict. After defeating Confederate forces under Brig. Gen. John S. Bowen, Federals marched northeast toward Edwards Station.

Deep rifle pits border the cemetery. Once they sheltered a Confederate regiment; now they are part of the new Grand Gulf Military Monument, a 104-acre park.

Bruinsburg is dead, too: Bruinsburg, where more than 22,000 Federal soldiers came ashore unopposed in the largest amphibious operation in American history up to that time. A brick cistern remains.

Now we headed for the town of Port Gibson, ten miles northeast on Little Bayou Pierre. Near it, Grant won a great strategic victory, securing his bridgehead on the east side of the Mississippi.

Legend has it that Grant said Port Gibson was "too beautiful to burn." Two-thirds of its houses are as they were when he marched through. Such anachronisms are the excep-

KODACHROMES BY NATIONAL GEOGRAPHIC PHOTOGRAPHER JAMES P. BLAIR © N.G.S.

tion, though. Mostly, it takes searching to glimpse ante bellum Dixie along Grant's angular 130-mile line of march—from Bruinsburg to Jackson to Vicksburg. All along it time has covered the old way of life as well as the signs of battle.

We continued northeasterly from Port Gibson to the town of Raymond. Cattle browsed where cotton once stood; cotton is planted on a smaller scale now, and beef is of growing importance. Woods have come in where Rebel and Yankee struggled; lumber, pulpwood, and paper now are major industries.

Outside Raymond, 3,000 Confederates fought 10,000 Federals, and each side lost about 500 men. You pass the unmarked battlefield today without knowing it.

(Continued on page 49)

Civil War Students on Champion Hill Review the Campaign's Climactic Battle

Fresh from victories near Raymond and Jackson, Grant began his drive west to Vicksburg. Confederates under Lt. Gen. John C. Pemberton were maneuvering athwart the Union's line of march when Grant struck on May 16.

Southern artillery on the crest of Champion Hill blasted advancing Union infantry. In the seesaw battle the hill changed hands three times, but repeated attacks drove the Southerners from the field.

That night a Union officer "lay down perfectly fatigued and exhausted, and slept as only the soldier can sleep." It was the sleep of victory, for at Champion Hill Grant sealed the fate of Vicksburg and took a long stride toward becoming commanding general of Union Armies.

PRELUDE TO Vicksburg

MAP NOTES BY CAROLYN BENNETT PATTERSON

GUNS of Fort Sumter, answering the attack that started the Civil War, were still echoing when the Federal high command in Washington took a long look at a map and saw at once the North's most important single objective: the Mississippi River. In Union hands, the river would split the Confederacy, deprive it of men and supplies from the west, and open the Southern heart.

Plans for taking the Mississippi called for a Union Army, supported by gunboats, to strike downstream from the north, while units of the Federal ocean-going Navy, escorting transports of infantry, would drive upriver from the Gulf of Mexico.

Amphibious War Opens in West

In the spring of 1862, as Union gunboats pushed downriver toward Memphis, ships under Flag Officer David Farragut sailed up the Mississippi and took New Orleans, Baton Rouge, and Natchez. Appearing before Vicksburg, the Union Navy demanded the city's surrender. Back came a reply from Col. James Autry: "Mississippians don't know and refuse to learn how to surrender."

Farragut's fleet attacked, but bluff-high Vicksburg returned devastating fire, its guns sweeping a three-mile stretch of river.

Lincoln now realized Vicksburg was the key to the Mississippi. Assigned to win it, Maj. Gen. Ulysses S. Grant faced his chief problem: to get behind Vicksburg and use dry land as a springboard for attack.

Geography gave Vicksburg the advantage. Bluffs rising on a 200-mile arc from Memphis to Vicksburg enclosed a flood plain known as the Delta. Crisscrossed by bayous and overgrown with brush, the country was almost impassable except by boats.

General Grant's first plan was to drive south from Grand Junction, Tennessee, making a march through the heart of Mississippi. In early November, 1862, he shoved off, but failed to reckon on surprise. Under cover of "absolute secrecy," Confederate Maj. Gen. Earl Van Dorn and 3,500 cavalrymen set out to disrupt the enemy's supply line.

Three miles from Holly Springs, at dawn on December 20, Van Dorn's gray-coated troopers put spurs to horse and thundered forward. Union men, many in "night attire," poured out of tents, rifles in hand. In minutes Holly Springs lay at the raiders' mercy. Women dashed from their homes, as one observer wrote, "their long hair streaming behind and fluttering in the frosty morning air, shouting and clapping their hands, forgetting everything except the fact that the Confederates were in Holly Springs."

Van Dorn's men seized all the equipment they could carry and burned a million dollars' worth of supplies.

Grant then devised four schemes designed to get him around or behind Vicksburg by water. He tried to cut a canal across the De Soto Peninsula, but floods forced him out. He ordered another canal cut into Lake Providence, Louisiana, and a route cleared through a labyrinth of bayous and lakes, but abandoned the project as too difficult.

Next, Grant opened the Yazoo Pass by blowing up its earthen levee and then sent gunboats and transports through it into the Tallahatchie River. Reacting to the threat, Pemberton sent Maj. Gen. W. W. Loring to build an earth-and-cotton-bale rampart—Fort Pemberton—on a narrow neck of land between the Tallahatchie and Yazoo Rivers. When Union gunboats chugged into range, the fort spurted destruction. Pacing the parapet, Loring cried, "Give them blizzards, boys! Give them blizzards!" and forced the bluecoat withdrawal.

Lincoln "Can't Spare" Grant

Another expedition sailed into Steeles Bayou, where Confederates blocked the passage with felled trees and nearly captured the fleet.

With each failure, pressure against Grant mounted in Washington. But Lincoln held fast to his faith in Grant, feeling, as he said after Shiloh, "I can't spare this man; he fights." His confidence was not misplaced. Victory crowned Grant's sixth attempt.

A year of maneuvers to topple a fortress

1 March 7, 1862. Farragut leaves Ship Island for the Mississippi. Navigating the river with ocean-going ships, he braves "elements of destruction . . . beyond anything I ever encountered."

2 April 25, 1862. New Orleans falls to Farragut. "The city is yours by . . . brutal force," writes the mayor, who begs respect for "a gallant people."

3 May 9, 1862. Union Navy occupies Baton Rouge, Natchez gives up four days later.

4 May 18, 1862. Union Navy arrives beneath the bluffs of Vicksburg.

5 May 30, 1862. Halleck, after Union victory at Shiloh, occupies Corinth, a rail junction. Buell shortly takes part of the command toward Chattanooga; when Halleck leaves for Washington, Grant inherits other units.

6 June 6, 1862. Davis destroys the Confederate fleet of converted river boats, and Memphis falls.

7 June 9, 1862. *Beauregard* makes Tupelo headquarters after withdrawing from Corinth. Command shifts to *Bragg*, who orders troops to defense of Chattanooga.

8 June 28, 1862. Farragut attacks and passes Vicksburg, whose batteries rain iron on the fleet.

9 July 1-July 28, 1862. Davis joins Farragut, and the combined fleets shell Vicksburg. When the river drops, Farragut takes his deep-draught ships south, having "more anchors lost . . . and vessels ruined" than he had "seen in a lifetime." Davis leaves for Helena, Arkansas.

10 July 12-15, 1862. Confederate ironclad ram "Arkansas," completed at Yazoo City, sails down the Yazoo River and runs the Federal fleet at Vicksburg with guns blazing.

11 July 14, 1862. Curtis occupies Helena.

12 July 27-August 15, 1862. *Breckinridge*, driving from Vicksburg, unsuccessfully attacks Baton Rouge. Turning, he occupies Port Hudson, which Confederates hold until five days after the fall of Vicksburg.

13 October 3-4, 1862. *Price* and *Van Dorn*, attempting to recapture Corinth, meet defeat and fall back to Holly Springs, then to Grenada.

14 December 26-29, 1862. Sherman makes an assault near Chickasaw Bayou but fails, losing 1,780 men against Confederate casualties of 200. Meanwhile, *Pemberton* shifts troops to defense of Vicksburg.

15 January 11, 1863. McClernand takes Post of Arkansas and plans to attack Little Rock, but Grant orders him back for the Vicksburg campaign.

16 January-March, 1863. Grant fails to cut a canal across the De Soto Peninsula or to get around Vicksburg on three other water expeditions. At the same time, he concentrates troops near Milliken's Bend (next page).

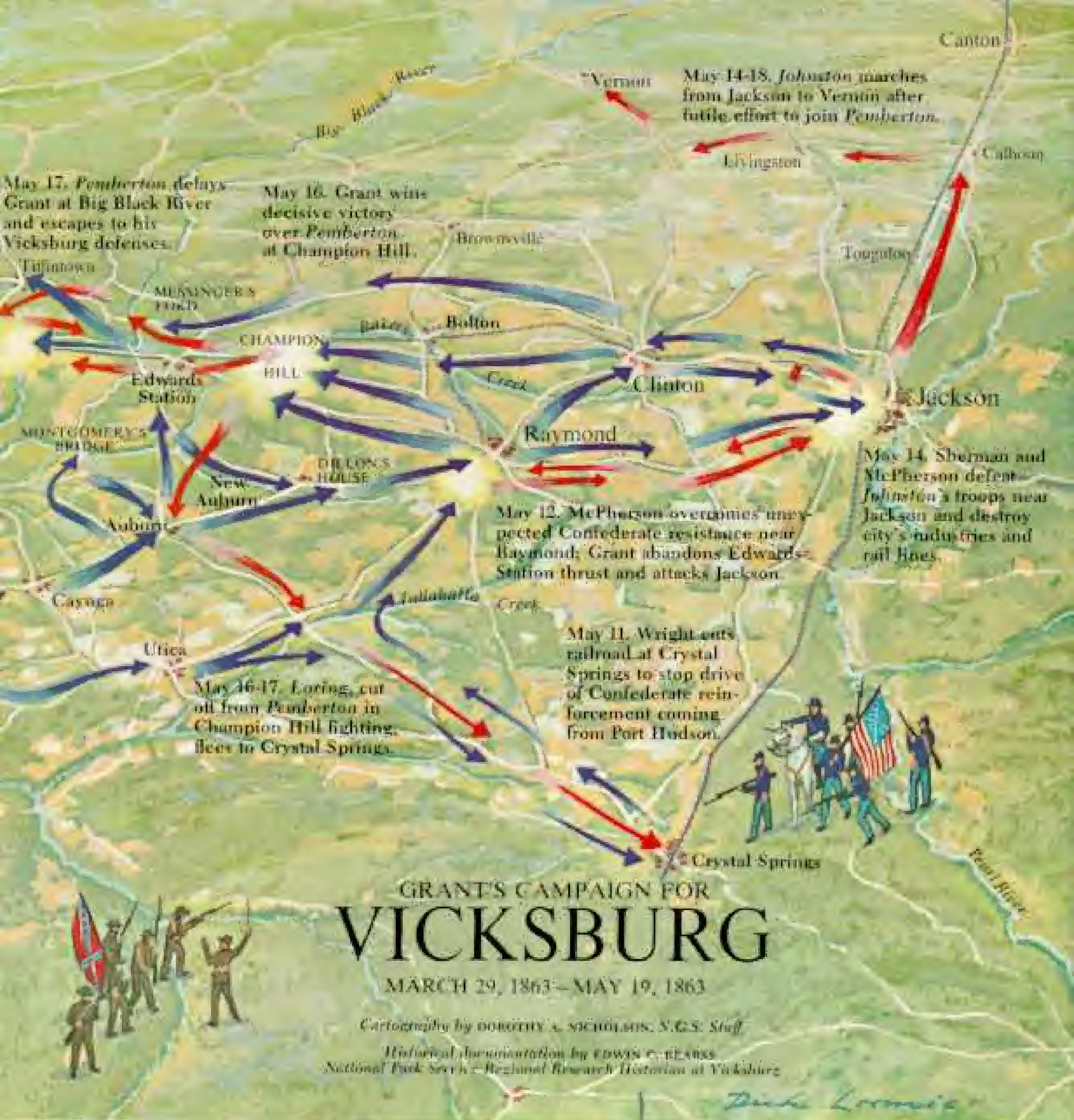
GRANT begins the big push on Vicksburg March 29, 1863. He masses troops and orders a route reconnoitered on the Louisiana side of the Mississippi south of Milliken's Bend. Within four weeks the Federals rendezvous at Hard Times.

Before midnight on April 16, with eight gunboats and three empty transports, Rear Adm. David D. Porter leaves the fleet anchorage and runs the Vicksburg batteries. "Every fort and hill-top vomited forth shot and shell," Porter recalls. Though hit repeatedly, all boats but one make the passage.

Grant finally crosses the Mississippi at Bruinsburg with "a degree of relief scarcely ever equaled since," he wrote. "I was now . . . with a vast river and the stronghold of Vicksburg between me and my base of supplies. But I was on dry ground on the same side of the river with the enemy."

Ignorant of Grant's movements, Confederate Gen. Joseph E. Johnston sends an order to Lt. Gen. John C. Pemberton at Vicksburg: "If Grant crosses, unite all your troops to beat him. Success will give back what was abandoned to win it."

But Pemberton sees Vicksburg's protection as his primary duty. Conflict between the gen-

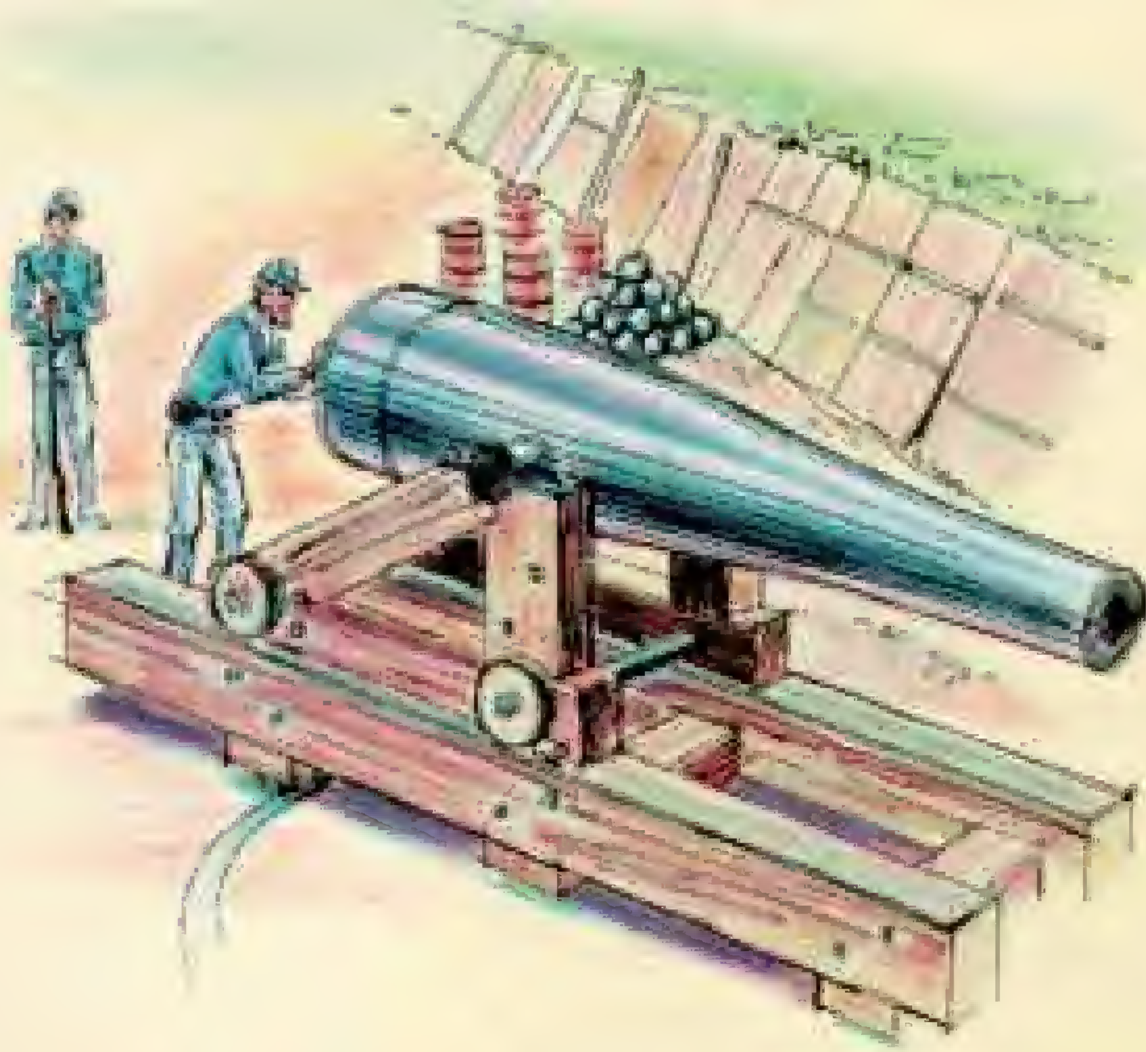


erals over strategy plagues the Southern cause.

Determined to enter Vicksburg from the east and bottle up its army, Grant resolves to leave his supply base at the river, march northeast and cut the railroad at Edwards Station, then swoop down on Vicksburg. Taking five days' rations, he swings out with his battle-tested soldiers, veterans of such engagements as bloody Shiloh. When Grant's men meet stiff resistance near Raymond, the general fears that a strong Confederate force is at Jackson and turns his army to crush it. Johnston, riding into Jackson, wires Richmond, "I am too late," and retreats. Pemberton, moving out of Vicksburg in force at last, drives east to meet the threat alone.

Wheeling, Grant attacks Pemberton at Champion Hill. Assault follows assault; the hill changes hands three times. Finally Pemberton cracks and falls back to the Big Black River. "Drums of Champion's Hill sounded the doom of Richmond," wrote British military historian J. F. C. Fuller.

Pursuing, Federals attack Pemberton at the Big Black. Fearful of being cut off, Confederates flee across the river bridges, burning them as they go. Grant's delay in crossing permits Pemberton to retreat into Vicksburg.



Siege and Fall of the City

BOOMING cannon rattle the windows of a Vicksburg church, where worshipers gather on Sunday, May 17. The preacher calmly finishes the service. Will the women meet and prepare bandages for the wounded, he asks, dismissing the congregation.

Bands Play "Dixie"; the Agony Begins

Retreating Confederates fall back into the city. "A woeful sight," writes a Vicksburg woman, "humanity in the last throes of endurance. Wan, hollow-eyed, ragged, footsore, bloody, the men limped along unarmed. . . . At twilight two or three bands on the courthouse hill . . . began playing 'Dixie' . . . and drums began to beat."

Pemberton, facing a Union Army of 48,000, throws 31,000 men into a defense line overlooking the river and curving around the city on the crest of a broken ridge. On May 19 Grant tests the enemy line, sending Sherman against the Stockade Redan. When that attack fails, Grant determines to make a general assault along the entire line. On May 22 his lieutenants synchronize their watches and at 10 a.m. the bluecoats surge forward (pages 48-9). But withering fire forces them back.

Thereupon, Grant decides on "a regular siege, to out-camp the enemy," as he put it. Federals dig in, forging an iron ring around Vicksburg. Cutting zigzag trenches, "the soldiers got so they bored like gophers and beavers," one Yank recalled later, "with a spade in one hand and a gun in the other."

Naval guns and mortars begin a ceaseless shelling, and the Union infantry's staccato "greets the ear from morning till night, and from night till morning," a citizen writes.

To escape the bombardment, residents go underground, taking refuge in caves and cellars. As mortars dig craters outside, the Lord family huddles together in its dugout. When her four-year-old daughter weeps, Mrs. Lord comforts her: "Don't cry, my darling. God will protect us."

"But mama," sobs the child, "I's so 'fraid God's killed, too."

"General Starvation" Takes Charge

Week after frightful week passes, and a Confederate calls out from his trench to a Yankee, "Look out! We have a new general . . . General Starvation." Citizen and soldier alike eat mule meat and bread made of a mixture of cornmeal and ground field peas.

On June 25 a Vicksburg woman confides to her diary: "A horrible day. The most horrible yet to me, because I've lost my nerve. . . . Now I . . . realize that something worse than death might come; I might be crippled." When terror subsides, she adds, "I must summon that higher kind of courage—moral bravery—to subdue my fears of possible mutilation."

In the trenches, ammunition-short Confederates spend day-and-night watches in the face of an unending barrage of artillery and small arms fire that sounds like "the nailing on of shingles," writes a Southern soldier.

Federals dig closer. One looks up from his pit at night and marvels at a "wonderful spectacle," the naval bombardment. He could "see the fuse from the shells . . . the comet or star-like streams of fire and then hear them coming down into the doomed city."

Enemies Fraternize by Night

By day, soldiers on both sides fight with unrelenting ferocity, but at night anger dies and they become just men again, weary, lonely, and far from home. Pickets in blue and gray, only yards apart, talk to one another, trade coffee for tobacco.

"What are you doing over there?" shouts a Southerner.

"Guarding 30,000 Johnnies in Vicksburg, and making them board themselves," answers a Yankee.

Southern officers arrange a trysting place where their men can meet relatives among the enemy and exchange news of home.

As June nears its end, Vicksburg lives on hope alone, hope that Johnston and his army will come to lift the siege. But Johnston has told his government, "I consider saving Vicksburg hopeless."

"Better Surrender Us"

Finally Pemberton faces defeat. His lieutenants advise that the weary army cannot fight its way out. And a message comes from "Many Soldiers," saying: "Just think of one small biscuit and one or two mouthfuls of bacon per day.... If you can't feed us, you had better surrender us, horrible as the idea is."

On July 3 white flags flutter from Confederate lines, and Pemberton writes Grant for terms of "capitulation." Grant first answers "unconditional surrender," but reduces demands after the two men meet. Having served with him in the Mexican War, Grant greets the vanquished general "as an old acquaintance."

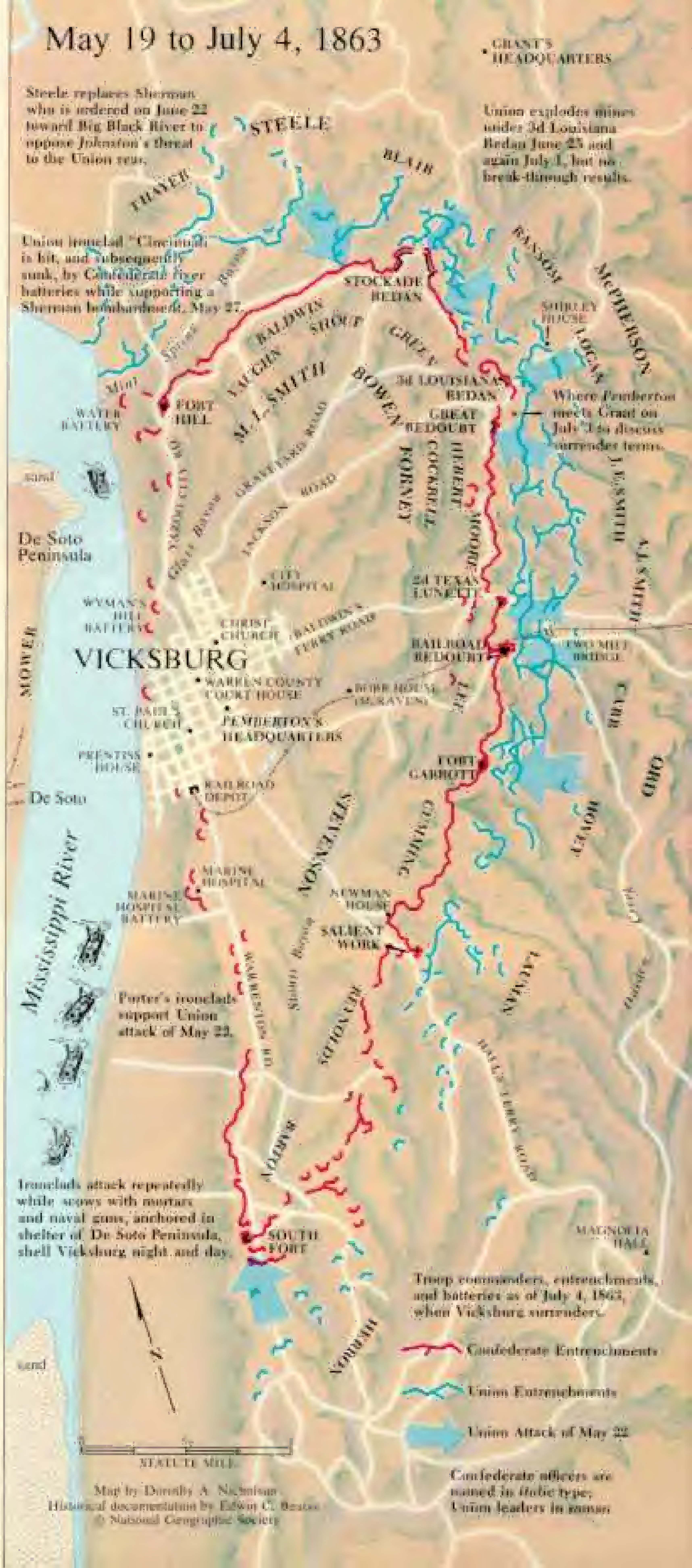
Next morning, as the North celebrates Independence Day, Vicksburg formally surrenders. Confederates march out and stack arms. Grant and his staff watch in silent respect for an army whose lines were never broken.

"Hail glorious 4th," writes a Union officer, "made thrice glorious by the success of our long toil!"

"I Can Hear the Silence"

And in a battered Vicksburg house, a siege-wearied man muses to his wife:

"It seems to me I can hear the silence, and feel it, too. It wraps me like a soft garment; how else can I express this peace?"



THE OLD COURT HOUSE MUSEUM, VICKSBURG

Steel Meets Steel in a Charge Against a Siege-line Bastion

Determined to avoid a long siege if possible, Grant ordered a massive attack on May 22. At Stockade Redan, 158 volunteers—called the Forlorn Hope—raced along Graveyard Road with planks to bridge the ditch fronting the fort. "From every part of the line rose the Confederates in double rank and poured in a terrible fire . . . the enemy's guns swept the ridge so clean that no living thing could pass it," a Union officer said. Victory went to Confederate defenders.

Fog of battle makes ghosts of Rebels firing point-blank. Civil War buffs act out the assault against the Stockade Redan.

EKTACHROMES BY NATIONAL GEOGRAPHIC PHOTOGRAPHER JAMES P. BLAIR © N.G.S.

In Raymond, the gracious old courthouse, slave-built, is still in use. Inside, office workers paused to admire a handsome riding horse—a plantation walker, they told me—prancing by on the street. In the same block a modern drugstore sells boots, saddles, ten-gallon hats, and other gear more appropriate to cattle than to cotton.

Grant marched from Raymond to Jackson, Mississippi's capital, and took it, wedging his army between General Johnston's Confederates on the east and the forces of Lt. Gen. John C. Pemberton, charged with the defense of Vicksburg, on the west.

Then, at Champion Hill, came the bloodiest battle of the campaign. Grant had casualties of 2,500; Pemberton lost nearly 4,000—and his last chance to keep the North from Vicksburg's back door. He made a final stand at the Big Black River, was routed, and fell back into Vicksburg's defenses.

The battlefield at Champion Hill is overgrown; the plantation bell is still there, but no longer does it rouse field hands at four in the morning. The plantation runs cattle now.

Old days are gone, but memory lingers. In the dining room of the Champion house is

Iowa's 26th Infantry, memorialized by the marker below, charged 500 yards up this hill May 22, 1863, in the face of direct fire. Distant shaft honors Louisiana's Maj. William W. Martin, who was picked off by a sharpshooter a month later.

Record of Union action holds the attention of Southern school children. Here guns of the 8th Battery, Michigan Light Artillery, went into action on May 25, 1863, and hammered enemy lines until July 3.

Amid thunder and smoke, men in gray act out the battle that raged in front of the Great Redoubt on May 22, 1863. Guns in this position shredded attacking Union columns.

a large oval table of solid walnut. "Look at the underside," said Mrs. Sid S. Champion.

I got down on hands and knees and poked my head under. I could see dark stains, as if varnish had trickled there and dried.

"That's blood," said Mrs. Champion.

The Champion home became a Union hospital after the battle, she explained. "There were often two wounded Yankees on the table at the same time, head to toe, with two surgeons operating on them."

Champion Hill was won May 16, 1863. Two days later Grant came up to Vicksburg. In 18 days since crossing the river, he had won five engagements and prevented Johnston's army from coming to Pemberton's aid. He was on his way to military greatness.

Pemberton was ready for him—West Pointer Pemberton, native Philadelphian with Southern sympathies. His engineers had built a strong line of defense along an irregular ridge, and he had about 31,000 men when the siege began. Grant could muster some 48,000 then, and as many as 76,000 later.

It took us less than half an hour to drive from Champion Hill to the National Military Park. Once there, I could see why Grant needed 47 days to make Pemberton submit. If Vicksburg was a natural fortress from its river front, it was no less so here.

Pemberton's fortifications began a mile above Vicksburg on the river and curved along the crest of the ridge for nine miles to the river below the city. Forts and artillery positions, linked by rifle pits, commanded roads and ravines. The Yankees had to scale steep slopes in the face of murderous fire to reach the enemy.

Supervisory Park Historian Albert W. Banton, Jr., gave me an idea of what Grant was up against. He took me to the Union line opposite the Rebel stronghold called the Stockade Redan, and told me how 43,000 Yankees tried all day May 22 to storm that citadel and others connected to it. When it was over, nearly 3,200 Federals were strewn in the ditches or on the slopes, dead or wounded, and Grant had nothing to show for it.

This was not the first assault that had failed. So Grant determined to lay siege. He

Refuge against Union shells, this cave preserved Thomas Lewis and his family during the siege. Later, Mr. Lewis supported the move to make the battle site a national military park.

Copying Rome's Pantheon, Illinois built a battle monument at Vicksburg in 1906 "in grateful remembrance of ... the sacrifices ... of her sons."

Caves and lean-tos shelter Illinois troops: a photograph taken during the Vicksburg siege. Shirley House, which still survives, stood in the line of fire. Despite the danger, Mrs. Shirley refused to move when the troops dug in; Federals evacuated her by force. From this position Union sappers tunneled through the ridge at left and exploded a mine beneath the 3d Louisiana Redan (map, page 47).

In hoop skirts and crinolines, Vicksburg women mourn the city's surrender—a re-enactment in the old Warren County Court House. The building now serves as a Civil War museum.

Stars and Stripes flutters atop the Warren County Court House as Union troops march into Vicksburg on July 4, 1863. "What a contrast [they are] to the suffering creatures we [have] seen so long . . ." wrote

had battled his way to Vicksburg's back door; now empty bellies must do what bullets had not. Day after day, the North dug closer to the South's defenses, shooting all the while. Night after night, when firing died, men of North and South met to exchange news of home—for brother fought brother here.

But finally, exhausted and shorn of hope of relief, the brave defenders no longer could carry on. Civilians were paying as much as $10 for a basket of corn; rations for the soldiers dwindled. Vicksburg was a battered pile of buildings, and 6,000 Confederates, a fifth of Pemberton's force, were laid low by wounds or sickness. Pemberton and Grant discussed surrender terms on July 3. At 10 a.m. on July 4 the Confederates displayed white flags and marched out in front of their works. They stacked their arms and colors, and it was done.

Independence Day, 1863. Far to the northeast that day, at Gettysburg, Lee knew failure and turned his army home. With Vicksburg, the key to severing the Confederacy had been

OLD COURT HOUSE MUSEUM

a Vicksburg woman. "Sleek horses, polished arms, bright plumes . . . the pride and panoply of war." The Vicksburg *Citizen*, then in Union hands, declared: "Gen. Grant has 'caught the rabbit'; he has dined in Vicksburg; and he did bring his dinner with him." But even defeat brought relief; one resident said, "I feel . . . an angry wave had passed."

pocketed; once again, as Lincoln wrote, the Father of Waters flowed unvexed to the sea.

Since crossing the Mississippi at Bruinsburg, the Union had lost 10,000 men killed, wounded, or missing. The Confederacy had suffered 9,000 battle casualties—plus the loss of the Vicksburg army of nearly 30,000 officers and men and a mountain of war materiel. The South could replace neither men nor materiel—nor Fortress Vicksburg.

Now the North would carry the war deeper into the Confederate heartland. The South would fight on, when and where it could, for nearly two years more, hoping that something might yet be salvaged.

One drives from the National Military Park to downtown Vicksburg in minutes—Vicksburg, city of today's South, city that never really was Old South. Vicksburg voted against secession; it lived on trade and commerce, much of which was with the North.

Today the city looks north, south, east, and west, wooing trade, inviting industry, welcoming tourists. The Chamber of Commerce

FOR THIS AUTHORITATIVE centennial article on two of history's great campaigns, NATIONAL GEOGRAPHIC invited the participation of noted historians Frederick H. Tilberg and Edwin C. Bearss. Their detailed knowledge of the campaigns of Gettysburg and Vicksburg brought maximum accuracy to the dramatic maps in these pages, to the moving article by Robert Paul Jordan, and to the captions and map notes by Carolyn Bennett Patterson of the Senior Staff.

Dr. Tilberg, Research Historian of the Gettysburg National Military Park, has an intimacy with the combat resulting from 27 years of service at the park. Mr. Bearss, Regional Research Historian of the National Park Service, stationed at Vicksburg, began his Civil War interest with accounts told by his parents in place of bedtime stories.

points out in its brochures that Vicksburg is "strategically located in the heart of the vigorous New South."

The vigorous New South is, of course, many things. In Vicksburg, it is widely diversified industry; it is agriculture and commerce as well. The city's largest single employer is the U. S. Army Corps of Engineers, which has four agencies here.

But the real heart of Vicksburg, or the New South, must be its people. I think of Mrs. Dominick Tuminello, who remembers when Vicksburg was "all dirt streets and plank sidewalks." The fourth Tuminello generation today can be found in the small grocery store established in 1912 by Mama Tuminello and her late husband—and the grocery store has become a restaurant seating up to 300.

Nor shall I forget Miss Florence C. Fox, who, in her 81st year, smilingly greets visitors to the Old Court House Museum. Sherman's "whole army," she told me, camped in her Grandfather Fox's pasture, and one day the general sent for Mr. Fox, who was an Episcopal minister with five sons in the Confederate Army.

"My soldiers would like you to preach a sermon," said General Sherman.

"All right," said Mr. Fox.

"If you give the sermon," the general continued, "you'll have to pray for the President of the United States."

Replied Mr. Fox, "That will be all right, too. I don't know anybody who needs it more."

And I remember James R. Prince. We talked at length in the red brick building whose entrance bears the words "Colored Y.M.C.A."

"This is the center of activity for Negroes in Vicksburg," the Y's executive secretary told me. "More than 50 different organizations meet here."

His great-great-grandmother, he said, had been a slave; nobody had wanted the slaves after the Civil War ended, and they didn't know where to turn.

"We have come a long way," said James Prince. "It has taken a long time, and we have a long way to go."

Way of a United States

I ended my visit to Vicksburg as I began it—in the National Military Park.

One last time I walked among its 1,600 monuments, markers, and tablets; once more I saw the artillery pieces aiming at one another, 128 of them pointing as they did 100 years ago from the parallel Confederate and Union siege lines. It was difficult to see the Union lines in many places, for time has brought the trees in thickly. Park Historian Banton had spoken of cutting "windows" in the heavy growth.

I went to the Vicksburg National Cemetery at the northwest end of the park, where more than 16,000 Union soldiers lie, two-thirds of them with names known to no man. Someone once estimated an average age among those identified. It was 22.

There among the silent ones the faint scream of far-off jet aircraft came to me, and down on the canal the hydroplanes snarled. But the hoot of an owl was a stronger, better voice. A bluebird flashed prettily past; a lone quail drummed up from a ditch in great fear.

Perhaps, I thought, James Prince had found the words for Vicksburg and for all of us when he said that it has taken a long time and we have a long way to go. But there was the other part of it, too: we *had* come a long way—the way of a United States—since what happened on Independence Day a century ago at Gettysburg and Vicksburg. THE END

Rockets' Red Glare Re-creates Porter's Naval Bombardment of Vicksburg

On the night of surrender, Roman candles splashed the sky as Yankees celebrated July 4. Thereafter, as an observer wrote, "Silence and night are once more united."

[illegible] BY NATIONAL GEOGRAPHIC PHOTOGRAPHER JAMES P. BLAIR © N.G.S.

Canada's Dynamic Heartland

BURGEONING TORONTO, *Ontario's capital, thrusts a changing skyline above Lake Ontario. Nearly two million Canadians crowd the city's streets and push out into the suburbs. Escaping the heat, youngsters play offshore at Toronto's Centre Island Park.*

ONTARIO

By MARJORIE WILKINS CAMPBELL

Illustrations by National Geographic photographer WINFIELD PARKS

WHEN I STARTED SCHOOL in Saskatchewan, my teacher was very young, very pretty, and very homesick for Ontario. She probably taught all the required subjects, but my chief recollection as a beginner is of singing "The Maple Leaf Forever." We sang it almost as often as "God Save the King." Yet I was 18 before I ever saw a flaming maple. Hard maples don't grow in western Canada.

Inevitably I associated the maple leaf with Ontario. It wasn't a flattering association. In Saskatchewan everyone knew that Ontario firms supplied the west with farm implements and other essentials. And didn't Ontario interests hold many farm mortgages? In my youthful intolerance I resented Ontario. I even resented the fact that I had to go east, to Toronto, its capital, to complete my education. That autumn the maples blazed in arches across Toronto's streets. As I walked in High Park in the warm stillness of Indian summer,

Laced-in baby peeks from a cradleboard as a Cree Indian mother waits for a floatplane to land at Fort Albany on James Bay.

Red-coated cadets pass in review at the Royal Military College of Canada, Kingston.

Honeymooners aboard *Maid of the Mist* exchange tender glances, ignore Niagara.

maple leaves swirled inches deep about my ankles. And I was homesick for the wide horizons of the sparsely treed prairie.

But those gold-and-scarlet maples wooed and won a place in my heart. I learned that when Alexander Muir wrote his song in 1867, the year Ontario and three other provinces became Canada, the settled areas were limited to the land of the sugar maple, a mere strip along the southeastern border of the country as we know it today.

And so the maple leaf, immortalized by an Ontarian, has become Canada's national emblem. It's poetic justice. Heartland. Province of opportunity. Call it what you will, Ontario today, as in my student days, is still the richest among Canada's ten provinces and two territories.*

It is also the most varied. I can think of few more dramatic trips than that from Ontario's deep south—Point Pelee, on Lake Erie, lies in the same latitude as northern California—to Moosonee on the frigid shore of James Bay.

Though second in size to Quebec, Ontario covers 412,583 square miles, almost as much as Texas and California combined. Its cities include Toronto, the provincial capital, with a total population nearing two million, and Ottawa, capital of all Canada.

Geographically, it divides into two separate areas: The rich industrial and agricultural

*See "Canada, My Country," by Alan Phillips, NATIONAL GEOGRAPHIC, December, 1961.

Firmly gripping umbrella and attaché case, a preoccupied pedestrian strides through the financial district of Toronto.

Laden with books, Sisters of St. Joseph stroll the maple-shaded campus of the University of Western Ontario at London.

Punch-press operator stamps out parts for automobile radiators at the Long Manufacturing Company, Ltd., plant in Oakville.

KODACHROMES (UPPER LEFT AND LOWER CENTER) AND EKTACHROMES © N.G.S.

south, 30,000 square miles of it, is bounded roughly by Lakes Huron, Erie, and Ontario and by the St. Lawrence and Ottawa Rivers. Rock of the ancient Precambrian Shield underlies most of the vast north, predominantly mining and timber country. (See the 11-color supplement map, **Central Canada**, distributed with this issue.)

Southern Ontario barely missed becoming part of the United States following the Revolutionary War. So little value did Britain put on what today is Canada west of Quebec Province, and so little did her commissioners understand what was involved, that they considered a proposal putting the boundary along the 45th parallel west of the St. Lawrence River. But a decision that a border following the Great Lakes would be easier to define saved southern Ontario for Canada.

Most of the province's 6.4 million people—a third of Canada's population—live within a highly industrialized fringe along Lakes Erie and Ontario. "And," a high provincial official reminded me, "a fifth of Canada's purchasing power lies within a 100-mile radius of Toronto!"

Finn Designs New City Hall

In a recent 5,000-mile tour of the province with my sister Nora, I saw heavy industry, agriculture, theater, vacation activity, and mining, all thriving.

This was my second circuit of Ontario in ten years. The earlier trip had been a search for material for a book. The contrasts between the two opened my eyes to stirring, heartening changes.

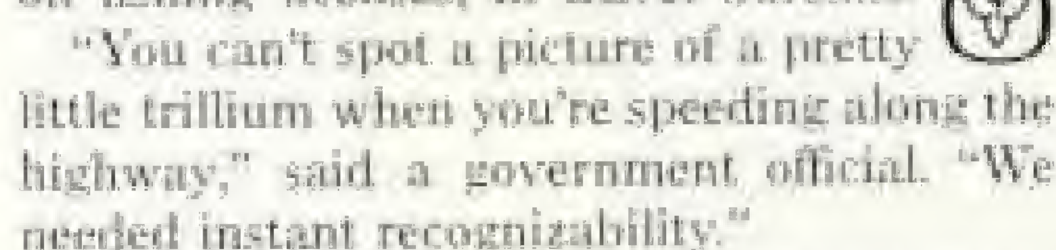
Just before that earlier trip, I talked with a former official about Toronto's old City Hall. When, I asked, could we hope for a new, more inspiring administration center for Ontario's largest city?

"That building's solid and sound," he said firmly. "We don't want any of this so-called modern architecture here!"

Things are different now, to my delight. A couple of years ago the city fathers broadcast an invitation to submit plans for a new city hall; more than 500 poured in from 42 countries. The winner was Viljo Revell of Helsinki, Finland. Construction is well under way on his two half-moon-shaped structures that will tower above a circular council chamber and spacious reflecting pool.

Ontario's "Signature": a Stylized Trillium

Ten years ago Toronto could no more have achieved such an imaginative city hall than the province could have changed the form of its floral emblem, the trillium. Yet this year a new stylized trillium has appeared wherever Ontario needs a signature—on road markers, on fishing licenses, in travel bureaus:



"You can't spot a picture of a pretty little trillium when you're speeding along the highway," said a government official. "We needed instant recognizability."

It was the sort of thing I found everywhere when I took a good look at Toronto, as I did before setting out on my recent tour.

That late July day I lunched at the little restaurant atop the Park Plaza Hotel, at the corner of Bloor Street and Avenue Road, a major crossroads of the city. Bloor at Avenue is Toronto's Bond Street, its Fifth Avenue. In the last decade it has changed, almost beyond recognition. Practically the only familiar structure in the area is the little Church of the Redeemer. And that barely escaped having its morning sun eclipsed by the 14-story Colonnade.

"Quiet elegance is the motif for the Colonnade," explained the owner-developers of this $10,000,000 venture, urbane Irwin Burns, age 37, and 32-year-old Murray Webber.

Three floors of offices and shops, a terrace restaurant above the city's traffic where we may eat outdoors during Toronto's agreeable summer, a swimming pool, underground parking for 300 cars, 11 stories of apartment suites—all of this I found exciting. But why right in the center of town?

"Suburbia has not turned out to be Utopia," said Mr. Burns. "Many now recognize the modern city as a place of excitement and convenience, where one can live with some style. The Colonnade will cater to these people."

There are 20 restaurants in this area, some with gourmet rating. "Our patrons," I was told at one, "are becoming connoisseurs. Perhaps it is because Canadians travel so much now; perhaps because so many Europeans have moved here since the war."

In a mid-town coffee shop I lingered just

The Author: English-born Marjorie Wilkins Campbell makes her home in Toronto. She brings to NATIONAL GEOGRAPHIC a writing skill and a knowledge of Canada that have twice won for her the Governor-General's Award. Her books include *The Saskatchewan,* in the "Rivers of America" series; *The Nor'Westers; Ontario;* and *McGillivray, Lord of the North West.*

EKTACHROME (BELOW) AND KODACHROME BY NATIONAL GEOGRAPHIC PHOTOGRAPHER WINFIELD PARKS © N.G.S.

Policewoman in jaunty hat and white gloves whistles traffic to a stop in Toronto. Beneath her feet, a subway speeds 32,000 persons an hour in peak periods.

Taillights Paint the Road Red as Traffic Pours Into Toronto

Streamers in this time exposure along Queen Elizabeth Way, a divided highway, attest the growing traffic problem in Ontario's industrialized southern fringe. One of every three Ontarians lives in greater Toronto; last year its population grew by 50,000.

Canadian Bank of Commerce (right) towers in the distance.

to listen to the Babel of languages; many of my fellow patrons obviously had emigrated from Paris, Vienna, Milan, or Bonn.

"The word Toronto," I was reminded by dynamic, 47-year-old Donald D. Summerville, the city's present mayor, "is a Huron Indian word meaning 'place of meeting.' It's oddly appropriate; Toronto has come to be known as an incomparable convention city."

So swiftly has Toronto grown that midtown now laps at the edge of the University of Toronto campus. Pausing on my way to visit President Claude T. Bissell, I recalled a frigid winter's day during World War II when I stood with my husband and several other doctors as a flag-draped funeral cortege left Convocation Hall. The university was paying its last tribute to Ontario-born Sir Frederick Banting, the co-discoverer of insulin.

I knew of Toronto's science facilities. "What of the arts and humanities?" I asked 46-year-old President Bissell.

"Well, there's our library," Dr. Bissell replied. "It's by far the largest in Canada and has just acquired its millionth item. The university's outlook used to be provincial; now it aims to become a world center of research and scholarship."

Not far from the campus stands the 12-million-dollar O'Keefe Centre for the Performing Arts. It was built by Edward Plunket Taylor, the Toronto industrialist whose interests range from gold mines to breweries (pages 70-71).

This is what I hoped Toronto would be like, I thought, when the premiere of *Camelot* opened the center in October, 1960. *Camelot* has been followed by sell-out successions of revues, ballet, opera, symphony, jazz concerts.

Returning to the Park Plaza's roof for a panoramic look, I could see that Toronto was still a city in a forest, though scores of high-rise structures have dwarfed the forest to a mere carpet. Flanking Lake Ontario, the new elevated Gardiner Expressway cut my view of the new docks that handle world-wide shipping brought in by the St. Lawrence Seaway. A plane coming in over the lake directed my eyes to the new 30-million-dollar terminal building at International Airport. Ontario's capital and metropolis was undeniably growing up.

KODACHROME © NATIONAL GEOGRAPHIC SOCIETY

Beach styles beckon to Torontonians passing corner windows of a store on Yonge Street. Some passers-by are mirrored; others are seen through two panes of glass. Toronto's prosperous residents contribute a big share of Ontario's purchasing power.

KODACHROME © NATIONAL GEOGRAPHIC SOCIETY

Artists and writers frequent a cafe in "The Village," Toronto's Bohemian quarter. Squeezed amid busy streets, The Village is threatened by expanding neighbors.

You can't drive casually around huge Ontario as you would England or Maine. We would have to break our circuit into several trips. First we would visit that rich industrial and agricultural section southwest of Toronto (see supplement map).

Hamilton Steel Creates Niagara Power

The multilane Queen Elizabeth Way took us to Hamilton, Ontario's third largest city (after Toronto and Ottawa). Ten years earlier I had visited its art gallery, its handsome Royal Botanical Gardens, and McMaster University.

This time I toured one of the mills that make 60 percent of Canada's steel (pages 74-5). Mountains of pelletized ore and reddish hematite awaited their turns in the glowing furnaces; docks received some of the 450 vessels that annually unload here.

I wondered where this obviously nonmining area got its ore and coke.

"Although this is an almost entirely Canadian-owned concern," a spokesman for the Steel Company of Canada, Ltd., told me, "most of our ore comes from the Mesabi Range of Minnesota, the coking coal from Pennsylvania and West Virginia. Only limestone—the third essential—comes from the Hamilton area."

Much of Hamilton's steel traveled only a few miles southeast, to build the tremendous new system of hydroelectric plants on the 36-mile-long Niagara River. These new power installations, in turn, have stimulated Ontario's industrial growth.

"Capacity on the Canadian side totals two million kilowatts," an official of the Queenston plant told me. "Generators on the New York side produce an equal amount." *

Besides turning the wheels of industry, Niagara's power also creates beauty. Some of it goes back to floodlight the falls themselves, an attraction that last year drew more than

*See "Niagara Falls," photographs by Walter Meayers Edwards, NATIONAL GEOGRAPHIC, April, 1963.

KODACHROMES BY NATIONAL GEOGRAPHIC

five million visitors to Queen Victoria Park, on the Niagara's west bank. Even on New Year's Eve, during one of the worst storms on record, little groups huddled together to see the falls, a pageant in ice sculpture.

It was on a hot August day that I sought out Maxim T. Gray, General Manager of the Niagara Parks Commission for Ontario. His office stands in Queen Victoria Park. I had to push my way through huge crowds to get there. Mr. Gray anticipated my first question.

"As many as twenty thousand cars enter the park on Sundays in July and August," he said. "Their licenses originate in every province in Canada, every state in the Union. We've even had some from the United Kingdom and various other European countries."

I looked at the park; at the School of Horticulture, whose students come from the world over; at the beautiful Oakes Garden Theatre; the Whirlpool aerial cable car; and Seagram Tower, from which you can see 40 miles on a fine day. Were all these self-supporting?

"Some are," Mr. Gray told me. "But the parks and most of the public facilities are supported by revenue from water-rental rights paid by the hydropower plants."

There it was: hydroelectric power again. Its abundance is evident all over Ontario.

With this in mind, the Canadian Government during World War II picked Sarnia, a town of 18,000 people on lower Lake Huron, as an ideal location for producing synthetic rubber. Then, a decade ago, geography de-

Tilt-and-whirl ride thrills youngsters at Toronto's Canadian National Exhibition. Each August the "Ex," as Ontarians know it, attracts some three million visitors.

Skates ripping ice, defenseman Kent Douglas races in pursuit of the puck as the Toronto Maple Leafs battle the Montreal Canadiens. A capacity house of more than 15,000 watches National Hockey Leaguers engage in Canada's national sport in Maple Leaf Gardens.

cided that Sarnia was the logical Ontario base for the transcontinental crude-oil pipeline from Alberta. Old, disused salt wells provided excellent storage facilities for petroleum by-products.

Now a new smell greets visitors to Sarnia: the smell of a giant new petrochemical industry. The city's population has grown to 51,000, yet I didn't think I'd care to live near Chemical Valley's belching chimneys. I said so to a young housewife.

"The smell?" she said. "I notice it when you mention it, but who cares? We never had it better here!"

Here is where southern Ontario may face a serious clash of interests. Swift industrial development, with sprawling residential areas and shopping plazas, already encroaches seriously upon the province's finest farmland. So do tourism's demands for more and wider roads. Yet agriculture is still basic to Ontario's welfare. Farm production in 1962 grossed nearly a billion dollars—most of it from southern Ontario's dairies, orchards, and truck farms.

Tobacco is also an important crop; each year some 4,500 farms produce about 200 million pounds for flue curing (page 77). The Tillsonburg tobacco area attracts hundreds of migrant workers. I talked with one, a dark, pretty Yugoslav girl tying harsh, newly picked leaf into bundles for a conveyer belt. Her hands were swollen and bruised.

"They hurt so much," she said. "But I

make much money. And we buy a mortgage on our house, I and my husband."

It was to southern Ontario that young Alexander Graham Bell came with his Scottish parents in 1870. The Bells had already lost two sons to tuberculosis and sought a kindlier climate for the third, who also was threatened.

Telephone Born in "Thinking Spot"

In the salubrious air of the family homestead at Brantford, young Bell's health steadily improved. He spent much of his time resting in his favorite "dreaming place" under a tree. Here he conceived the principle of the telephone, and here in Brantford he conducted some of his early experiments. A Bell memorial in granite and bronze stands today near the center of the town. The old Bell home, with its original furniture and mementos of the inventor, attracts a steady stream of visitors.

Many years later, in nearby Stratford on Ontario's River Avon, another young man had a brilliant idea. He was Tom Patterson, editor of a small trade paper, whose consuming interest was to make Stratford a center of Shakespearean theater, like its older counterpart in England.

One day Patterson telephoned Shakespearean director Tyrone Guthrie in Ireland. Would Guthrie come over and help plan a Shakespeare theater?

Guthrie was so astonished—and impressed—it never occurred to him to ask why or how he should help a Canadian town of 20,000 acquire such a theater. He merely asked, "When shall I come?"

Sails Bellying, Crews Hiking, Sloops Skim Lake Ontario

Sunlight jewels a choppy sea off Toronto as Wayfarer 276, its sheets eased, races for the outer mark during the Canadian National Exhibition Regatta.

Sailing lures thousands of Canadians to the Great Lakes in summer. Good sailors in larger boats sometimes venture all the way across the lakes.

W
276

Sir Alec Guinness, in *Richard the Third*, opened the theater in 1953. Every one of the 2,258 seats was occupied the night I saw John Colicos in a gay and polished performance of *The Tempest*.

This summer the Stratford Shakespearean Festival is presenting *Troilus and Cressida*, *Comedy of Errors*, and also one of the Bard's rarely performed works, *Timon of Athens*, in a modern-dress version with an original score by jazz composer Duke Ellington.

"Underground" Route Led to Ontario

Before the Civil War several thousand Negro slaves escaped to southern Ontario. The Reverend Josiah Henson, regarded as the hero of Harriet Beecher Stowe's *Uncle Tom's Cabin*, came to Dresden. His descendants and those of other former slaves still live in this quiet town an hour's drive northeast of Detroit.

Ten years ago I asked one of Henson's descendants to have coffee with me at a Dresden restaurant.

"I'm sorry, ma'am," he said, "but I can't. That's for white folks." Embarrassed, I asked him to show me Henson's grave. On the way he told me something of his own story.

"My great-great-grandfather, I guess it was, came over by the Underground Railroad."

He referred to the system by which fugitive slaves from the Southern States were passed from secret station to secret station on their flight to freedom in the North.

KODACHROME © NATIONAL GEOGRAPHIC SOCIETY

Hands clasped, face aglow, a girl watches Britain's Queen Mother, a visitor to Toronto.

Ankle-deep in grass, Queen Mother Elizabeth walks the infield at New Woodbine Race Track, Toronto, to greet the winning jockey in the 1962 Queen's Plate. Industrialist E. P. Taylor, owner of the winner, accompanies her.

"The man who looks after Reverend Henson's grave told me about those days. I guess the slaves thought this was the promised land."

Revisiting Dresden a decade later, I sensed a change, although I could see that the town's Negro citizens still chose to patronize their own restaurant, poolroom, and barber shop. The change I had noted was emphasized last spring, when Dresden's high-school students met to elect officers. A Negro girl became their vice president and another won a place on the student council.

From Ontario's agricultural south, my sister and I now turned our thoughts straight north. We would travel through the vacationlands and the lumbering and mining country all the way to the chill waters of James Bay.

For me, Ontario's north really begins at Lake Nipissing. The town of North Bay, situated well within the area of the Precambrian Shield, is the gateway to a region that in 1961 produced 948 million dollars' worth of minerals, including nickel, uranium, copper, gold, iron ore, platinum, and zinc.

The men who pioneered the opening of Ontario's northland mining country are, above all others, the hard-rock miners. Recently they used dynamite and drills in a dramatic new cause: North American defense.

Nora and I went to Reservoir Hill, near North Bay, to take a look at SAGE (Semi-Automatic Ground Environment). Four hundred miners used 750 tons of explosives to tunnel

Blur of Action Starts the Day on the Toronto Stock Exchange

Among North American exchanges, only New York's exceeds the Toronto market in volume of shares traded, an average four million a day valued at about 15 million dollars. On July 7, 1958, at the height of a uranium boom, an all-time record of more than 15 million shares changed hands. Bid and asked prices constantly flash on the hexagonal trading posts studding the floor.

Decks and doors open, new cars roll off the assembly line at Ford's Oakville plant, largest industrial building under one roof in the British Commonwealth. More than four thousand workers turn out nearly 600 vehicles a day. Here, at the trim section of the line, men install window crank handles, painted moldings, and upholstery panels.

roads into the hill's granite heart. They excavated openings as large as cathedrals.

Today, deep in the rock, technicians operate the complex equipment that controls manned interceptors and surface-to-air missiles. Logically, the base's designers stressed self-sufficiency; it pumps its own air and water, and generates enough electricity for a town of 3,000.

Indians Meet Moosonee Train

Near Ramore on Highway 11 my sister and I noted a large roadside sign: "From here all streams flow north to the Arctic Ocean. This point is 1,061 feet above sea level."

Cochrane was as far as we could go by road. We parked the car and boarded a train for Moosonee, on James Bay.

Archie and Lorna Michelle, hosts at The Lodge, Moosonee's only hostelry, met us at the station. So did Moosonee's Cree Indian population, including many babies on cradleboards. There was a sprinkling of men in RCAF uniform, from the new Moosonee radar base. Freight canoes, powered by outboard motors, rode the gray waves of the Moose River's wide estuary. Planes roared over the riverside airport.

We crossed to Moose Factory Island in a canoe. Fortunately our visit coincided with the annual gathering of Indians to decorate graves at the cemetery. They came in a score of canoes, almost all equipped with outboards. I chatted with one group. Where did they live? What work did the husbands do?

An Indian pointed to hunting grounds upstream. "In winter, trap line. Summer, work at hospital"—he grinned—"seven, eight dollars a day."

Families trudged to the white-picketed burial ground beside a potato patch, carrying homemade wreaths and sprays of imported spring flowers from the Hudson's Bay store.

A little before three o'clock we filled the white Anglican Church, admiring the exquisitely stitched moose-hide frontals on the altar. We sang "Unto the Hills Around," a rather incongruous choice, since Moosonee has no hills. An Indian canon began the service in Cree, and Suffragan Bishop the Right Reverend N. R. Clarke preached in English.

STEEL-MILL LIGHTS *star the dusk at Hamilton. Burlington Skyway leaps a landlocked harbor.*

KODACHROME AND HS EKTACHROME (INSET) © N.G.S.

Asbestos-shod worker stands atop a rolling mill of the Steel Company of Canada, Ltd., in Hamilton. Poised tongs will guide glowing bars from a reheating furnace.

During the recessional, clergy, red-cassocked choir, and congregation filed slowly out. When all the Indians had gathered about the graves of their kin, clergy and choir walked singing between the white crosses. The day was cold, with a stiff wind. Dark clouds turned to rain. Yet a mood of glad reunion overrode grief. I saw only one person weeping, a black-kerchiefed widow standing alone.

Next day, back at Moosonee, white-robed Sister Paul-Germaine took me round the 29-bed Grey Nuns hospital. She and her staff look after less serious cases, referring patients in need of major surgery to the Government hospital on Moose Factory Island.

A small boy who had stepped on a nail was having his foot dressed and an antitetanus injection administered. A 99-year-old Indian woman, her furrowed face strangely beautiful, roused to Sister Paul-Germaine's touch. Gently, tenderly, a young nurse treated three black-eyed, black-haired babies.

"There, you must not cry," crooned the Superior, dangling a bright toy. "The medicine will make you better."

The Most Reverend Henri Belleau, O.M.I., is the tall, bearded Roman Catholic Bishop of

© NATIONAL GEOGRAPHIC PHOTOGRAPHER WINFIELD PARKS © N.G.S.

Mennonites Turn Backs to the Camera and Trudge Home After Sunday Worship

Plain dress reflects the frugal farm life of Mennonites in the Kitchener-Waterloo area of Ontario's fertile southern triangle. Members of the sect reject force, refuse to take oaths, and adhere to a strict moral code. Most practice abstinence from tobacco and alcohol.

Backs bent, woman and child work in a tobacco field near Simcoe. Identical curing barns rise in the distance. Irrigated farms enrich the region by more than 40 million dollars a year.

Moosonee and a veteran of many a dog-sled journey before planes and helicopters eased his travels. One stormy day I flew with him along Ontario's northern bays to Fort Albany. The other passengers on the small floatplane were a pretty nurse from the island's Indian Hospital, taking a chubby-faced baby home to his parents, and NATIONAL GEOGRAPHIC photographer Winfield Parks.

The pilot had engine trouble as he taxied from shore into the Moose River and had to return for another plane. The nurse, the baby, and I took shelter from the driving

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War Memorial Tower dominates the University of Western Ontario, London. College buildings rise on 500 acres of rolling fields and wooded valleys. Registration day summons freshmen.

rain under a wing. When the airworthy plane arrived, the bishop turned to and helped the pilot transfer Her Majesty's mailbags and the assorted air cargo.

"I would get to fly on a day like this!" groaned the nurse, airsick before the pontoons left the water.

Settling the child between her own and Win Parks's feet, she comforted him with an arrowroot biscuit and leaned her parka-clad head against the window. Finally we touched down on the Albany River. Not a sign of habitation had I seen on that entire trip above the muskeg wilderness.

Priest Drives a Bucking Jeep

Fort Albany is Ontario's oldest continuously occupied settlement. The French captured the first crude Hudson's Bay Company fort in 1686; the British recaptured it seven years later and have held it ever since. But while Albany lacks even the airport facilities of Moosonee, it lacks none of the pleasant warmth of frontier hospitality.

"Come and have lunch with me," said the bishop as we scrambled up a wooden ramp and into a waiting jeep. At the wheel sat Father Jean-Baptiste Gagnon, the black-robed priest who directs Albany's Indian residential school (page 87). The tortuous trail could scarcely have been rockier, but the director drove with obvious pride.

"I apologize for the rough ride," he said. "But a jeep is a great improvement on a sled—or having to walk everywhere."

The meat and potatoes and cabbage were fresh. "They are produced here," said Father Gagnon, reminding me that many of the earliest white men at Fort Albany died of scurvy or starvation.

Later I toured the school and

then went to see the new additions that were being made to the local hospital. Where did the obviously skilled Indian electricians, carpenters, and plasterers get their training?

"We taught them ourselves," said the brother in charge of construction.

In the autumn some of Albany's Indians work for Bill Anderson, who runs a camp famous among men from "outside" who can afford to spend hundreds of dollars on a goose hunt.

"The hunters come from all over the continent," said Mr. Anderson. "Doctors, lawyers, businessmen. This is the main Hudson Bay flyway, and it has always been noted for its abundance of fowl. The Indians used to stock up for the winter on the mud flats, freezing the game. Now conservation laws limit them to the normal quota, except for those who live off the land."

Houses Bought With Pelts

Bishop Belleau told me about Winisk, far-north settlement on Hudson Bay, site of a vital new radar station and home to part of his Indian flock. He was proud of the fact that many members owned their own homes—real houses, lined up along streets.

"When the construction workers finished the station," he said, "we bought several of their bunkhouses and moved them to a suitable site. We cut each of them into three separate dwellings. And, do you know, those Winisk Indians paid for their houses, too—up to a hundred dollars a house."

The Indians paid for them by working on the RCAF base or, like their ancestors, by following lonely miles of trap lines, skinning and dressing beaver and other pelts that would go south to fur auctions.

Returning again to Mooso-

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"Under the shade of melancholy boughs. . . ." Actress Martha Henry studies a Shakespearean script in Stratford, whose Shakespearean Festival is now in its 11th season.

nee, I relaxed for an hour in the officers' mess at that slightly more southerly radar station.

"This place is yesterday, today, and tomorrow," said a woman who knew the James Bay area well. "It's Indians being taught how to use a flush toilet. It is also this"—she indicated the cozy officers' mess—"and new houses set down in a clearing bulldozed out of scrub spruce. And those radar bubbles."

With Wing Commander Louis Nault I visited some of the houses where his staff and their families lived. Each prefab had been hauled in by train and fully furnished.

"Our people can arrive with only their luggage and move right in," he said. "Everything is ready, even a few days' provisions."

We took a train back to Cochrane, and then drove to Kapuskasing, beautifully situated town of the Spruce Falls Power and Paper Company, Ltd., whose mills make newsprint for the New York *Times* and other papers. You always know when you're nearing a pulp and paper town. Your nose alerts you to that unmistakable blend of fresh-cut wood, sulphur, and water.

I recalled a conversation I'd had here ten years ago with Guy Minard, Spruce Falls' general manager, and now president of the company. I had visited a dozen such plants throughout the north, watching wood from the forests go through the chipping and cooking stages until it finally emerged in 1,700-pound rolls, each containing more than five miles of newsprint. How long would the forests maintain such a supply?

"Take a look at that town," Mr. Minard

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Athletic teen-agers do the twist in a sail-decorated clubhouse during the annual regatta dance at Lake Muskoka, east of Georgian Bay.

Vacationists in tents and trailers settle for the night at a campground off Georgian Bay, eastern arm of Lake Huron. Long a favorite vacation area, the bay abounds with lake trout, bass, muskellunge, and pickerel. Hundreds of hotels, lodges, and campsites ring its shores. More than 30,000 pine-clad islands stud the bay.

Boaters enter Port Severn Lock on Georgian Bay for the 12-foot lift into the Trent Canal, which leads 240 miles southeast to Lake Ontario.

Fiery Rivers Spill Down a Slag Heap; Houses Rise Near the Inferno's Rim

Twice every hour train-borne ladles from the smelter of the International Nickel Company of Canada, Ltd., empty tons of molten waste at Copper Cliff, near Sudbury. From this area the noncommunist world draws two-thirds of its nickel, a vital ingredient in high-strength steel. The same mines produce much of Canada's copper. Other by-products include gold and silver.

had said then, indicating the landscaped park and modern houses: "Does it look like a fly-by-night venture?" Time proved him right. Park and houses are still there.

They are there because the Government of Ontario administers an enlightened reforestation program. The plan pays, for trees still cover 76 percent of Ontario's land. In one recent year, forestry and related industries brought the province 660 million dollars.

Port Booms as Seaway's "Mile Zero"

Now Nora and I went west, almost as far west as we could go in Ontario and still be on the shore of Lake Superior. I wanted my sister to see Thunder Bay when the setting sun coppered the water and silhouetted the Sleeping Giant—*Nanabijou*, the Ojibway Indians called it, the Great Spirit. The promontory guards the entrance to the huge harbor on the west shore of the lake. And so we drove up to the lookout on Mount McKay. Below us lay the adjoining cities of Fort William and Port Arthur, home to 140,000 Ontarians.

Pulp and paper mills, ore docks, and grain elevators ringed the shore. Log booms floated like neatly contained patches of algae. As the twilight faded, cargo and masthead lights located ships whose home ports were at the other side of the world. A plane winked its way into the airport. Here was a major center on the 1,715-mile water boundary between Ontario and the United States.

Fort William, much the older of the two cities, was named for William McGillivray, chief director of Montreal's fur-trading North West Company. It served as the company's field headquarters. But apart from Fort William's founding, its greatest event took place 156 years later, when the harbor became the upper terminus, Canada's "mile zero," of the St. Lawrence Seaway.*

On May 2 last year the Liberian freighter *Panagiotis L.* sailed into this heart of the continent, 2,000 watery miles from the Atlantic. A West German freighter brought a cargo of steel and general merchandise. By mid-month a French 20,000-tonner called, seeking a cargo of grain for Venezuela.

Enthusiastic officials escorted me over much of the new nine-million-dollar Keefer Lakehead Terminal, as big as seven football fields. The terminal was named for Francis H. Keefer, who prophesied 50 years ago that

*See "New St. Lawrence Seaway Opens the Great Lakes to the World," by Andrew H. Brown, National Geographic, March, 1959.

KODACHROME © NATIONAL GEOGRAPHIC SOCIETY

"salties" (ocean-going ships) some day would anchor in Thunder Bay.

Robert J. Prettie, Chairman of the Northern Development Committee of the Ontario Economic Council, has great hopes for this area 600 miles northwest of Toronto.

"We have an unusual set of circumstances here," he told me. "The area's 27 elevators can store 110 million bushels of prairie grain, and they can dump 2,000 bushels of it into a ship's holds in five minutes.

"Out there," he indicated the shoreline, "ore from inland iron mines is dropped into the carriers. And now we have the St. Lawrence Seaway to link us with the ocean. But a community can't depend on transshipping alone, important as that is.

"We need more local industries like the big foundry, the shipyard, and our four paper mills. We have an abundant supply of timber, electric power, and water."

Mr. and Mrs. Prettie and I continued our talk over lunch at their country home on Lambert Island, Amethyst Harbour. The

dining room opened on to a broad cantilevered deck with a fine view of the Sleeping Giant.

Mr. Prettie runs a $5,000,000 wood-preserving business in Port Arthur. I asked him how his company chose the location.

"Believe it or not," he said, "we looked at the map of Canada for the most strategic spot. Here is the very center, halfway between Atlantic and Pacific. Here were potential markets to east and west and plenty of local raw materials. We started out small. But then, nearly every big business started small."

His words could be the slogan for the potentially great port destined to weld together not merely two sections of the province, but eastern and western Canada as well.

We left Fort William to the throb of a kilted pipe band playing "The Road to the Isles" and "Macgillivray's March." The band's chief today is George B. Macgillivray, publisher of the Fort William *Times-Journal*, who is of the same ancient Scottish stock as fur trader William McGillivray.

Heading northwest for Kenora, my sister and I drove 300 miles through country that Washington Irving long ago described as belonging to the "lords of the lakes and forests."

I had flown over much of the Kenora-Lake of the Woods country ten years ago in one of the Department of Lands and Forests' bright-yellow Beavers. Pilots of those planes, and their co-workers in the fire prevention service, guard the province's greatest natural resource.

Nose flattened against a station window, a Cree girl watches for an incoming train, a favorite pastime in lonely Moosonee. The town lies on an arm of James Bay, end of the line for the Ontario Northland Railway.

Moosonee's Indian children play outside

the Hudson's Bay Company store. Roman Catholic Church stands across the dusty main street

On that flight, pilot J. O. Burton's eyes seldom left the terrain below for a second. He named lakes and rivers suitable for emergency landings, pointed out the locations of scores of summer camps, fly-in fishing spots, timber and wildlife operations from Minnesota to Red Lake.

We flew low over a wild rice swamp etched with long canoe trails. Later, I talked to two Indian girls who had flailed the rice heads into a canoe with their paddles. How good was the harvest? "We make ninety dollars since sunup." They smiled happily.

Today Ontario regulates the wild rice harvest. Two men in a canoe can reap about 200 pounds a day. I've paid as much as $3.85 a pound for wild rice to cook with venison my husband brought home from his annual deer hunt.

As we again passed over forest, the pilot barked a fearsome word: "Fire!"

It was a mere wisp of smoke rising from the forest floor.

"Lightning, I guess," Burton commented, as he circled for a closer look. Then he headed back to base. At Kenora rangers with parachutes loaded fire-fighting equipment and lashed red canoes to the pontoons. In five

minutes the Beaver was off again. Reluctantly I stayed behind while the airborne firemen put out the blaze.

"That's the best way to handle big fires," said a ground crewman. "Quench 'em while they're small!"

"What if it's a really bad fire?" I asked.

He answered soberly. "We've got the best equipment in the world. So far we've kept them under control."

William M. Benidickson, Member of Parliament for the Kenora-Rainy River constituency, told me about this part-urban, largely frontier corner of Ontario.

Kenora, a popular tourist resort and a timber and milling center, has good transportation facilities. But how, I asked, did an M. P. keep in touch with outlying constituents in this vast area of only 73,000 people?

"I fly a lot, though that's out during fall freeze-up and spring thaw when you can't land on water," Mr. Benidickson said. He must envy Toronto members, I thought, who can cross their districts in ten minutes.

Sturgeon Makes a Royal Feast

Along the east side of the Lake of the Woods, every mile beckons fishermen. Americans own or use most of the camps near the border. I had a memorable dinner at Len Cadieux's restaurant overlooking Rainy Lake. The entree was golden, delicious sturgeon, gently fried in butter. Len Cadieux knew better than to offer dessert with it. A salad, a hot roll, and perfect coffee. That was enough.

Fort Frances, on Ontario's Minnesota border a few miles from Lake of the Woods, was named for the London-bred wife of a Hudson's Bay Company notable, Sir George Simpson. In 1830 the Simpsons traveled the voyageurs' canoe route, part of the original trans-Canada highway westward from Montreal to the Pacific. Today Fort Frances has farming and small business, but like so much of Ontario it still looks to the forest for its major resources.

Fort Frances is the giant Ontario-Minnesota Pulp and Paper Company, Ltd. (page 92). It also is J. A. Mathieu, the perennially young dean of northwestern Ontario lumbering. He was celebrating his ninety-third birthday when I called. On his broad desk, 93 long-stemmed red roses almost hid him and his dashing, Kentucky-colonel-style Panama hat. His handshake was firm, his eyes clear and bright.

"I started rafting logs when I was sixteen," he remarked. "That was back in 1885. I've been in lumbering ever since—nearly three-quarters of a century."

"And you have no plans for retiring?"

"Oh, no. Not yet! I'm opening a new mill—my ninth—this fall on Rainy Lake east of Fort Frances." And then he answered the question that had been at the back of my mind ever since I had heard about him.

"The secret of my longevity?" His eyes twinkled. "Always combine pleasure with business. And always keep working!" To me, Mr. Mathieu typifies the spirit of his corner of the province.

Scotland on a Wide Screen

On my earlier trip I put the car aboard the Canadian Pacific's *Assiniboia* for a restful 20-hour cruise down Lake Superior, from Fort William to the Ontario side of Sault Ste Marie, just across the busy Soo canals from Michigan.

This time I drove King's Highway 17, opened in 1961, part of the Trans-Canada Highway edging Lake Superior. At one of the breathtaking overlooks, a tourist with New York license plates turned back for a final look before driving away.

"It's the Scottish Highlands on a wide screen," he said. "But so empty. No old inns, old villages."

But there are towns here, model towns like Terrace Bay, glimpsed by the passer-through. Towns with magic names—Red Rock, rich with Indian pictographs; WaWa, Indian for "wild goose"; Nipigon; Michipicoten; Batchawana. Towns new and yet linked with a far-distant past by their names.

I recall the names when I grope in vain for words to evoke the magnificent upthrust of rock along this north shore: the wooded, rolling mountains and the breadth of sky that reminds me of prairie horizons; wide vistas of seemingly endless Lake Superior itself, and, in early September in the Algoma country, soaring wooded slopes flecked with flaming maples.

Some day this country may produce a Sibelius to compose music in praise of its lakes and forests. It has already inspired a 32-year-old Ojibway, Norval Morrisseau, to paint the legends of his ancestors with Picasso-like line and color.

"I grew up with these legends," Morrisseau told me. "I paint them as I know them."

PHOTOGRAPHS © NATIONAL GEOGRAPHIC SOCIETY

Cree Baby Returns to the North After a Flying Trip to a Hospital

Twice-weekly flights by bush planes link Fort Albany, a Hudson's Bay Company post on James Bay, with settlements to the south. Nomadic Crees still trap and hunt as their ancestors did. Trading at the Albany post has gone on since 1694.

Here a parka-clad nurse from the Indian Hospital on Moose Factory Island holds a former patient as the bearded Roman Catholic Bishop of Moosonee, the Most Reverend Henri Belleau, steps ashore for a visit at Fort Albany. Father Jean-Baptiste Gagnon, director of Albany's Indian school, greets the bishop.

White-robed Sister Paul-Germaine of the Grey Nuns hospital in Moosonee visits a Cree tent to dispense candy to the children and advice and pills to the ill. Only 15 years ago tuberculosis cut short the lives of many Indians. New drugs and treatment have reduced the death rate dramatically. Patients arrive at the hospital from settlements far to the north on Hudson Bay.

Dwellings of the Crees range from tents to small houses. In winter the men run trap lines; in summer they work at odd jobs.

Skiers' Bright Flares Trace Ribbons of Fire

Members of the Fort William Ski Club weave down Death Valley run on the north slope of Mount McKay.

Lights of Fort William and Port Arthur, twin cities on Lake Superior, spangle the waterfront.

Paraders defy 18-below-zero cold at Fort William's Winter Carnival. Pipers and drummers in MacGregor tartans step smartly behind a drum major in ostrich-plume bonnet. Members of a curling club ride a truck with their ice-sweeping brooms thrust upright. A team of huskies follows.

February's annual carnival is a major event in Fort William, a city whose venerable Scottish flavor has been enriched by immigrants from Italy, Finland, and the Ukraine.

Snug on a sled and bundled to the eyes, a young spectator enjoys the parade.

Because of his work, the people in Toronto, who bought out his first one-man show, have greater insight into the heritage that is both his and theirs.

Ontario and northern Michigan touch hands at Sault Ste. Marie. Here were so many modern developments—the locks, the soaring International Bridge, Algoma steel mills, the growing border city itself—that I had to search to find its greatest historic monument, the first lock on the Great Lakes. It was built by William McGillivray's North West Company in 1797 to float a *canot de maître* (chief's canoe) 36 feet long. During the War of 1812 United States forces from Lake Huron destroyed the lock. It was restored by the Abitibi Power and Paper Company as a historic symbol, but was never used again.

I tried to compare the tiny canoe lock with the present locks, Canadian and American,

KODACHROME BY NATIONAL GEOGRAPHIC PHOTOGRAPHER DEAN CONGER © N.G.S.

Glass walls offer sweeping vistas of lovely Lake of the Woods. Winnipeg resident W. Steward Martin built this post-and-beam summer home for his family on Sugar Apple, their privately owned island 3½ miles by boat from Kenora.

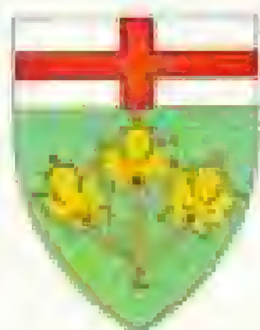
Fourteen thousand islands freckle sun-burnished Lake of the Woods. Lake waters teem with great northern pike, pickerel, black bass, lake trout, and muskellunge weighing up to fifty pounds. In fall hunters bag moose and deer.

EKTACHROME BY NATIONAL GEOGRAPHIC PHOTOGRAPHER DEAN CONGER © N.G.S.

Riding a jet of water, a log drops onto a storage pile at the Ontario-Minnesota Pulp and Paper Company, Ltd., Kenora. Conveyer at center carries peeled logs into the mill from mountains of spruce. Twenty-five-ton grinders chew them to pulp. A mixture of ground and chemically treated fibers rolls through drying presses to emerge as newsprint.

ONTARIO

SECOND LARGEST of Canada's ten provinces (after Quebec), Ontario links polar bears, peaches, and people. It ranges from subarctic wilderness to fruitful farmland. Its name, in Iroquois, means "beautiful waters."



AREA: 412,582 square miles. **POPULATION:** 6,400,000. **MAJOR CITIES:** Toronto, capital (met. pop. 1,824,481); Ottawa (met. pop. 429,750), national capital; Hamilton (met. pop. 395,189), steel and lake shipping; Windsor, automobiles, rail and air center; London, center of rich agricultural area. **ECONOMY:** Chiefly industrial (hydroelectric power, motor vehicles, pulp, paper, lumber, meat packing, metal and petroleum refining). Agricultural produce includes dairy products, livestock, fruit, tobacco. Rich ore deposits (nickel, uranium, copper, gold, iron ore, platinum, zinc).

CLIMATE: Abundant rainfall; summer temperatures reach average high of 80° F. along U. S. border, drop to about 10° F. average low in winter. **FLORAL EMBLEM:** White trillium.

by which ocean-going vessels and lakers negotiate the drop between Lakes Superior and Huron (pages 94-5). The *Whitefish Bay*, twenty times as long as a Montreal canoe, made the 22-foot descent in 20 minutes. The Soo Locks, Canadian and American, handle more tons of shipping in a year than does even the Panama Canal.

In spring, maintaining the locks poses a challenge as great as did building them.

"Ice fields at the lower end of Lake Superior are among the world's worst," explained a lock attendant.

"It's not only the ice. Think of all the water of Lake Superior funneling into the St. Marys River. Add to that the ice that breaks up with spring thaws. Then remember the gales that blow on Superior. Current. Ice. Wind. We can manage fine with only current and ice. But when there's a gale—well, it happened last spring. We just got the channel cleared, and the ice blocked it. Time and again. Late into the second week in May, ships were still entering the locks at a trickle."

From Sault Ste. Marie I drove southward around Georgian Bay toward Lake Ontario. This time I skipped Algonquin Provincial Park's 2,910 square miles of vacationtime lakes and woods, happily familiar to most Torontonians. I wanted to see what was new on the St. Lawrence River.

Few parts of Ontario have changed more in recent years than the upper St. Lawrence. The hydroelectric developments at Cornwall and at Massena, New York, created Lake St. Lawrence. The lake necessitated the removal of entire towns and villages before flooding began.

Long Sault, like its neighbor villages, new Iroquois and Ingleside, did not exist when I visited the area ten years ago. Planned to the last detail on paper, Long Sault gleams with modern homes and a shopping center, churches and schools.

"Those islands facing Long Sault," said a local woman, "they used to be hills, with valleys and fields between them—and between the river and this new townsite."

Had it taken long for the farms to disappear, the hills to become islands? All shipping in the seaway ceased for three days, she told me. Thirty tons of dynamite breached the 600-foot-long earth dam that had diverted the river's flow. That was on July 1, 1958. Next day, slowly, the fields changed: "They looked like mammoth blotters soaking up spilled water."

Lake Covers Homes and Farms

The lake broadened and rose steadily until many local residents, watching anxiously, began to pray that the engineers had made their calculations correctly. But the rise stopped as planned when the water reached the 238-foot mark.

Today the lake stretches 28 miles upstream from the Cornwall generating stations to Iroquois, covering some 100 square miles of Ontario and the State of New York.

"It was a great day for some, a shame for others," one man remarked. "Folks hated to leave homes their ancestors built back in the 18th century."

On a two-hour boat trip down Lake St. Lawrence, I cruised over villages, cemeteries, railway tracks and yards, 14-foot-deep canals, 35 miles of paved road, 225 farms.

As we watched a Norwegian freighter emerge from the Eisenhower Lock, a guide reminded us that there were in fact two great projects here, the St. Lawrence Seaway and the power installations. He described Massena Intake on the American side, the great Long Sault Dam, and then the Robert Saunders and Robert Moses installation. The Saunders half was built by Canada, the other by the United States.

Each plant has a capacity of 940,000 kilowatts. And that power is generated by water that has already produced twice as much at Niagara. It is part of the 6,470,000 kilowatts generated by Ontario installations.

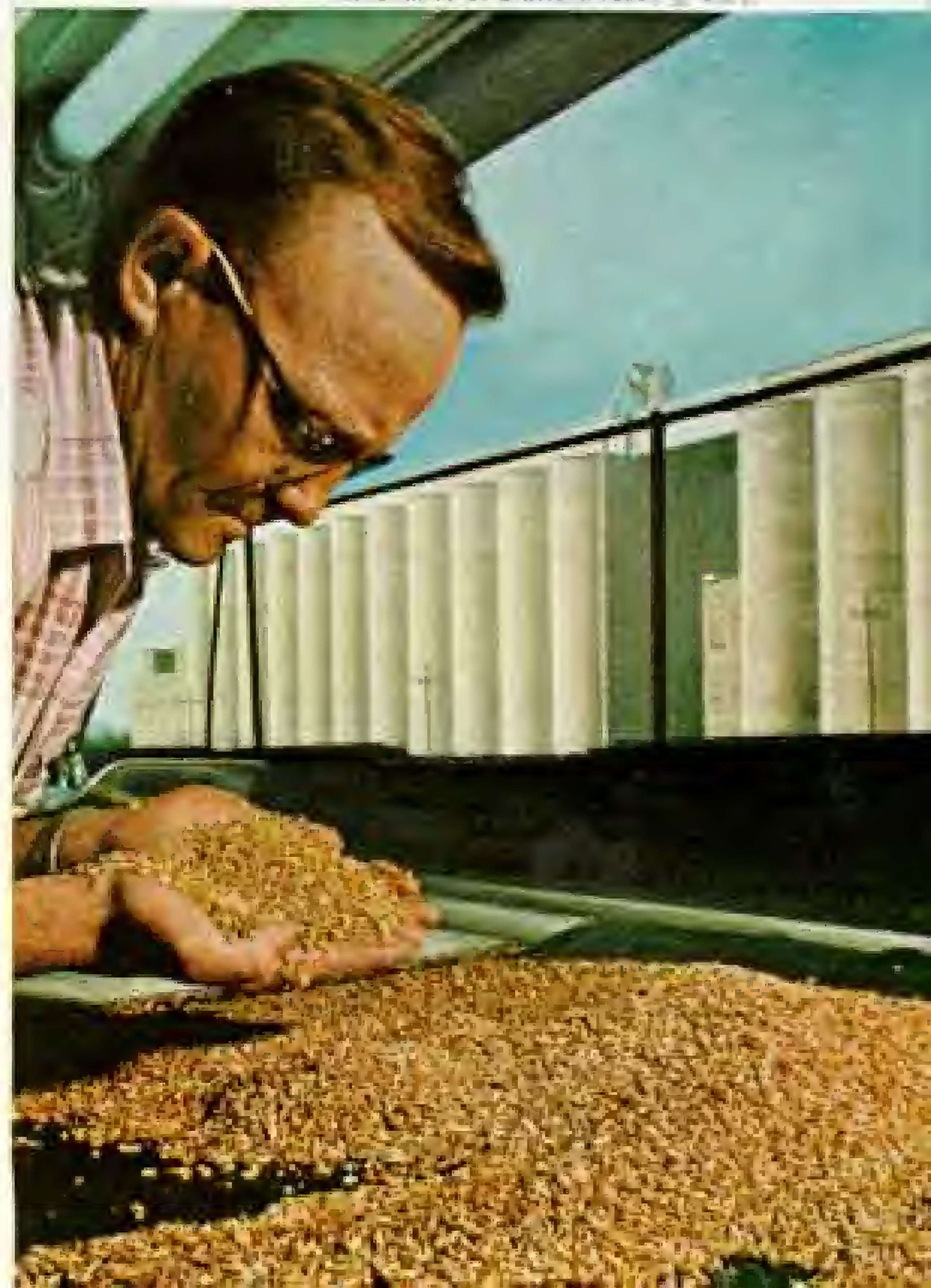
Queen Chose Site for Capital

Back in 1857 Queen Victoria, armed with the recommendations of the colonial government, looked at the still largely empty map of Canada and chose a site on the Ottawa River, 100 miles west of Montreal, as the capital.

It wasn't a popular choice. Ottawa, charged one Torontonian (who had hoped that his

Amber durum wheat from Saskatchewan, prized for macaroni making, undergoes grading by inspector John Bisby at Port Arthur. Grain from Canada's prairie provinces flows to Lake Superior elevators.

KODACHROME BY WINFIELD PARKS © N.G.S.



Sault Ste. Marie Locks, in the busy Soo Canal, lift Great Lakes carriers over a 22-foot drop

city would win the honor), was a mere "sub-arctic lumber village converted by royal mandate into a political cockpit!" Yet Victoria's choice turned out to be a good one. The nation's capital occupies a magnificent site high above Ottawa's Chaudière Falls, with the Gatineau Hills in Quebec Province as a backdrop.

A master plan developed by the Paris town planner, Jacques Gréber, and the National Capital Planning Commission has produced striking results. Each spring Ottawa blossoms with miles of tulips. In summer, Sparks Street Mall—gay with potted plants and shrubs and trees—delights tourists, citizens, ambassadors, and just plain civil servants.

But to appreciate Ottawa's changing outlook one must see the new City Hall, on a green isle in the Rideau River, and meet the city's energetic mayor, Charlotte Whitton (page 96).

At 66, Miss Whitton recently was elected

from distant Superior to Huron. New International Bridge links Michigan (left) and Ontario

mayor of Ottawa for the ninth year. She carries out her duties with such vigor and dramatic flair that last year a Canadian newspaper poll voted her the country's most newsworthy woman—for the sixth time.

But the evidences of the capital city's—and thus Ontario's—broadening outlook are to be found also on the national scene.

"One of the most important things that has happened to this country in recent years is the appointment of Maj. Gen. Georges P. Vanier as Governor-General," a leading industrialist told me.

General Vanier is the second Canadian to represent Queen Elizabeth at Ottawa; the first was Ontario-born Vincent Massey, a superb success as a viceroy although not as well known as his actor-brother Raymond.

His present Excellency, a soldier and diplomat whose military bearing and crisp mustache match the best in the United Kingdom, comes from a proud Quebec family; like

Robed in scarlet and fur, Ottawa's Mayor Charlotte Whitton stands at her chair of authority in City Hall. A solid gold chain of office weights her shoulders; its links bear the names of the city's mayors since 1855.

Canada's Government Buildings Crown Parliament Hill in Ottawa

Spiring 400 feet above the Ottawa River, the clock-faced Peace Tower stands sentinel over the national capital's Senate and House of Commons. Flying buttresses ring the conical Library of Parliament. Staircase locks of the Rideau Canal rise beside the Château Laurier (left), a hotel.

his gracious wife, he is of Canada's senior race, the French. I watched them ride to the opening of Parliament in an open carriage attended by a detachment of scarlet-coated Royal Canadian Mounted Police.

"It's almost as fine as seeing the Queen herself," said a woman beside me, a catch in her voice. And I felt hot tears sting my eyelids, unexplainable tears born of an emotion too deep for words. The tall man in resplendent uniform, the gracious woman smiling at his side, the pageantry—and we, the people, cheering along the street.

I can think of no better explanation for our emotion than that our feeling for the ancient Mother of Parliaments deepens with the passing of decades. That and the age-old exultation of men and women who feel rather than say: "This is my land, my homeland!"

Madame Vanier received me at Rideau Hall, the official vice-regal residence. We talked about this new vitality that I had seen

KODACHROME © NATIONAL GEOGRAPHIC SOCIETY

everywhere throughout the province, about Canada's centennial to be officially celebrated on July 1, 1967. Were the dynamism, the progress due to technology? To the influx of men and women of a score of ethnic origins? To the flowering of our early French and Scottish heritage?

"To all of these, I think," said Her Excellency. "But most of all because we Canadians are now adult enough to begin to appreciate that heritage."

So from this tall, white-haired daughter of neighboring Quebec Province, I think I learned as good an explanation as any for the stirring changes taking place all over Ontario: We can now look back far enough to capture something of the dream of a great land that inspired our forefathers.

Theirs was an impossible dream. But, then, so is everything that I've just seen in Ontario—or at least that is the way it seemed only a decade ago. THE END

Powerful Neighbors Join Hands Across the Great Lakes

THE WORLD'S GREATEST concentration of fresh water dominates the Society's latest Atlas Series Map, **Central Canada.** From those waters, in large measure, flows the economic success of the region today. The province of Ontario, which the map features, shares a 1,715-mile watery border with the Great Lakes States.

Benefits as well as border are cordially shared: The St. Lawrence Seaway, the Soo Locks, and the vast system of Niagara electric-power plants typify the historic partnership of the two nations.

Water has shaped this region's destiny since the 17th century. French voyageurs in search of the rich-pelted beaver found the mighty St. Lawrence River—and the five Great Lakes that it drains—a natural canoe highway into the heart of North America. Today ocean-going giants ply the same route, now the great St. Lawrence Seaway, to reach North America's "fourth sea coast," with its scores of inland ports.

Indians Resist Smokey the Bear

The Seaway's benefits are dramatic: Shipping a ton of grain from Chicago to England is now cheaper than freighting it overland to New York. Seaway traffic has grown to 36 million tons in an eight-month season, carrying Minnesota iron ore, Manitoba wheat, German autos, Ethiopian coffee, Malayan rubber.

Yet with all its 20th-century commerce and power, the Central Canada-Great Lakes region still offers reminders of days when the Indian was master of the forests. Recently residents of Manitoulin Island in Lake Huron, predominantly Ojibway and Ottawa Indians, opposed a fire-fighting campaign featuring Smokey the Bear—because by tribal tradition a bear walking upright symbolizes evil.

The new map shows U.S. and Canadian highway development keeping pace with growing waterways. Two years ago Ontario completed its portion of the 4,877-mile Trans-Canada Highway by closing "The Gap," a 165-mile stretch between the Agawa River and Marathon. A new bridge spanning the Rainy River at Fort Frances, Ontario, helps tie the Trans-Canada Highway into a 1,700-mile north-south route to New Orleans. Not far from Fort Frances lies the Northwest Angle, a 130-square-mile morsel of the United States hitched onto Manitoba by a boundary-making quirk.

A new $17,000,000 steel arch across the Niagara River links Ontario's Queen Elizabeth Way with the New York State Thruway. Nearby once stood the Niagara's earliest span, engineered in 1848 by an American who flew the first strands across the torrent by kite.

Five insets on the new map magnify two of Canada's most important cities—Ottawa, the national capital, and Toronto, capital of Ontario—as well as three regions vital to the U.S.-Canadian partnership. Inset A depicts the St. Marys River, site of the Soo Canals. Inset B focuses on the Detroit and St. Clair Rivers, connecting Lakes Huron and Erie. Inset C traces the St. Lawrence Seaway's Welland Canal, a water staircase that lifts 25,000-ton ships around the thundering barricade of Niagara Falls.

Mammoth turbines harness Niagara's power. But an international treaty preserves nature's spectacle: 100,000 cubic feet of water a second must flow over the falls during daylight in the tourist season. THE END

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KODACHROMES BY NATIONAL GEOGRAPHIC PHOTOGRAPHER WINFIELD PARKS © N.G.S.

Detroit Skyscrapers Soar Above the Streets of Windsor, Ontario

Although Detroit and Windsor fly different flags, they consider themselves sister cities. A bridge and two tunnels link them across the Detroit River. Residents and visitors make more than 17 million crossings a year. Canada's largest border city, Windsor with 114,367 people is a major rail and industrial center.

Penobscot Building, tallest in the Michigan metropolis, rises 47 stories.

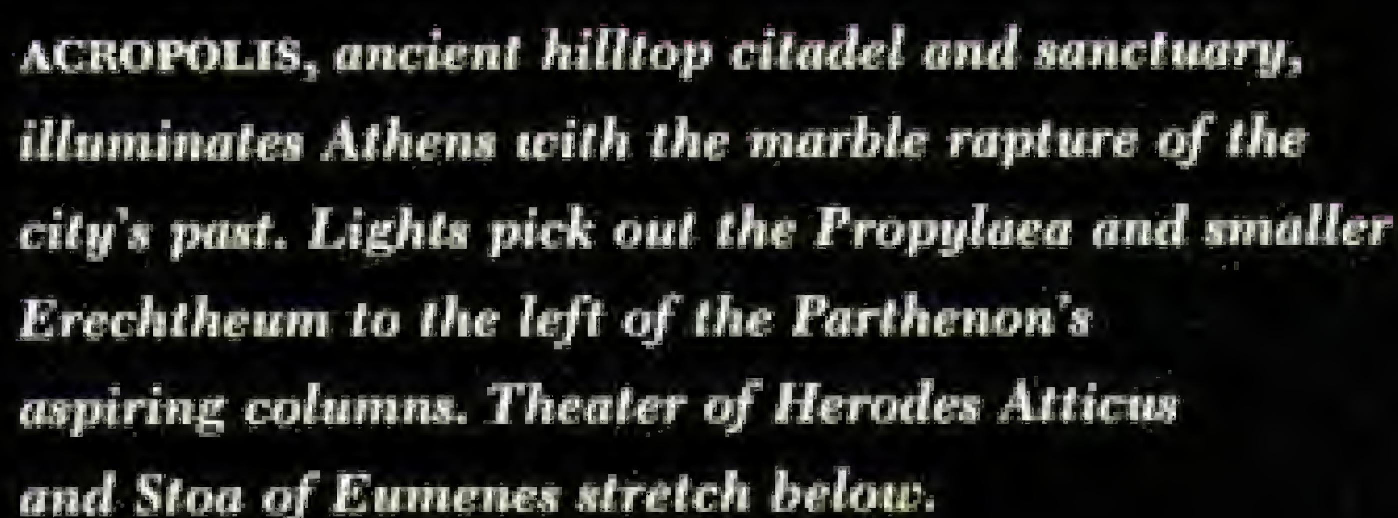
Visitors to the Civic Center in Detroit gaze at Windsor's skyline.

Athens

HER GOLDEN PAST STILL LIGHTS THE WORLD

By KENNETH F. WEAVER
Senior Editorial Staff

Photographs by PHILLIP HARRINGTON



ACROPOLIS, *ancient hilltop citadel and sanctuary, illuminates Athens with the marble rapture of the city's past. Lights pick out the Propylaea and smaller Erechtheum to the left of the Parthenon's aspiring columns. Theater of Herodes Atticus and Stoa of Eumenes stretch below.*

NG EKTACHROME © NATIONAL GEOGRAPHIC SOCIETY

OPPOSITE PAGE FOLDS OUT

THE VIOLET DUSK for which Athens is famed settled gently over the city as I left my hotel with a Greek friend. On the corner a policeman stood at bay against alternate waves of rushing wheels and pounding feet. All Athens seemed to be abroad, and the strident cries of street merchants selling sponges, sesame-seed rolls, and lottery tickets competed with the hubbub of traffic.

The city looked much more modern than I had expected, and I said so.

"What happened to ancient Athens?" I asked my friend. "Except on the Acropolis, all I see is a building boom surrounded by traffic jams."

"It's closer than you think," he replied. "Scratch the skin of Athens and you'll find it. Right now you may be standing only inches away from history.

"Let me show you something," he said, and led me to Klafthmonos Square near the center of the city. We entered a shiny new glass-and-steel office building, walked down a flight of stairs from the lobby, and found ourselves in a corridor. Along one side ran an enormous stone wall.

This black wall, 12 feet high, 50 feet long, and free standing, faced several commercial establishments across the corridor. It supported nothing, and obviously had nothing to do with the building itself.

It simply stood there in a kind of brooding loneliness. Its huge blocks of coarse, rough stone measured at least four feet long and two feet on a side.

"You wanted to see old Athens," said my companion, John Poutos. "Well, that's part of the ancient city wall. Bulldozers digging the foundation for the building uncovered it.

"Almost every week workmen uncover relics, some big, some small. A few days ago street repairmen found vases and gravestones on the other side of the square. Telephone linemen unearthed a mosaic pavement near your hotel a few months ago."

Flutes Wail as Walls Tumble

I ran my hand over the harsh, cold surface of the wall. I paced its massive blocks, laid 15 feet thick and twice as high as my head. A tremendous fortification! Invaders would have had a tough time breaching it, I observed.

But John recalled for me a forgotten page from the history of the Peloponnesian War. Athens' bitter enemy, Sparta, did not have to force the wall. In 404 B.C. she simply starved Athens into submission. Then, to the triumphant music of flutes, Sparta's soldiers tore down the guarding walls that stretched from Athens to its port of Piraeus. On the city's enclosing fortification, time laid a crumbling hand. "The remarkable thing is that so large a part remains at all," John said.

Slowly we climbed the stairs again. I mused on this remnant of one of the most glorious cities of all time, and on the tragedy of Athens' defeat. I fancied I could hear the clash of arms, the keening of women in mourning, the sharp melody of the flutes. And then, suddenly, 24 centuries melted away and we were back in the pulsing modern city.

But from that moment I could never divorce Athens present and Athens past, and I became increasingly aware of the deep roots the entire Western World traces to this city on the Aegean.*

We are all Athenians, it has been said, so great is our cultural debt to Athens of the 5th and 4th centuries before Christ. In that golden age flowered one of history's most spectacular civilizations, whose indelible mark still lies on Western art and thought, government and politics, science and religion.

Architecture? The Parthenon, though now a ruin, remains the most marvelously conceived and beautifully executed structure in the Western World. A thousand buildings have copied its columns and pediment.

Philosophy? What liberal-arts student does not learn of the *Republic* of Plato, the logic of Aristotle, the teachings of Socrates? And what democratic citizen can deny that our ideas of human freedom and popular government were born in classical Athens?

Art and drama? Man's most shining triumphs in sculpture were fashioned by the Athenians. The Greek dramatists Aeschylus, Sophocles, and Euripides wrote with such insight that their plays are performed to this day.

Science? Virtually every major branch had its beginnings in Greece. We owe to the Greeks the very words geography and geometry, biology, astronomy, and physics.

The British scholar H. D. F. Kitto, in his book *The Greeks*, sums it up aptly: ". . . unless our standards of civilization are comfort and contraptions, Athens from (say) 480 to 380 was clearly the most civilized society that has yet existed."

Changes Sadden an Old-timer

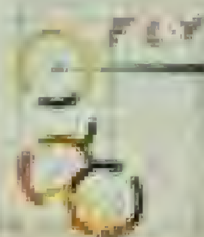
I discovered that Athens, for all her ancient monuments and relics, is a new city (pages 106-7). When the Greeks revolted against their Turkish masters in the 1820's, Athens had declined to a miserable provincial town of 300 houses clustered around the Acropolis. But today's city is growing at an enormous pace. Her spreading bulk covers 155 square miles. The metropolis shelters nearly two million persons, almost a fourth of the population of Greece.

Not everybody approves of this change. William Papageorge, for one. I met him one morning when I was having difficulty com-

*See "Athens to Istanbul," by Jean and Franc Shor, NATIONAL GEOGRAPHIC, January, 1956.

Parthenon's battered columns glow in the sun like honey in a jar. Sculptor Phidias supervised construction of Athena's temple, which began in 447 B.C. A millennium later the shrine became a church, later a mosque. Gunpowder stored by Turks and exploded by Venetian cannon shattered the building in 1687. Columns show the Parthenon's wounds.

◀ **Plumed Athena,** her eyes of semiprecious stones still agleam, came to light during a sewer excavation in 1959. The seven-foot statue was buried in debris when a warehouse in Piraeus burned, apparently in 86 B.C. Goddess of battle and wisdom, Athena thus escaped the fate of most large bronzes: melting down for weapons.


FLY
OLYMPIC
AIRWAYS

KODACHROMES, NATIONAL GEOGRAPHIC PHOTOGRAPHER JAMES P. BLAIR

Sponge seller lifts featherweight bundles

KODACHROMES BY PHILLIP HARRINGTON © N.G.S.

Bootblack caps his bottles with the brass ends of light bulbs. Flowers brighten his stand.

Trolley buses parade down wide Venizelou Street. Blue-and-white transports belong to individuals who operate them through cooperatives; a quarter interest in a bus forms a favorite wedding gift from a bride's parents. Neoclassic Greek temple, completed in 1903, houses the National Library's one million books.

KODACHROME © NATIONAL GEOGRAPHIC SOCIETY

Handstanding dog and his performing friends convulse a crowd beside City Hall

municating with a shopkeeper in Hermes Street. Mr. Papageorge came to my rescue, then introduced himself as a retired barber from Springfield, Massachusetts.

After I had made my purchase, we fell to talking about the rapid changes taking place in Athens.

"I left here 50 years ago," he told me. "I've come back to see my native city, and the changes make me very sad. I used to know this neighborhood well. Now . . . everything I remember is gone. See that wall? A statue of Bacchus used to stand there. I don't recognize this place any more."

Another Athenian who has misgivings about Athens' growth is Constantinos A. Doxiadis, the famed architect and city planner. From the top of his office building on the slope of Mount Lycabettus, the 909-foot cone that shoots up abruptly in the middle of town, we traced the fingers of the city as they probe across the Attic plain and between the encircling ranges. Within the bowl girt by these mountains nestled a vast, tumbled agglomeration of white cubes—marble and stucco and whitewash—that dazzled in the bright Mediterranean light.

As we watched the endless procession of automobiles below, Mr. Doxiadis told me that traffic doubles every three and a half years. He predicted that Athens would choke herself to death within a decade unless radical measures are adopted.

My plan had been to rent a car in Athens, but I gave up the idea as madness after seeing those swirling gluts of traffic.

But if I could not drive, I found cabs a delight, with lace curtains at the back windows and vases of flowers and icons at the windshields; phonographs under the dash blaring folk songs; and chauffeurs shouting "*vlacho!*" (peasant) at rivals who contest their right of way. No cars ever shine more brightly, for the drivers incessantly whisk the finish with

Vivacious star, Aliki Vouyouklaki mirrors the mood of Greece's motion-picture industry.

Sidewalk tables in Syntagma Square do a rushing business. Small kiosk jams into its box magazines, aspirin, souvenirs, and film—the combined wares of a drug store and five-and-ten.

feather dusters. Trips became a game between me and the drivers, who hoped I did not know how to read the meter. Sometimes it was located in the glove compartment.

Policemen in their pulpits at intersections directed traffic with the mannered grace of ballet dancers. But their best efforts were no match for the Athenians, who freely slipped by when a policeman's back was turned.

"We call it *philotimo*," a Greek friend told me. "That means a love for self-respect.

"If you offer us a dare, we take it because we have philotimo. We regard traffic lights as a challenge."

This independent spirit consumes many a Greek driver. On the road, should you honk and try to pass another, he will often speed up. Such a contest of wills can go on for miles.

I recall one terrifying stretch along a winding, dusty road. Xenophon, my driver, trying to get me to an appointment on time, pushed the speedometer to 100. "It's only kilometers, not miles," I reassured myself as we dodged sheep, buses, carts, and pedestrians. Then I sat transfixed as Xenophon roared down the wrong side of the two-lane road, trying to pass another car. A wagon and donkey started leisurely across at the right. A cyclist with a bundle of faggots rolled up unconcernedly from the left. Oncoming traffic came at us pell-mell. Our horn shrieked its dismay, and by some miracle the puzzle untangled. We plunged through a suddenly created hole... and I breathed again.

Traveling in the countryside, we encountered other examples of Greek independence. We saw, for example, the word *OXI* (no) on whitewashed boulders on mountainsides. It proudly recalls the answer Prime Minister Metaxas gave in 1940 to Mussolini's demand for passage through Greece.

And one day we came upon women washing newly woven blankets in a stream. A magnificent orange coverlet took the eye of pho-

tographer Phil Harrington. Through an interpreter he offered her 600 drachmas for it. (A drachma is about three cents.)

The owner, making a sound through her teeth like "tss," lifted her eyebrows and tossed her head—the classic gesture of "nodding up" that Greeks use for saying no.

Harrington increased his offer to 800 drachmas, to no avail. "Who ever heard of selling a blanket?" the woman parried.

He persisted. Why wouldn't she sell?

The merriment fled from her face. "Because we make these blankets for ourselves," she snapped. "What would our daughters do for dowries if we sold our blankets to you?"

Harrington never got the blanket.

Hobnailed Shoes Stamp a Noisy Salute

I lived on Syntagma Square, with a magnificent view of the Parthenon half a mile to the southwest. From my windows I looked down on the old Royal Palace, now the home of the Greek parliament. Beneath its yellow walls, white-kilted, red-capped evzones of the Royal Guard keep watch over the Tomb of the Unknown Warrior. I often heard their rifle butts clanging on the pavement and their hobnailed and pomponed shoes stamping in noisy salute.

The day in Athens starts early, I discovered. At seven, the hour when I normally got out of bed and opened my shutters to look down Queen Sofia Avenue, buses from the suburbs were rolling bumper to bumper, and the flower stalls stretching toward the Royal Palace were already open. Coffee shops had standing room only as workers rushed in for a quick breakfast of coffee and *koulouria*, sesame-seed rolls.

Most employees work until two o'clock, when they go home for lunch and siesta. Then a lull settles over the city. Stores close, except for the kiosks, those miniature sidewalk department stores that sell everything from aspirin and souvenirs to the European edition of the New York *Times*.

Do people really sleep during siesta? I doubted it until I visited a school for gendarmes one afternoon and found most of the men in pajamas, filling the dormitory with snores.

By four or five o'clock the city comes to life again, and the gregarious, outdoors-loving

Kilted evzones lose not a tassel-toed step as a 6-year-old darts through their ranks and paces them on the walks of the National Garden. Arms swinging, the Royal Guard wears button-studded workaday blues.

KODACHROME © NATIONAL GEOGRAPHIC SOCIETY

Athenian is in his element. Shops reopen, homes empty, people cascade into the streets, and traffic roars again.

From the shadowy interior of the coffeehouses come the click of dice and dominoes and the shuffling of cards.

In the National Garden, fragrant with the white blooms of locust trees, people relax with a handful of pumpkin seeds and feed the hordes of pigeons. The vendors of roasted nuts smile as their sales spurt, and jingle the drachmas in their apron pockets.

Now and again I found the evzones drilling in the park, their button-studded blue jackets glittering and black tassels bobbing behind their knees. And on occasion I would find a six-year-old Greek youngster named Yannis prancing beside them, a toy rifle slung across his shoulder. He mimicked the long arm swing of the tall warriors, and his knees lifted high at each step (pages 110-11).

The sergeant tolerated the child, who scampered in and out of the ranks, but he was sharply critical of his men.

"Throw those knees higher!" he bawled as they marked time with a clack, clack, clack of their hobnails. "I am very sorry, but you are a bunch of donkeys!"

Cafes Serve *Ouzo* and Octopus

After siesta, brightly painted chairs in the sidewalk cafes fill up with chattering customers, their hands aflutter and their voices often rising in sham violence. Now the idling waiters begin to hustle. Coffee? Yes, thick Turkish coffee in thin cups.

There's orangeade for this patron, and for that one there's *ouzo,* the anise liqueur that turns milky as the customer adds ice or water. He sips it slowly, nibbling on dried octopus and slivers of dried fish.

If he offers you a bit of octopus, take it. That's the law of hospitality in Greece. Besides, you may like it. I did.

From a seat in my favorite sidewalk cafe I learn much about life in this earthy capital. Those persons with little white net bags have just come from a wedding; the bags hold candied almonds, symbol of the bitterness and the sweetness of life, the invariable gift at a Greek wedding.

That housewife carrying a pan of roasted potatoes and veal patties is on her way home from the baker's. Like most Greek women, she has no oven of her own.

And the little girl chalking a message on the pavement pays tribute to her favorite soccer team. ΠΑΟ=ΔΟΧΑ, she writes: "The Pan-Athenian Athletic Club=Glory."

The May Day wreaths, I notice, are drying up and yellowing above the doors across the way. The wandering guitarist, hopeful of picking up a few drachmas, is singing a melancholy ballad with the refrain, "I am thinking of your plump white arm!" And my back aches as I watch a cleaning woman sweep the street with her short broom.

Questions Pepper a Conversation

"You mind if I sit next to you?" an elderly gentleman asked me one day. After the manner of the inquisitive Athenian, he peppered me with questions: "Where you from?" "You like it here?" "What's your business?" "You own a car?" "You married?"

When the waiter served me a dish of strawberries, just then coming on the market, my new acquaintance asked the price. In amazement he turned to me: "You going to pay 17 drachmas for those?"

"Yes," I said, "if that's what they cost."

"Too much!" he snorted.

The food I liked best in Athens I found in the city's numberless small *tavernas.* Here the Athenians indulge their taste for dining in courtyards or in unpretentious rooms with open kitchens. Of the lot, the most amazing is Vassilenas's in Piraeus.

I visited Vassilenas's one night in the company of Athenian friends. Nobody brought us a menu, but Vassilenas himself served our table, his gloomy face revealing suspicion that we would not do justice to his cooking. Without announcement he served course after course after course.

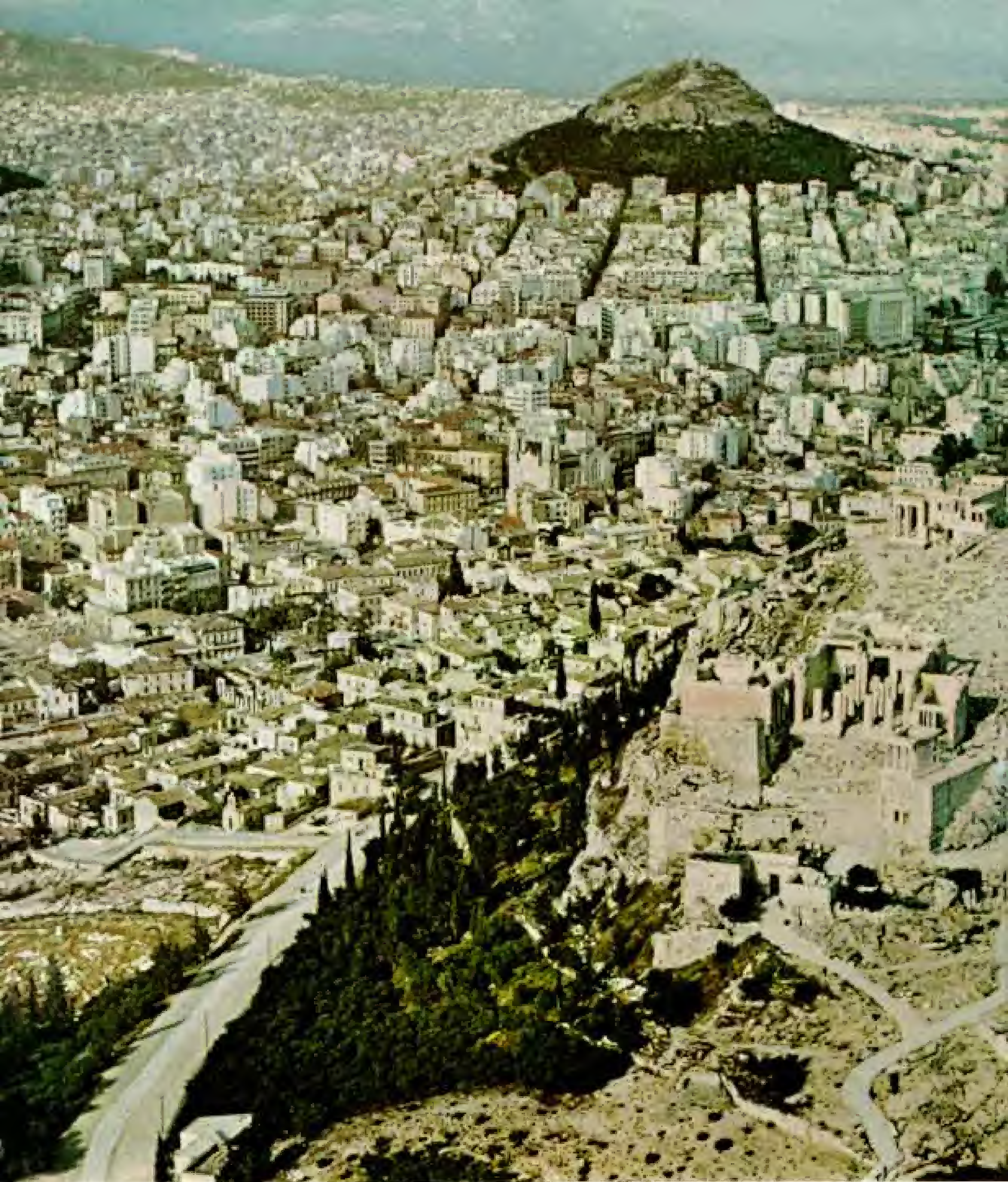
Mussels on the half shell whetted our appetites. Then appeared anchovies, goat's-

(Continued on page 120)

Prince Weds Princess by Chandelier Light in Athens Cathedral May 14, 1962

Prince Juan Carlos may well become King of Spain if the monarchy is restored; Princess Sophia is the elder daughter of the King and Queen of Greece. An audience of nobility saw King Paul (right) briefly hold the crowns on the table over the heads of the couple. Gold-crowned Metropolitan of Athens (left) performed the ceremony.

EKTACHROME BY NICHOLAS TSOUKALAS, AFP © NATIONAL GEOGRAPHIC SOCIETY



Acropolis and Mount Lycabettus Rise Like Islands in a Lake of White Buildings

"Athens, the eye of Greece, mother of arts and eloquence," floods the Attic plain and thrusts fingers into the blue distance along the slopes of Mounts Pentelicus (left) and Hymettus. Marble, plaster, and whitewash blind the eye at midday.

The Acropolis, cleared of the huts of Turkish days, raises in stark splendor the Parthenon and its companion structures that Pericles called "mighty monuments of our power which will make us the wonder of . . . succeeding ages." Below the Acropolis lies Plaka, the old quarter, whose tangled streets and low buildings mark the war-ravaged town of 300 houses that became the capital of liberated Greece in 1834. Nearly all of Athens has risen since that year. Little is old but the ruins.

Everywhere machines break ground to house newcomers streaming in to look for work. One Greek in every four lives in the capital, home of nearly two million. "In Greece," an Athenian told the author, "space is small, but the life, it is big."

KODACHROME BY PHILLIP HARRINGTON © NATIONAL GEOGRAPHIC SOCIETY

1. Theater of Herodes Atticus, built A.D. 161
2. Stoa of Eumenes, circa 168-159 B.C.
3. Theater of Dionysus, circa 330 B.C.
4. Walls of the Acropolis, circa 479-461 B.C.
5. Temple of Athena Nike, circa 420 B.C.
6. Propylaea, 437-432 B.C.
7. Erechtheum, 421-407 B.C., and Athena's tree
8. Parthenon, 447-438 B.C.
9. Acropolis Museum, 1878
10. Zappeion, 1888, and National Garden
11. Mt. Hymettus 12. Mt. Lycabettus 13. Mt. Pentelicus

KODACHROME BY NATIONAL GEOGRAPHIC PHOTOGRAPHER JAMES P. BLAIR © N.G.S.

Vestibule to the Acropolis, the Propylaea raises bare bones through which sacred processions passed. Viewed from the Parthenon, its time-wracked columns brood in the gathering dusk. Carved slabs of white marble, recently hewn from the ancient quarries, await a proposed reconstruction of the Parthenon ceiling.

Temple of Athena Nike (opposite) dreams in the night under blue floodlights.

Propylaea glows red, recalling the fires set by Persian pillagers 2,440 years ago.

EKTACHROMES BY PHILLIP HARRINGTON

Deathless dreams of old: marble, gold, and bronze

GREEK statuary made real the ideal. Broken by war, burned for lime, melted down for metal—even fragments attest the disciplined genius of ancient artists.

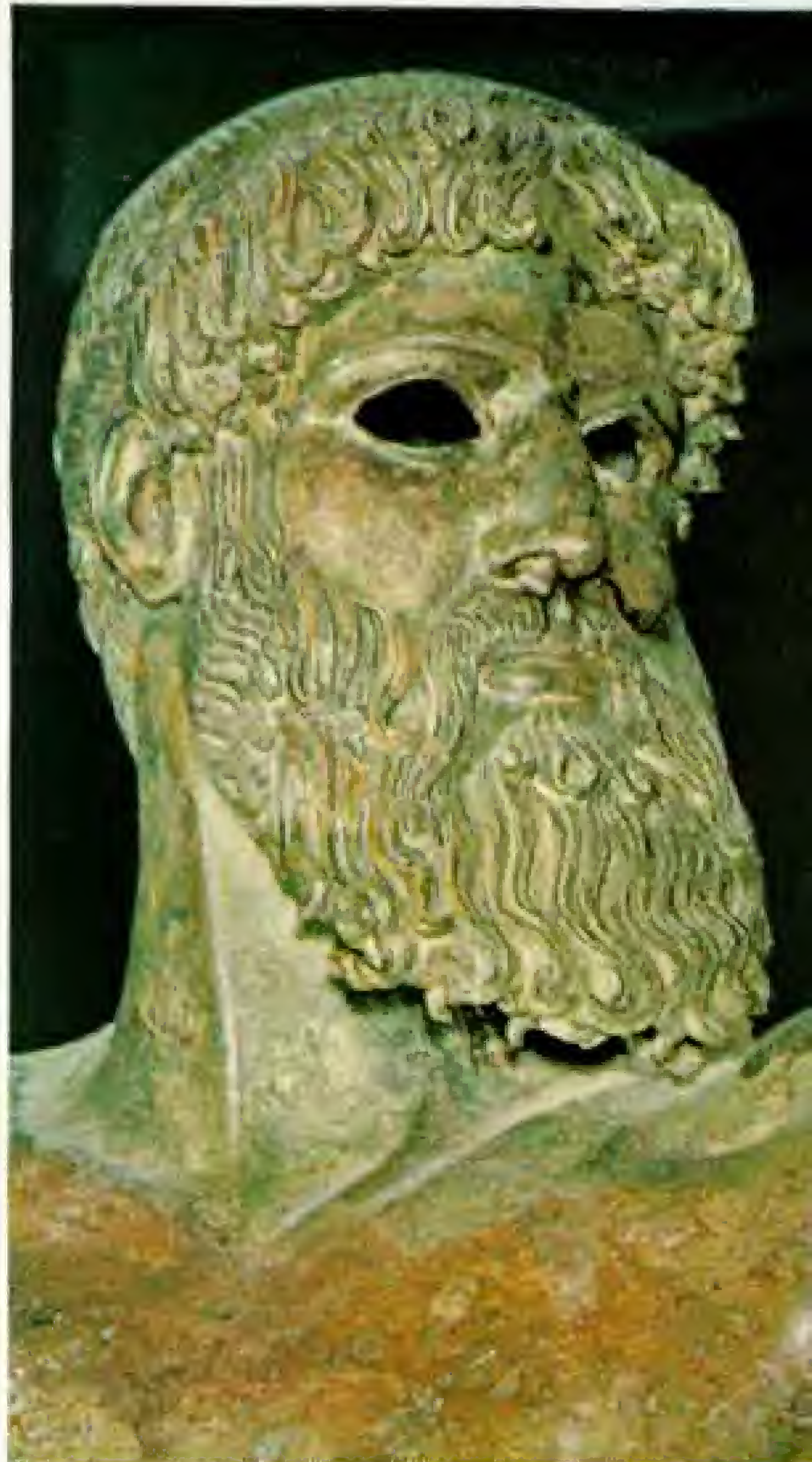
Nike, or winged Victory, stoops to loosen a sandal. This marble formed part of an architectural design, a balustrade around the Temple of Athena Nike on the Acropolis. Now she stands in the Acropolis Museum.

Powerful head of a god gazes with sightless eyes once filled with colored insets. Portraying Poseidon, or possibly Zeus, the bronze was on its way abroad when lost by shipwreck. Divers rescued the god in 1929 off Cape Artemision, about 75 miles north of Athens.

All treasures on this page repose in the National Archaeological Museum, Athens.

Archaic youth lies passive beneath the soft brush and delicate pick of a restorer. Found in a 1959 excavation for a Piraeus sewer, the Apollo from the 6th century B.C. is one of the oldest known full-size bronzes.

Golden mask covered in death the face of a nobleman of Mycenae. When German archeologist Heinrich Schliemann excavated here in 1876, he thought he had found the grave of Agamemnon, Homeric conqueror of Troy. Much older, the mask could have belonged to one of Agamemnon's forebears.



milk cheese, lettuce salad, and olives—black, wrinkled, and oily. And *taramosalata*—red caviar blended with bread, lemon juice, and olive oil, which we spread on tough bread.

From the sea, tiny shrimps in mustard; boiled octopus; *marides*, like fried smelts; sautéed crayfish; and lobster balls.

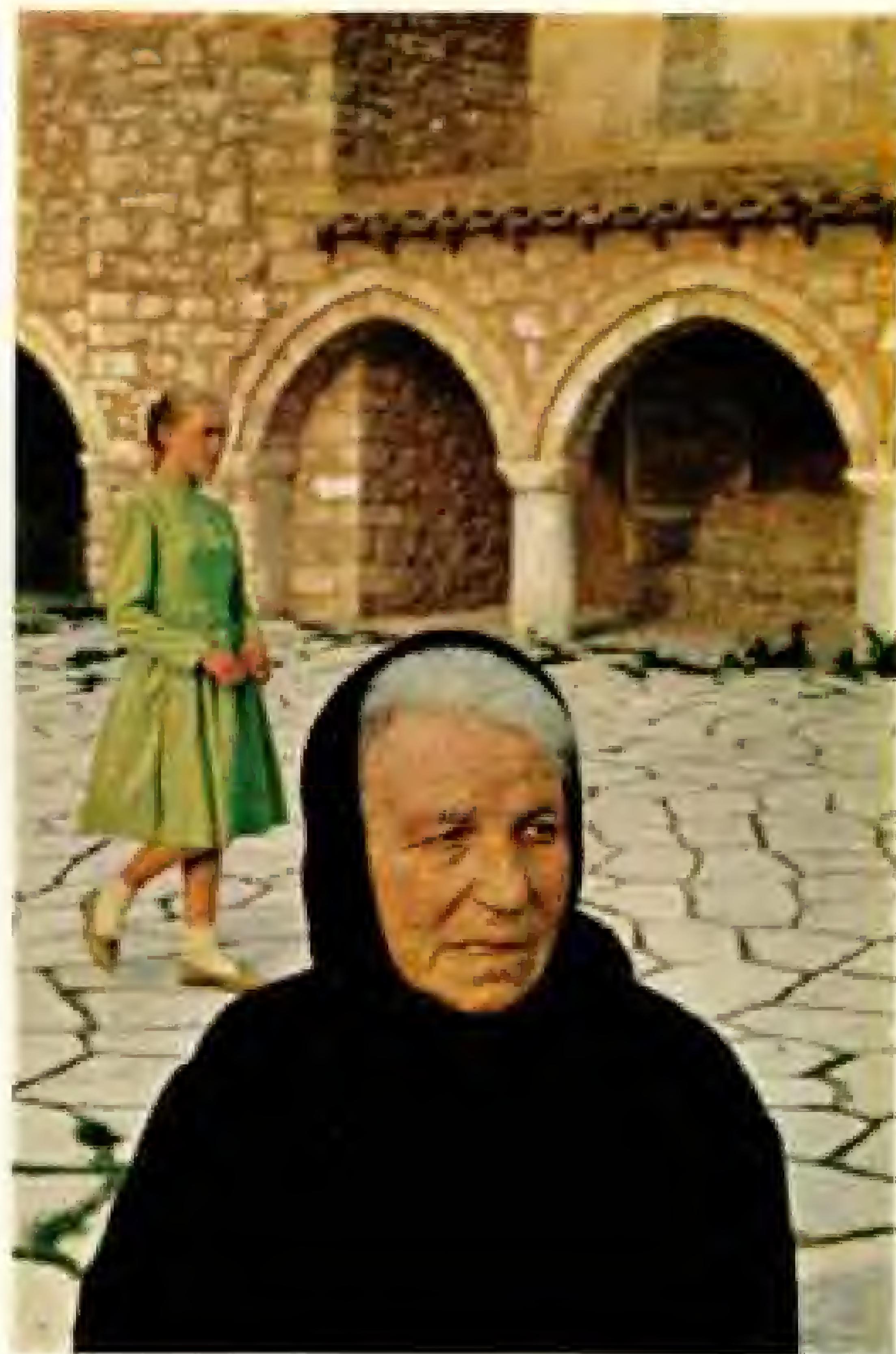
Then a specialty of the house, jellied pork, followed by *dolmades*, tender grape leaves stuffed with meat and rice.

Beginning to feel like diners at a harvest feast, we turned to sausages; then *kreatopita*, chopped veal fried in a flaky crust; and *soutzoukakia*, veal meat balls.

By now I would have given up had I dared face Vassilenas's displeasure. Languidly, I turned to *barbouni*, the red mullet; fish soup; and chicken baked with tomatoes.

Other courses were waiting, but I could take no more except the favorite Athenian dessert, thick-skinned navel oranges.

Throughout our trencherman's dinner, Vassilenas kept the table liberally supplied with *retsina*, the golden wine flavored with resin



Memories return to 72-year-old Zaharoula Bountzou, who as a girl attended church at the now-abandoned monastery of Daphni on Athens' western outskirts. She recalls monks who scurried away lest they see a female. She could not believe the author knew no Greek—"It's so easy to speak."

Time-worn Mosaics at Daphni Still Glow With Byzantine Glory

Christ the Universal Lord looks down from the ceiling of the 11th-century church. Despite vandals, earthquakes, and weather, the mosaics still rank among the finest in the world. In the 1821 revolution against the Turks, looters built fires in the church trying to melt gold from glittering glass that contained no metal.

[illegible] BY PHILLIP HARRINGTON © NATIONAL GEOGRAPHIC SOCIETY

that is the staple of every taverna meal. No one could tell me why this flavor, vaguely suggestive of turpentine, is so popular.

Favorite pastime of the Athenian is conversation. In this he resembles his forebears, who loved to gather in the market and who were chided by Saint Luke for spending their time "in nothing else but either to tell, or to hear some new thing." Not surprisingly, the word *agoreuo*, "I make a speech," comes from the same root as *agora*, market place.

The Athenian Agora of classical times lies just below the twin outcroppings of the Acropolis and the Areopagus. From the barren rock of the Areopagus (where the Apostle Paul appeared before the Athenian council to defend his preaching), I surveyed the broad, sunken expanse of the market place. It seemed no more than an antiquarian's junk yard, with blocks and drums of marble scattered aimlessly. But on closer examination I found foundations of the temples, public buildings, and columned arcades that once crowded this busy civic center (page 123).

KODACHROME FROM BLACK STAR

O Attic shape! fair attitude! with . . . marble men and maidens overwrought

Patched bowl that held wine some 2,450 years ago brings to solid form John Keats's "Ode on a Grecian Urn." Fabled Ariadne holds a wreath to lay on the brow of Theseus after his victory over the Cretan Minotaur. Save on pottery, classical Greek painting has all but perished.

Ancient Greek designs inspire modern vases turned out by scores in a Piraeus pottery factory.

EKTACHROMES BY PHILLIP HARRINGTON © N.G.S.

We have extensive knowledge of the Agora and other parts of classical Athens, thanks to the detailed *Description of Greece* written by Pausanius, a traveler of the 2d century A.D. But for the reconstructed Agora itself, we are indebted to the painstaking work of the American School of Classical Studies. This archeological institution, supported by nearly 90 U. S. and Canadian educational organizations, carries on excavations in Athens and in the Peloponnesus. For the Agora dig, the school bought up 360 pieces of property and leveled many houses in Plaka, the "old town" of Athens that clings to the north slope of the Acropolis.

With Colin Edmonson, then Secretary of the American School, I strolled the ten-acre Agora. We walked amid tumbled stones that once echoed to the slapping sandals of the great Athenians of the Golden Age. I had to keep reminding myself that this was indeed the spot where Socrates had met his friends and carried on his dialogues.

To the southwest of the market I found the raised circular floor of the Tholos, seat of the ancient Athenian Government. Here, I learned, a number of the city's council members lived, ate, and slept so as to be available at all hours. And nearby any winner in the Olympic Games could get free meals for the rest of his life.

Red Paint for Shirking Voters

In the strict democracy of Athens, every male citizen was subject to political service. Four times a month, at dawn, every man was expected to appear on the Pnyx, a low hill near the Agora. There he voted on the laws of Athens as a member of the world's first parliament of free citizens. There he heard such famed orators as Pericles and Demosthenes.

"If citizens tried to get out of this public duty," Mr. Edmonson told me, "Scythian archers who served as Athenian police rounded up the stragglers and drove them with ropes freshly dipped in red paint. Anyone whose clothes became stained had to pay a fine."

In the reconstructed Stoa of Attalos II (opposite), he showed me objects of everyday life that tell much about ancient Athens.

"You know what it means to ostracize some one. Well, that word comes from the Greek *ostrakon*, and here is an ostracon." He showed me a potsherd. "This fragment of pottery was a ballot prepared for use against the famous Themistocles. You can see the letters of his name scratched on it. The Athenians were often jealous of their leaders,

PHOTOGRAPHS BY PHILLIP HARRINGTON © N.G.S.

Boys frolic before the Stoa of Attalos II, a Hellenistic king who in the 2d century B.C. built the arcade in the Agora, just below the Acropolis (background). In 1956 the American School of Classical Studies restored the Stoa as a museum.

Along the Stoa's columned way, philosophers and politicians strolled with their followers. Old-time Athenians shopped in the stalls (right), which now house a treasure trove of antiquities. Greek beauty leans on a broken stone from the Agora.

and a man could be sent into exile if 6,000 of his fellow citizens voted against him."

Mr. Edmonson showed me also a clepsydra, or water clock, made of two clay cups. This simple device timed debate in the courts: an advocate could speak only as long as it took water to flow through a small hole from one container to the other. I could not help thinking that this useful device might have modern applications.

Night Lends Magic to the Acropolis

During three days of full moon each month it is possible to visit the Acropolis after dark. I chose to wait until this period for my first visit to the rock.

An hour after dusk one April evening I set off through Plaka. Ahead of me, gently curving, rose a narrow street of stone steps, bordered by elegantly carved doors, vine-trellised courtyards, and the tiny shops of cobblers sitting late over their lasts. "*Yassu*" (your health), they greeted me as I paused to watch.

At intervals the windows of tavernas spilled light on my path, and the fragrance of roasting meat and the jangling of guitars proclaimed the pleasures available within.

I left behind the last of the whitewashed, shuttered houses. My path, climbing less steeply, swung sharply to skirt the precipice. Below, myriad lights sprawled in every direction, but the pulsing life of the modern city seemed suddenly very far away. I was alone now with the past. High in the east, dodging among clouds, rode the same full moon that had looked down on the heroes of that past.

Impatiently mounting the steps of the Propylaea, the many-pillared ancient gateway, I stood at last on top of the most famous hilltop in history. My heart pounded, not alone from the haste of the climb, but even more from the magic of the scene before me: the moon-bathed Parthenon, Temple of Athena the Virgin.

The Parthenon exceeds all expectations. To see it in solitary splendor under the full moon, with the smell of thyme and camomile on the air, is one of the moving experiences of a lifetime.

Picking my way around fallen chunks of marble, I approached more closely, marveling at the size of the temple. Not massive, but magnificently spacious. The fluted columns, reflected in rainpools among the hollows of the rock, appeared taller than I had imagined. I could not escape the illusion that the marvelously proportioned structure, far from being earthbound, soared and hovered in the silvery air.

I felt an infinite sadness for that moment three centuries ago when a Venetian cannon ball exploded a Turkish powder magazine in the Parthenon. In that instant of supreme disaster, their warfare turned to glorious debris the finest thing art and handicraft had ever produced. The miracle is that, for all the chips and bullet scars, for all the vacant sockets that once held superlative sculptures, the partly reconstructed temple still conveys that sense of perfection and beauty that, to me, makes everything else fade into insignificance.

Umbrella Turns Up a Battle Relic

A few winters ago, a student idly poking with his umbrella on the Acropolis found a bronze arrowhead. Almost certainly, says Mr. Edmonson, it is a relic of the Persian attacks early in the 5th century B.C. It brings back schoolbook memories of treachery at the Pass of Thermopylae in 480 B.C. that opened the way for Xerxes to reach Athens and burn it to the ground.

Although the Athenians escaped the yoke of the Persians by their victories at Salamis and Plataea, less than a century later they fell to the onslaughts of their old enemy, Sparta. Most of the history of Athens in the centuries that followed was that of a subject people, ruled in turn by Macedonia, Rome, Byzantine emperors at Constantinople, Frankish dukes of the Crusades, and the Turks.

The end of the Turkish occupation produced one of the strangest stories in the history of warfare. During the revolution of the 1820's, the Greeks laid siege to the Acropolis, where the Ottoman troops were making their last stand. In time the Turks exhausted their supply of bullets. They began knocking down

Puppets Work Backstage. Their Shadows Delight Viewers Beyond the Screen

Sotiris Spatharis (center) founded his Theater of Shadows 50 years ago. His son Eugene (right) has taken their translucent, rod-held dolls all over Europe and twice to New York. The family carries on an art known as far away as Japan and Indonesia.

Entranced youngsters in the Spatharis back yard see big-nosed Karagiozis, a folk hero, battle a monster. Says the billing: "So that poor children ... may have a good time."

ΑΥΤΟΣ Ο ΚΑΡΑΓΚΙΟΖΗΣ ΕΙΝΑΙ
ΓΙΑ ΝΑ ΠΑΙΖΟΥΝΑΙ
ΤΑ ΦΤΟΧΑ ΠΑΙΔ
ΤΗΣ ΚΗΦΙΣ

Beckoning lights and pendent casks invite a couple to an evening of food and resin-flavored wine. Pastel walls like those of Kritikos's venerable tavern may be seen throughout Plaka, the old quarter. Though April winds blow, diners will sit outdoors.

marble columns to salvage the lead calking around the bronze and iron dowels that held the column drums together.

When the Greeks discovered this desecration, they were horrified; they, above all people, understood the incalculable worth of the Parthenon as a legacy of the glory that was Greece. They sent word to the Turkish commander that if he would spare the temples further damage, the Greeks would send up ammunition.

The Turks accepted and stopped their depredations. During the truce the Greek guns stood silent while porters carrying cases of bullets trudged up the winding path to the Propylaea. Then the Greeks swung into battle with redoubled ferocity and swept the Turks off the sacred hilltop.

I do not know if this oft-told story is true, but I do know that it is completely in keeping with the Greek temperament. When I visited the Acropolis, I found not only tourists but many Greeks as well, who had made the pilgrimage to sit and look and think of the great days when their city was the cultural center of the world.

Mementos of the Turkish occupation may still be found on the Acropolis. I saw, for

example, a beautifully carved marble block bearing a Turkish inscription praising an Ottoman governor.

Just a few paces from this carving stands a lone olive tree. As I leaned against it, Mr. Edmonson recalled the legend of Athena and Poseidon, who waged a contest on the Acropolis to see which should control Attica and be the patron deity of Athens:

"Poseidon threw his trident into the rock, and a spring of sea water gushed out. Then Athena thrust her spear into the ground, and a full-grown olive tree sprang up. Athena was victorious and the city was named in her honor because of the value of her gift. To this day the Greeks think it is unlucky to cut down an olive tree.

"The historian Herodotus says that when Athenians returned to the Acropolis after the Persians had burned the temples, they were astounded to discover that the blackened stub of Athena's tree had produced a foot and a half of new growth overnight. They took this as a sign Athena had not abandoned her city.

"And that's Athena's tree you're leaning against!" he concluded.

Was the story any less interesting because I knew that a director of the American School of Classical Studies had planted the tree 35 years ago?

A drive through the countryside 50 miles west of Athens took Harrington and me to the site of Old Corinth, the city of Paul's Letters to the Corinthians. Leaving Athens, we passed the Kerameikos, marble-studded cemetery of the ancients, where Pericles delivered his celebrated funeral oration for the Athenian dead in the war with Sparta; the olive grove of Plato's Academy; and Daphni, whose monastic church holds some of the world's finest Byzantine mosaics.

And all the while we were following the Sacred Way, the road on which processions wound their way to Eleusis for the highly secret rituals of the mystery cult of Demeter. Now the mysteries are lost, and the sanctuary of Demeter that I saw is but a drab field of ruins.

The thin, rocky soil of Attica offers scant hospitality to today's farmer, yet we passed frequent wheat fields and orange groves. Men and women scythed grass and cultivated their plots with hoes so heavy that watching them left me weary.

The dusty green of olive trees lined the road for long distances, their twisted, pitted, and perforated trunks sometimes three feet thick, but the limbs much smaller because of severe pruning a few feet from the ground.

On we drove, past pistachio groves and through fields spangled with the wild flowers

Streetside grill offers take-home meat courses. Customers buy slices of roast lamb or of long, thin *kokoretsi*—skewered lamb heart and liver wound in washed intestines and broiled to a crisp. Visitors approach kokoretsi doubtfully, but most find it delicious. Nosegays say it's May Day.

of Attica, with poppies so red and thick that they melted into pools of blood. And always to our left lapped the sun-sequined sea.

At Old Corinth, a few miles from the modern town, Dr. Henry S. Robinson, Director of the American School of Classical Studies, climbed out of a pit to greet us. He and his students were supervising excavation in Corinth's ancient market place. Pickmen, half squatting, with elbows braced on knees, swung their implements from side to side, skimming off thin layers of soil.

"They work that way when we think we're getting close to ancient floors or walls, or when we're running into pay dirt," Dr. Robinson explained. "They can feel their way better, and they don't risk plunging a pick through a valuable find."

Now and again a digger paused to feel the earth and toss an object into his basket.

I wondered aloud about diggers who might perhaps be tempted to pocket valuable finds.

"We forestall trouble with bonuses," Dr. Robinson explained. "A drachma for a coin; a sliding scale for inscriptions, depending on the number of letters. Gold brings its value by weight. Of course we don't often find gold."

Back in Athens, I went to see the Theater of Dionysus, in the lee of the Acropolis. How magical it would be, I mused, to see the dramas of antiquity here where they were first presented. But the place is a ruin. Only in imagination's eye could I see masked players strutting the checkered pavement, reciting lofty tragedy.

But in the amphitheater of Herodes Atticus, built in Roman times, I sat on reconstructed marble benches and watched a rehearsal of *The Trachinian Maidens* of Sophocles. So marvelous are the acoustics that from the top tier of seats I could hear conversation in the circular orchestra as clearly as if I were next to the speakers. The original orchestras, incidentally, were simply circular stone threshing floors.

Leading characters in the play wore painted masks, as did the ancient actors, to convey the emotions of comedy and tragedy. Some also wore platform shoes, adding eight to ten inches to their heights. Liana Michael, the star, told me that the ancient stage thus distinguished god-characters from mortals.

Miss Michael showed me her own stage shoes, high-laced and heavy as a skier's boots. "We have to walk with extreme care in these," she complained. "Once I fell and broke both my feet."

Interest in the stage that brought such an outpouring of dramatic writing in the Golden Age has not died in Greece. Athens supports 14 legitimate theaters, each with its own resident company.

At Charles Koun's theater-in-the-round, I saw Melina Mercouri give a memorable performance in Tennessee Williams's tragedy, *Sweet Bird of Youth*. Miss Mer-

KODACHROME © NATIONAL GEOGRAPHIC SOCIETY

Neighborly Athenians are still eager "to tell, or to hear some new thing," as in St. Paul's day. Says the author, "When the weather's good, people go outdoors to meet their friends; they don't have television."

KODACHROME © NATIONAL GEOGRAPHIC SOCIETY

Soccer practice enlivens a government housing project. Demand for space runs so high tenants are chosen by lot. Thirteen cents a month for 20 years earns title to an apartment.

couri is widely known outside Athens: She was the star of the film *Never on Sunday.*

Athenians are also fond of another kind of theater: Ask anyone in the city about the Theater of Shadows and he will break into a broad smile. For half a century Athenians young and old have delighted in the shadow plays of the Spatharis family (page 125).

Many critics rate the Greeks of the Golden Age as history's most artistic people. Their jewelry, their armor, their objects of everyday use reveal exceptional taste. Their painted pottery—virtually all of Greek painting that survives—shows high skill, and their glazes are so fine that only recently have we learned to duplicate them (page 122).

But it is in sculpture that the ancient Greeks so notably outstripped the rest of the world. No one has ever excelled them at the art of turning cold stone into masterpieces of living flesh (page 118). In the fifth century, stonework for temples, statues, grave markers, and votive offerings was in such demand that every third man was a worker of marble; even Socrates was a sculptor in his youth.

As I observed sculptor Lazeros Lameras at work, I learned that the tools of today's stonecutter are hardly different from those of a Phidias or a Praxiteles: the same chisels—some pointed, some toothed, some flat. While Lameras modeled a face, I watched in amazement at how he could remove a powder-fine layer with his mallet and chisel, creating the most delicate effect.

Bronze sculpture from the Greek past, unfortunately, is almost totally lost. A few rare prizes have been recovered from watery graves where plunder-laden ships sank on the way to Rome. Barbarian invaders destroyed most of the rest, melting thousands of masterpieces into weapons.

You can imagine, then, the excitement in

Flashing waters play under colored lights in Omonia Square. Here Greeks from the provinces

the summer of 1959 when a Piraeus sewer worker's drill broke into an ancient cache of superlative bronze statues. Fissured, corroded, and blistered, the statues nonetheless are remarkably well preserved. Scholars term the "fantastic haul" a major event in the history of archeology.

Today the bronze statues are prized possessions of the Piraeus Archaeological Museum and the National Archaeological Museum of Athens. I was privileged to examine them as they lay in museum workrooms, waiting to be cleaned and restored.

Three of the statues date from the 4th century B.C., when Greek sculpture reached its apogee: a pensive, delicate figure of Artemis, goddess of the hunt; an exquisite figure of a muse, perhaps Melpomene; and a heroic seven-foot statue of Athena, her plumed helmet bearing owls and griffins, her shoulder draped with the magic goatskin aegis given by Zeus, her father (page 103).

The fourth statue, a 6th-century B.C. *kouros*, or youth, represents Apollo. It is one of the oldest full-size bronzes known (page 119). The late Ioannis Papadimitriou, General Di-

meet home-town friends beneath neon signs advertising macaroni and dairy products

rector of Antiquities for the Greek Government, rated it one of the world's great statues.

Professor Papadimitriou believed that the Piraeus board lay in a warehouse awaiting shipment to Rome. Fire-blackened roof tiles indicate that the warehouse burned; a coin that can be dated precisely suggests that the fire occurred in 86 B.C. during the pillage of Athens and Piraeus by troops of Sulla, the Roman dictator.

Athens' golden age of sculpture has ended. But along a shop-lined street named for Hephaestus, god of fire and metalworking, forges still glow bright. I chose to visit this narrow lane when the hammers of the smiths were still and the wares of the world lay spread on its sidewalks. For here, of a Sunday, Athens has its flea market.

"We call it *yusurum*," an Athenian told me, "a Turkish word that means 'place-where-you-can-find-everything.'"

"Oriste! Oriste!" cry the merchants. "What will you have?"

What will I have indeed? A worn-out fire hose? A mandolin? An oil lamp, a goat bell, a Byzantine icon? A polished samovar, a

KODACHROME BY AL MELLETT

Cloth of gold worn by Greek Orthodox clergy glitters in an Epiphany procession celebrating the baptism of Jesus in the Jordan. Gold-crowned Metropolitan of Mantineia and Kynouria will cast his cross into Piraeus harbor to bless the waters upon which Greek shipping and fishing depend. Priests and archimandrites (center) bear crucifix, Bible, and an icon depicting the baptism.

Yachts Bob in Tourkolimano, Pleasure Cove of Piraeus

Themistocles built Piraeus, five miles from Athens, to supply the fleet that maintained his city's empire. The port is still Athens' shipping and industrial center. Greeks flood to this quay to munch pistachios and listen to strolling musicians, dine on Aegean seafood and enjoy the view of distant Hymettus.

Overhauled propeller hangs in a maze of tackle at a ship's stern. Hellenic Shipyards Co. at Skaramanga belongs to the Niarchos interests, which operate one of the world's largest privately owned tanker fleets. Their ways cover site of a yard destroyed in World War II.

tricycle with green handlebars? An old coin? A blue bead to ward off the evil eye?

"*Osa-osa!*" "You may pay as you like!"

"Come and see! Everything good and everything cheap!"

Above the cries of the hawkers, the arguing of the customers, the shuffling of feet, the air trembled with the discordant assault of phonographs. Simultaneously I heard the Oriental wail of Greek songs, the brassy blare of a Latin-American dance band, the throaty growl of a jazz singer, and someone singing "Hey, Mr. Banjo" in French.

On a street called Athinas, noted for its fruit and vegetable market, I wandered through mountains of tomatoes from Crete, artichokes from Argos, zucchini and peas and vine leaves from Attica, lemons from Patras, blood oranges from Mesolongi, olives from Kalamata. And square in the middle of the market I saw a customer sitting on a box to get his mustache trimmed.

While interviewing an official close by this spot, I was startled to see from his window a solitary Corinthian column standing like a sentinel above low tile roofs. I searched through a maze of streets and alleys until I found the shaft, a remnant of a pagan temple, protruding from the roof of a tiny chapel called St. John of the Column. Inside, the odor of incense filled the room. An old woman in the unrelieved black of widow's weeds kissed an icon of the Virgin and lighted a candle.

It is not uncommon in Athens to find churches built on pagan temples. The monastery church of Kaisariani, at the foot of Hymettus, supports its central dome on four columns more than a thousand years old.

At Eastertime I found myself swept up in the most joyously celebrated event of the Greek calendar. For weeks Easter preparations had dominated the commercial scene, as Christmas preparations do in my own land. Artificial flower wreaths nearly smothered

the stalls in Plaka. Candles, slender pencils and yard-long giants, hung by the thousands in store fronts.

And eggs! Hen's eggs by the bushel, to be boiled and dyed red, and huge chocolate eggs, lavishly decorated.

"Kalo Pascha!" (Happy Easter), my maid called to me on Palm Sunday. Throughout the week this became the universal greeting.

A somber mood settled over the city as Holy Week progressed. By Thursday night streets lay quiet and deserted. The jack of spades hanging from the ceiling light in coffeehouses warned that jollity and games were not in order.

On Good Friday morning church bells tolled the mournful message of the Crucifixion. Shops closed at noon. That night the most solemn ritual of the Greek Orthodox faith was chanted. The service ended with a lengthy procession, in which the archbishop and his retinue carried the *Epitaphios*, an embroidered representation of the crucified Lord, through streets lighted by the candles of the multitude. Booming drums accented the slow death march of brass bands.

For the remainder of the paschal celebrations, I took the advice of friends and joined the thousands of Athenians who go to the provinces for Easter. I traveled to Tripolis, in the heart of the Peloponnesus, to see the lamb roastings and the dancing.

Saturday night's joy succeeded Good Friday's lamentations. At eleven o'clock, bells announced the Resurrection service at the provincial cathedral. Antiphonal chanting in the church reached the throng in the town square by loud-speaker.

Temple to Poseidon on Cape Sounion has been a sailor's landmark for 2,400 years;

Soon the square seethed with people. A rocket whistled and red flares set the sky ablaze. An army band, drums banging, marched into position.

At ten minutes before midnight the metropolitan stepped through the church doors holding aloft a burning candle. Worshipers near him strained to light their own tapers, then passed the flame to their neighbors. Watching from a balcony, I seemed to see a wall of sparkling lava that flowed with gathering speed until ten thousand points of fire danced in the plaza (page 136).

At midnight the biggest bell boomed a single note. Then all the bells rang wildly; the candles surged upward, and from every throat came the joyous cry, *"Christos anesti!"* (Christ is risen.)

As the services ended, the lighted candles dispersed like fireflies in the night. Each parishioner sought good luck by arriving home with his taper still lighted. In restaurants and in homes, feasting broke the fasts of Holy Week.

With the family of Eleni Varveri, I ate *magiritsa*, the traditional Easter soup of lamb viscera. We clicked eggs together, each person seeking to break his neighbor's egg while keeping his own intact.

Easter Sunday dawned bright and sunny, but a cool wind made the warmth of the barbecue pits welcome. Everywhere I turned, townspeople and visitors had gathered for the roastings. At several places I saw as many as a dozen spitted lambs, turning rhythmically over long beds of coals.

Retsina glasses were never empty. There was no end to the crisp morsels of roast meat,

outward bound mariners rounding the point prayed to the sea god for safe passage

Flaming Easter candles in Tripolis proclaim the Resurrection. Luck awaits those whose

of eggs and Easter bread, and of *kokoretsi*—lamb liver and heart wound with yards and yards of well-washed intestines and roasted on a long skewer.

In courtyards and streets, in barracks and homes, villagers performed the shuffling steps of the *tsamiko* and the *syrtos*, the leader of each circle kicking, pirouetting, squatting, and slapping his hand sharply against his shoes as he leaped in the air.

"*Chronia polla!*" Many happy returns!

The following morning I made a 40-mile drive to see what is left of Old Sparta, the mortal enemy that brought an end to Athens' Golden Age. I found nothing but a few hillocks, little evidence that a powerful city once stood there.

I climbed one of the hills where I could view the Eurotas River and the towering snow-draped Taygetus rampart. The tang of orange blossoms filled the air. A flock of white pigeons wheeled and soared in formation above the olive groves. Music drifted up from a country house.

As I leaned against a slender cypress and basked in the peaceful scene, so alien to militaristic Sparta, I reflected on the words of British novelist Sir Compton Mackenzie:

KODACHROMES © NATIONAL GEOGRAPHIC SOCIETY

two-foot tapers burn all the way home

Accordion drones and clarinet wails for Easter fun in a gaily decorated army barracks at Tripolis. Soldiers, enjoying their major holiday of the year, dance with guests amid the shambles of a tremendous feast.

Skewered on seven-foot poles fitted with cranks, Easter lambs sizzle over a trench of coals at the Greek Army's training center in Tripolis.

"Why do we obey Pericles and remain passionate lovers of Athens?

"Look what is left of Sparta—a mound or two of stones beside a little country town.

"And of Athens?

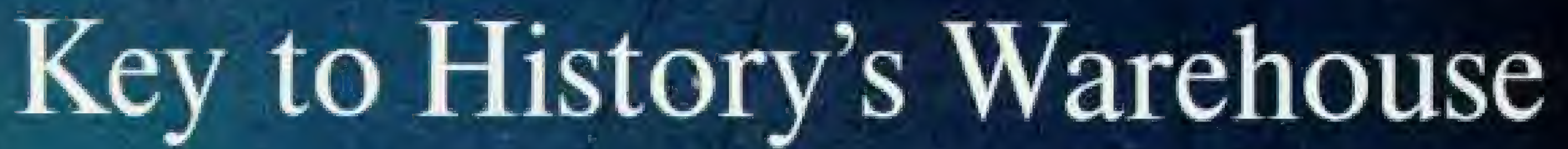
"Not a tithe, not a hundredth part indeed of what she gave to humanity. But of tragedy and comedy, of philosophy and architecture, and of political experiment—half the beauty and the wisdom of the world." THE END

Underwater Archeology:

By GEORGE F. BASS

Photographs by
THOMAS J. ABERCROMBIE
and ROBERT B. GOODMAN

National Geographic Staff



Key to History's Warehouse

BALANCED ON SCAFFOLDING *a hundred feet down, a diver photographs timbers from the hull of a Byzantine ship wrecked off Turkey 13 centuries ago. Ingenious iron grids enable archeologists to plot with amazing accuracy the vessel's size and type.*

KODACHROME BY THOMAS J. ABERCROMBIE © N.G.S.

THE GOLD COIN gleamed like new in the brilliant Mediterranean sun. And the smile on diver Wlady Illing's face sparkled as brightly when he handed me the prize he had just brought up to our barge off the coast of Turkey.

"Now can we be sure?" he asked. I took a closer look. The coin bore the profile of a young man with ribbons tied around his head and a cloak over his shoulder. Latin words identified him as the Emperor Heraclius.

"Well," I said, "almost sure." Heraclius had ruled the Byzantine Empire from A.D. 610 until 641. This coin would be important in dating the wreck we had come to investigate.

Despite the summer sun, Wlady and I and the rest of our divers huddled for warmth behind the engines of our barge. We zipped up field jackets over our sweaters. The cold wind, the *meltem*, seemed never to stop.

Yassi Ada, or Flat Island, only a hundred yards away, offered little protection. The

barge, anchored near a dangerous reef, bobbed in a white-capped sea.

The wind and the reef had brought me back to Turkey for the second summer in a row. Together they had sunk many an ancient ship, and to us, as archeologists, such wrecks were of the highest interest. Few sites lie as undisturbed as those where ships dot the bottom of the sea.

In past years, elsewhere off Turkey, our group had already salvaged the oldest known

Archeologists in the Sea Survey the Wreck as They Would on Land

Fat grouper, a nonchalant onlooker, swims above Claude Duthuit, who sights through an alidade on an anchored table. Fred van Doorninck, expedition's assistant leader, holds a ranging rod as he stands atop wine jars that formed the bulk of the argosy's cargo. Mapping frame sits above boat's cabin area. Bedspring-like grid lets diver-artists plot position of each artifact.

shipwreck—a Bronze Age vessel sunk more than 3,000 years ago.* Now in 1961 the object of our expedition, supported by the University of Pennsylvania Museum and the National Geographic Society,† was a Byzantine wreck some 1,300 years old.

We had not come to dive for sport or for treasure. Our aim was to proceed underwater just as archeologists work on land: To dig down layer by layer, carefully recording the position of each object in the cabin or hull before moving it or raising it to the surface. For if we were to make sense of what we found, it was essential to assemble a detailed plan of the ship and its cargo.

Fitting together all the data from an archeological site is the job of the expedition member known as the architect. Ours was William Wiener, Jr., a graduate of the College of Architecture at Cornell University. Bill's work, we hoped, would enable us to re-create a Byzantine ship on paper—much of it plank by plank and nail by nail.

Even the order in which the cargo had been stowed might be important. Suppose that at its highest level we found products from Cyprus, and below that objects from Egypt; we could then surmise the ship's ports of call, and speculate about trade routes.

Archeologists First, Divers Second

Most of us had learned to dive expressly for underwater archeology; it is far easier to train scientists to dive than to train divers to be scientists. Besides archeology students and an architect, we had artists, still photographers, and a cinematographer. A diving instructor and a surgeon had come along for safety. It was a staff that any land excavation project would be proud to have.

To get Bill accurate drawings and measurements, we experimented with various kinds of plane tables, sighting devices, and mapping frames (pages 140 and 141). Sometimes it seemed as if we were employing every blacksmith and tinsmith in the nearby town of Bodrum (map, page 145).

*See in the NATIONAL GEOGRAPHIC: "Thirty-three Centuries Under the Sea," May, 1960; and "Oldest Known Shipwreck Yields Bronze Age Cargo," May, 1962, both by Peter Throckmorton.

†Other sponsors: the Catherwood Foundation, American Philosophical Society, Corning Museum of Glass, Littauer Foundation, Main Line Divers Club of Philadelphia, and Crowell-Collier executive Nixon Griffis.

Ancient nails from the wreck are reproduced in plaster. Corrosion destroyed the originals, but lime secreted by sea animals made the molds that preserved their shapes.

Pagan goddess served not as an object of worship but as a lead-filled counterweight for a balance to weigh cargo. Gorgon's head on her chest identifies her as Athena.

PHOTOGRAPHS BY NATIONAL GEOGRAPHIC PHOTOGRAPHERS

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Early in the season, Bill had shown us elaborate professional plans for a piece of surveying equipment. Mustafa Kapkin, a Turkish diver and photographer from İzmir, who had experience in dealing with the local craftsmen, also looked over Bill's arrangement of solid and broken lines and blown-up details.

"You'd do better to make a sketch on the back of a cigarette box," he said.

Bill defended his work with pride until we reached the blacksmith's. For half an hour he tried to explain his neat plans. Then he saw we were getting nowhere. We squatted down and with a stick he drew on the ground a rough idea of what we wanted.

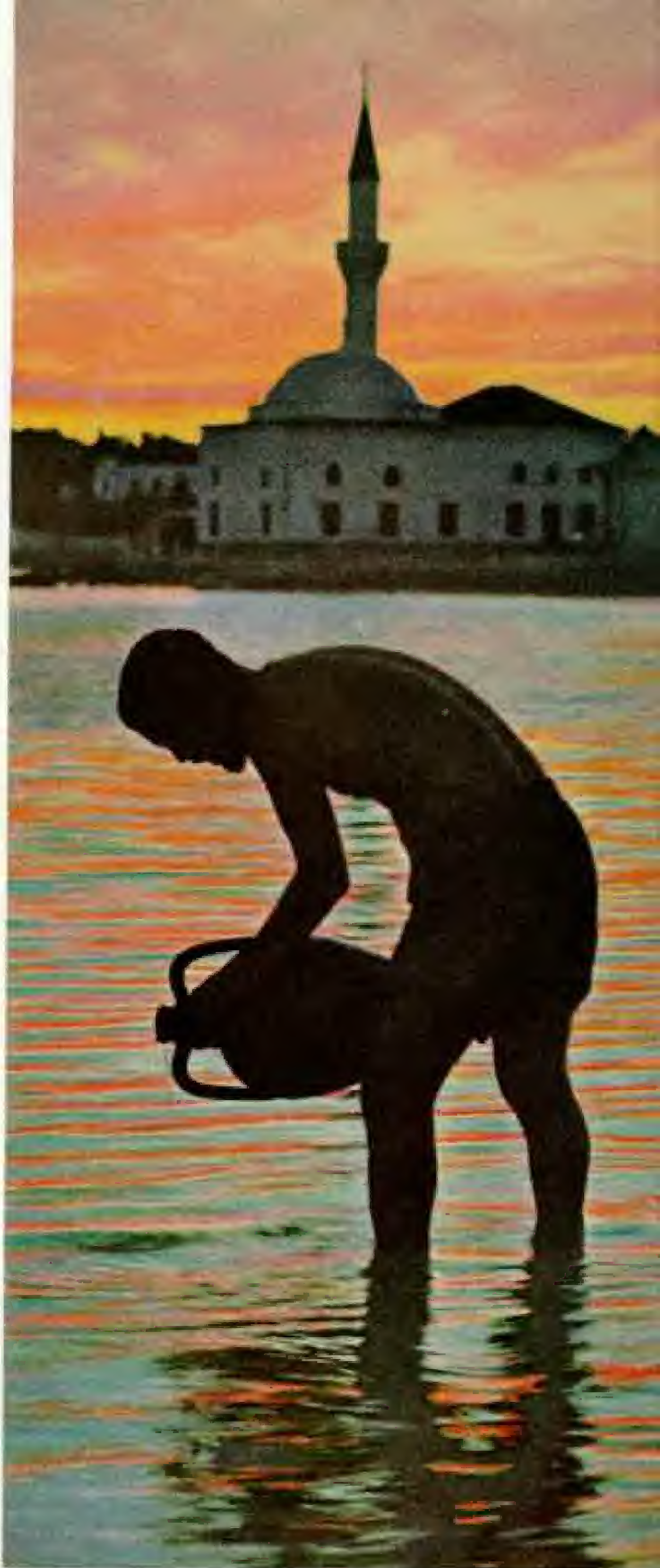
The finished product was perfect. And in due course the wreck was covered with a weird assortment of frames, grids, and surveying poles.

New Technique Speeds Excavation

Our wreck lay with its deepest point in 120 feet of water—30 feet deeper than our Bronze Age ship. Therefore we had to dive nearly to the limit at which Aqua-Lung archeologists can work efficiently.

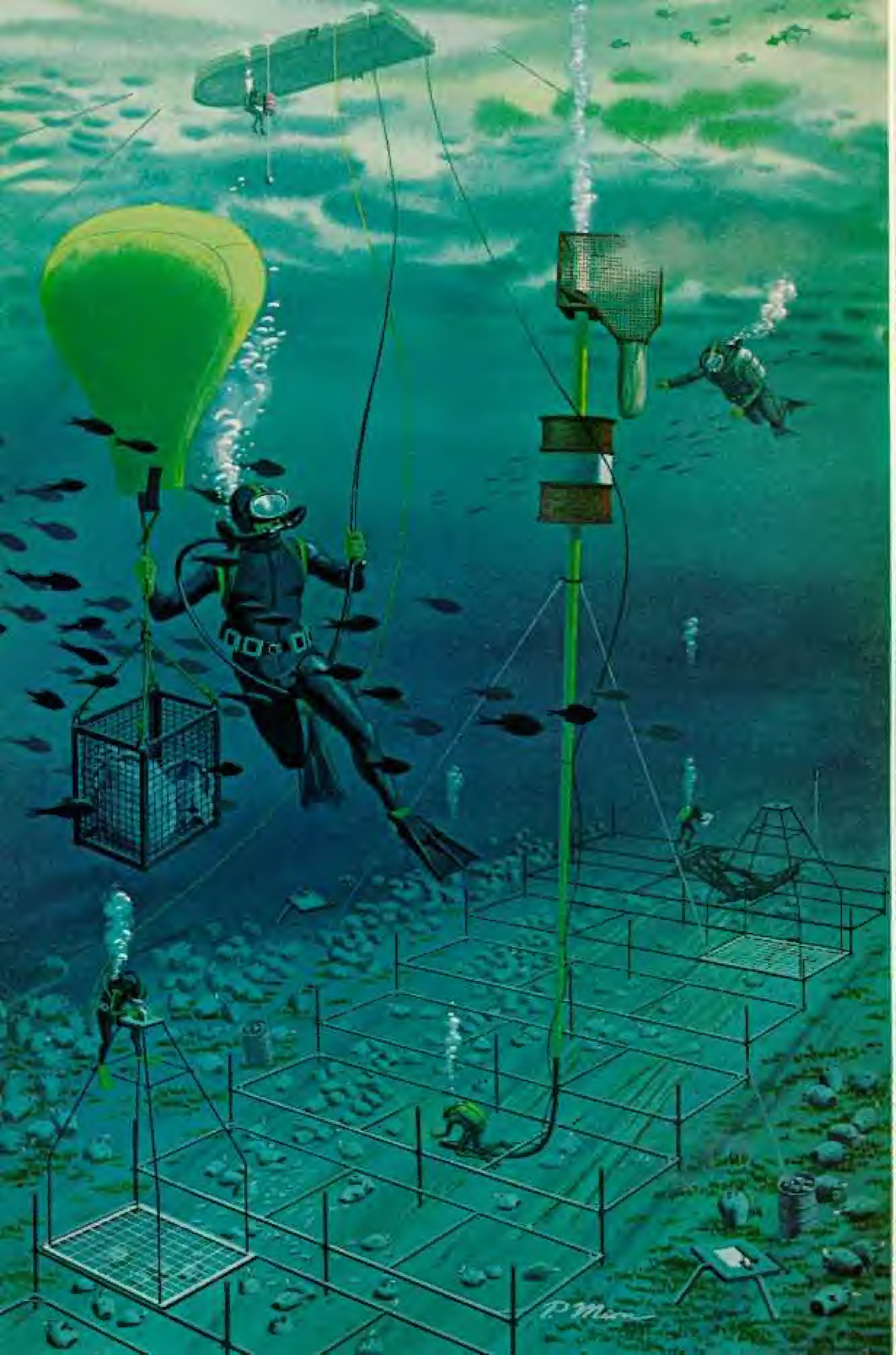
Using information from Navy diving tables, we set 45 minutes a day—in two separate dives with a three- to six-hour pause between—as the maximum time we could stay at this depth. And so four divers could do no more than three man-hours of work each day. Hovering over wire grids, we would sketch the objects beneath us on sheets of frosted plastic, using graphite crayons. But eventually we devised a better mapping method, and for two weeks nearly 15 divers concentrated on building our most advanced and most useful device.

First we placed a scaffolding of pipe and angle iron over the entire wreck. To accommodate to the slope of the site, we arranged the scaffolding in nine giant steps. Then we constructed two movable towers, each 13 feet high, to hold our cameras in a fixed focus (page 144). Thus we could take grid photographs quickly at each step of the scaffolding. We could plot planks and nail holes exactly to the centimeter. The time-consuming business of drawing underwater was practically eliminated, and underwater archeology had moved another stride forward.



EKTACHROME BY ROBERT B. GOODMAN © N.G.S.

Sunset burnishes Bodrum Bay and one of the Turkish town's mosques. Wading in shallows, expedition architect William Wiener, Jr., fills a modern amphora with sea water for cleaning objects from the wreck.



Peter Throckmorton, now a Research Associate at the University of Pennsylvania Museum, had been led to the Bronze Age wreck by Turkish sponge divers in 1958. And it was Peter who had first told me about Yassi Ada.

"It's a marine graveyard," said Peter. "More than a dozen ships are scattered over a reef running out from the island."

I could see why. Those rocks, waiting only a few feet below the waves, would have been hard to see from ships driven south before the constant meltem.

Among the Yassi Ada wrecks, we had deliberately chosen a ship that we thought to date from the seventh century A.D. It would be a link, we hoped, between the older, but better known, Roman ships and the modern wooden craft of the Mediterranean.

Coins Pinpoint a Ship's Demise

The first indication of our vessel's age came from Virginia Grace, an amphora expert working with the American School of Classical Studies in Athens. She judged the style of the pottery scattered at the site to be that of the seventh century. Now the coin with the profile of Heraclius assured us that the wreck could not date from earlier than A.D. 610, the year Heraclius came to power.

But had that coin already been fading out of circulation when the ship went down? We found more gold coins later on. Each portrayed Heraclius (page 147). Therefore I thought it a safe bet that the wreck dated from Heraclius's reign, the first half of the seventh century.

That day on which Wlady found the first coin was typical of our diving operations during the 1961 season, our first summer at Yassi Ada. Wlady and two other divers had spent the night on the barge. He brought up the coin after his first dive of the day, just as the

Diver Guides Inflated Cloth Balloon to Send Up a Basketful of Pottery

In an artist's conception, the air lift sucks silt to a wire sieve atop a tube anchored by two rock-filled drums and held upright by a buoyant drum near the top. Diver below the scaffold holds the archeologists' "vacuum cleaner." Swimmer at right checks the bag that reclaims any potsherd spewed out by the lift. Cameraman at lower left shoots a picture through the grid from an iron photo tower. Artist in the depths at right sketches six of the ship's anchors. Another diver (top) makes a decompression stop below the work barge on the surface.

Neoprene suit protects diver against deep-water cold as he moves a grid up the slope.

Ship graveyard edges storm-lashed Yassi Island.

TWO-HANDLED *cooking pot lay in galley area amid goat and sheep bones.*

Treasury of relics found

RESIN LINING *in this wine pitcher prevented the jar from sweating.*

TERRA-COTTA *lamp, one of 15 uncovered, lighted the merchantman's cabin.*

EARTHENWARE *plate and ribbed cup served the captain at his table.*

beneath the grids

CLAY *"wine thief," a type of pipette, drew wine from amphorae.*

COINS BY THOMAS J. ABERCROMBIE; OTHER PHOTOGRAPHS BY ROBERT B. GOODMAN © N.G.S.

GOLD COINS *of Emperor Heraclius (reigned* A.D. *610-641) bear a diademed bust of the Byzantine ruler on the obverse, globe and cross on the reverse. They indicate the ship sank in the first half of the seventh century.*

As in ancient days, wells in the town serve Bodrum women, who carry jars similar to those from the wreck.

Globe-shaped amphorae come ashore at the expedition's camp. Constant soaking in water prevents cracking.

EKTACHROMES BY NATIONAL GEOGRAPHIC PHOTOGRAPHER THOMAS J. ABERCROMBIE © N.G.S.

Boat's Ribs Take Shape in a Shipyard at Bodrum, the Ancient Halicarnassus

Studying shipyard carpentry, the author's party found construction surprisingly like that of the Byzantine merchantman—a help in understanding underwater finds. Stacked logs will be sawed into timbers. Crusader-built Castle of St. Peter overlooks the harbor.

rest of us arrived from expedition headquarters in Bodrum, a two-hour sail away. Now diving would continue until sunset.

I looked across the barge at the array of cots, blankets, and sleeping bags. Our Turkish cook, Gunay Alpay, squatted behind the galley—an overturned crate protecting two primus stoves from the wind. He stirred a pot of eggs, tomatoes, onions, and green peppers.

"All we need are a few chickens and goats and we'll have a floating gypsy camp," said Eric Ryan, who teaches art history at Colgate University. He sat on a wooden box, pulling on the tight pants of his neoprene diving suit.

The barge had been rolling, but now it began to vibrate as well. Jean Naz, our French mechanic, had started up our two Bauer compressors to fill the diving tanks.

Eric finished dressing, stuck a short crayon into his sleeve, and attached to a clip board a sheet of frosted plastic. David Owen, a graduate student at Brandeis University, grabbed a fistful of lettered plastic tags, each sprouting a long wire to be fastened to an object in the wreck. I joined them, carrying a plastic meter tape.

As we leaped over the side, David held the tags before him by their wire stems, look-

The Author: George F. Bass, Special Assistant for Underwater Archeology at the University of Pennsylvania Museum, directs excavation of the Byzantine ship in a project sponsored by the museum and the National Geographic Society. This summer, for the third consecutive season, Mr. Bass is diving off Turkey to complete the project, one of the most thorough undersea digs ever undertaken.

Brilliant Aegean sun washes the barge as Claude Duthuit (left) suits up. Larry Joline (seated) checks his gear. At depths of 100 to 120 feet, where the wreck lay, expedition members could work only two shifts a day—a total of 43 minutes apiece. Compressors filled their air tanks and ran the lift.

Guitar music and folk songs of bearded balladeer Herb Greer enliven a lunch of fruit and cheese aboard the work barge. Susan Womer, an art student at Swarthmore College in Pennsylvania, proved an accomplished underwater draftsman although she first began diving in Turkey.

KODACHROME BY THOMAS J. ABERCROMBIE © N.G.S.

Like a huckster with a basket of fruit, a diver rises with pieces of cargo, each tagged with identifying letters. To expel gases which could cause the crippling bends, he halts for three minutes at the first decompression stop, a concrete block suspended 20 feet below the barge. At the second stop, 10 feet higher, he will wait 18 minutes. Many expedition members had never dived before, but a few lessons turned novices into experts.

ing like a suitor about to present a bunch of posies. In a few seconds the hazy outline of the ancient cargo began to take form below us. We swam the 65-foot length of the visible wreckage, and I thought how much we had already learned from this site.

Lying across the bow was a stack of six iron anchors, cemented together by corrosion. Each was the length of a man. Nearby lay a seventh. Too many for one ship?

In Acts 27: 28-29 we read of Paul's voyage: ". . . and when they had gone a little further, they sounded again, and found it fifteen fathoms. Then fearing lest we should have fallen upon rocks, they cast four anchors out of the stern. . . ." The seamen considered throwing out additional anchors from the bow.

Later we found our ship's sounding lead, almost exactly like those used today on Bodrum sponge boats. A concavity in its bottom once held some sticky substance to pick up sea-bed samples.

Ancient Law Sheds Light on Gold

We passed on over the cargo of nearly a thousand amphorae—large, globular earthenware jars for carrying wine. At first we had avoided putting our fingers inside the amphorae until we had inspected them, because they make fine homes for sharp-toothed moray eels. By now the eels were gone and the jars had all been scrubbed clean of seaweed with wire brushes.

Near the stern were fragments of terracotta tiles which had fallen from the cabin roof as the wooden supports rotted away. There we found the captain's personal possessions—and the first gold coin.

To whom had it belonged? A medieval transcription of the seventh-century Rhodian Sea-law, which formed a part of Roman law as codified in Byzantium, gives us a rule about gold: "If a passenger comes on board and has gold or something else, let him deposit it with the captain. If he does not deposit it and says, 'I have lost gold or silver,' no effect is to be given to what he says;" since he did not deposit it with the captain.

We supposed that this coin—as well as the others we found later—was left behind in the rush from the sinking ship.

No human bones appeared in the wreck. The swim to Yassi Ada is easy, even in a heavy sea. But how the survivors could have got along on that barren rock was difficult to imagine. Its only inhabitants now were hundreds of rats. We wondered what these rats ate, and especially what they could find

to drink, for the only trace of fresh water we could discover was a heavy morning dew.

Many pieces of the terra-cotta tableware which served the captain, and perhaps the senior crew members too, were in perfect condition. The wine pitcher had an inside coating of resin (page 146). This may be how *retsina*, the resin-flavored Greek wine of today, began. At night the cabin must have been lit by some of the 13 oil lamps found scattered among the tableware.

The captain's plates, pitchers, cups, and bowls were one of our most important finds: together they make up what we believe to be the largest well-dated collection of Byzantine pottery from the seventh century.

Just aft of the cabin stood an open-mouthed water jar, similar to those still used on Aegean boats. Water rationing had been a problem. The Rhodian Sea-law ruled that "a passenger on board is to take water by measure." Nearby was a copper cooking caldron, like those used in Bodrum today.

No Flippers for the Wary

For the diver on the bottom, time flies. In our allotted periods with the wreck, David and Eric and I worked furiously, taking measurements and tagging objects.

But first we had pulled off our flippers—removed our shoes, you might say, before entering the house so as not to make tracks. With flippers on, we would have stirred up sand and mud, making visibility difficult. To maneuver without flippers, we had to carry extra lead weights.

"Clink, clink" from above drew our attention from the work. Someone was striking a crowbar hung over the side of the barge. This was the signal to come up.

But the dive was not yet over. To avoid the bends, we had to hang for nearly half an hour from a weighted line below the barge. This gave us a chance to breathe off some of the nitrogen dissolved in our systems under pressure farther down. We hung there twice a day, cold and hungry and bored. Until the NATIONAL GEOGRAPHIC comes waterproofed in plastic we must amuse ourselves by playing underwater tic-tac-toe.

As soon as Bill had recorded the top layers of the cargo on his plan—with the help of drawings made during many dives—we raised the objects to the surface. Air did the heavy work. A plastic-coated cloth balloon, able to lift 400 pounds, was attached to a wire basket. The balloon, inflated underwater with air exhaled from a diver's mouthpiece, gently lifted pieces of metal and pottery. Amphorae were often merely tipped up and filled with air, to act as balloons themselves.

One day the divers found and plotted a bronze bar attached to a series of chains and hooks. When these pieces had been brought to the barge, we discovered that together they formed a steelyard, or balance, almost exactly like those used for weighing in Turkey today. Our Byzantine model, however, was more finely carved: a boar's head at one end and a lion's head at the other.

"There's one more hook down there," said Wlady, pointing it out on the plastic grid in his hand.

I dived, found the hook, but couldn't move it and decided to leave it for the present. I spent the next day with visiting scientists and didn't get out to the barge. That evening at dinner I asked the others what they had found. They lifted an old burlap bag at the far end of the table. I was stunned by what I saw beneath it.

"That was on the other end of your hook!" said Wlady.

Staring at me was a 10-inch bronze bust of Athena. There could be no doubt about her identity. The traditional gorgon's head was centered on her chest (page 142).

I picked her up by the ring on the top of her helmet. Her weight surprised me, until I turned her over and saw that the bronze shell was filled with lead. She was the counterweight for our balance!

New Museum Shows Old Relics

Back in Bodrum, my wife Ann catalogued each piece we brought up and added detailed descriptions. These, filed with photographs, will enable us to study the cargo during the coming years; the objects themselves are to remain in a new museum for underwater finds which the Turkish Department of Antiquities has just built in Bodrum.

When everything visible under our grids had been plotted and removed, only a bare expanse of sand remained. It was time for our "vacuum cleaner," or air lift.

An air lift is a long tube placed vertically in the water.* Air pumped into it near the

*See in the NATIONAL GEOGRAPHIC: "Exploring the Drowned City of Port Royal," by Marion Clayton Link, February, 1960; and "Return to the Sacred Cenote," by Dr. Eusebio Dávalos Hurtado, October, 1961.

Victim of the Dreaded Bends, a Diver Collapses on Board the Barge

As diving instructor for the expedition, Larry Joline constantly preached adherence to safety tables and health habits. Yet, ironically, he was the only one afflicted with decompression sickness. Bubbles of nitrogen in his blood obstructed the flow of oxygen to nerve pathways in his spinal column, temporarily paralyzing him from the waist down. Today, two years later, he still lacks coordination in his right leg.

"An individual's susceptibility to this often fatal malady varies from day to day," Joline points out. He attributes his attack to lack of sleep, for weeks on end expedition members worked late and rose at 5 a.m.

Joline's spirits remain high during seven hours of decompression in a portable chamber at Bodrum. Faces of Turkish diver Tozun Sezen, his wife Josette, and white-shirted Baskin Sokullu attest anxiety for their friend. Later the stricken diver was taken to İstanbul, where he spent 38 hours in a double-lock chamber at the Turkish Navy's diving school. Though he suffered "Table-4 bends"—the worst—he returned to camp within two weeks. Last summer he was back instructing new divers.

KODACHROMES © NATIONAL GEOGRAPHIC SOCIETY

Drawing with graphite crayon, an artist sketches objects beneath the grid on a sheet of frosted plastic. Ruled off with a similar but smaller grid, the sheet reproduces wreck details on a scale of 1 to 10.

Master plan of the cargo reveals that amphorae, stacked three deep, shifted as the vessel sank. Architect Wiener transfers diver's plottings to the plan.

bottom rushes up in the pipe, sucking water, sand, and mud with it.

Our air lift emptied below the surface. Claude Duthuit, our chief diver, had bolted a screen-wire basket to the top of the lift. The mesh of the wires allowed fine sand particles to be carried away by the current. Larger sand particles and small objects dropped into a bag tied below (page 144).

Vases Assembled From Tiny Fragments

When the bag was full, we brought it up and emptied it on the barge. Some of our visitors laughed at the tiny fragments of pottery we picked out—until they saw what we did with them. In our mending room, an abandoned stable back in Bodrum, they were put together, often into fine vases.

Ann was also in charge here. She cleaned the fragments with acid before making whole pottery pieces of them. Once I sat on the moist ground, watching her work. Later I noticed townspeople looking at me strangely as I walked through the streets. A cool sea breeze hit me, and I realized that those cleaning acids had taken the seat out of my pants.

As work progressed, we learned more and more about the captain of the Byzantine ship. A yellow glass pendant with a cross on its face appeared in the air lift bag. A bronze censer and cross indicated that he was a religious man. A second bronze balance and a set of weights inlaid with silver came to light, emphasizing his mercantile interests. Still, our captain was anonymous.

Then, during the cleaning of the larger balance, an inscription, punched into the bronze bar, became visible:

GEORGE, SENIOR SEA CAPTAIN

it said in Greek. And so, from the mists of the centuries, emerged a man.

The word for sea captain was *naucleros*. During the seventh century, the naucleroi had risen to prominence. As smaller sailing ships replaced the larger Roman galleys, men of moderate means could buy ships of their own. Some amassed fortunes.

The Bends Strike a Diver

In the two and a half months of our 1961 season, we had no more than ten calm days. The work never stopped, but gradually our staff diminished as members returned to teaching and studying. A few days after our doctor, Charles Fries, had returned to America, I arrived in Bodrum from a business trip to Ankara. Eric Ryan and photographer Herb Greer met me.

NATIONAL GEOGRAPHIC PHOTOGRAPHER ROBERT B. GOODMAN © N.G.S.

Whitecaps whipped up by high winds lash the expedition's auxiliary sloop as it sets out for Yassi Ada—Flat Island—from a supply run to Bodrum. Voyagers don foul-weather garb or huddle amidship. Mountains spring abruptly from the mainland.

"Bad news," said Eric. "Larry has the bends." It was hard to believe. Larry Joline was our diving instructor. His dive had been perfectly timed.

At first he had thought it was only a stomach cramp. But Captain Kemâl Aras, our skipper, knew better. He had seen sponge divers die of the bends. We realized that Larry's best hope was the large recompression chamber at the Turkish Navy's diving school in İstanbul. By the time Larry reached Bodrum, however, both legs were paralyzed.

In Bodrum Larry was kept in a portable pressure chamber. It helped a little, but it could not withstand the higher pressure needed to treat a major case of the bends.

Larry looked out through one of the windows of the portable chamber and grinned (page 153). We admired his courage, but feared for his life. He scribbled on a sheet of paper and held it up to the glass: "I'll do anything for a NATIONAL GEOGRAPHIC photograph."

Other notes were not so cheery. "Still no feeling in legs." "Can't move feet."

The American Consulate in İzmir arranged for a plane to take Larry to İstanbul from İzmir airport. At midnight we put him into a Volkswagen bus for the rocky five-hour drive to İzmir. After 24 hours of anxiety we had a call from İstanbul: "Larry will be in the chamber for 38 hours, but he'll be O.K." We didn't know he would limp for months afterward.

Barge Anchor Snags on a Surprise

Poseidon has a way of telling us when it is time to quit. One morning in September when we sailed out toward the barge as usual, I found she had disappeared. Then I saw her bouncing a short distance away, a shambles of scattered cots, broken ropes, and torn canvas. After taking the worst the winds could offer day after day, her anchors had finally been wrenched from the sea bed.

We dived to see what had prevented the barge from being blown all the way to Rhodes. The largest anchor had caught on another ancient wreck. But, as tempting as it appeared, this new find would have to wait until we had finished work on the ship of George, Senior Sea Captain.

With the barge no longer usable, we made our last dives of 1961 from the island. We covered the visible parts of our wreck with cloth and weighted it with sand and stones. A year later we found that nothing had been moved by currents or treasure hunters.

Planks Prove a Tell-tale Link

During the 1962 season we uncovered more of the rotting and fragile wood, and had to develop greater patience. The iron nails which had held the hull together had disappeared, and pieces of wood, once uncovered from the sand, tended to float away. We solved this problem with sharpened bicycle spokes. Before the season was over we stuck more than 2,000 spokes through the wooden remains, pinning them to the sand.

Ribs and keel soon came to light, then strakes, or outer hull planks, flattened by the heavy cargo. Under almost five feet of sand we found a hand-carved ladder rung that had fallen from the rigging.

To eliminate our daily trips between Bodrum and Yassi Ada, we thought of building a camp on the island. But what about the rats? Larry had an idea. Let's build a cage—not for the rats but for the divers.

Soon we had made a house of screen wire, one side blocked with a stone wall to cut out the north wind. Twenty divers could sleep inside in peace. Rats ran on the canvas roof but none managed to enter.

As our plan of the hull progressed, we realized that the link was there between Roman merchant craft and wooden ships sailing the Mediterranean today. This was what we had been searching for.

Years of study must follow before a final report can appear. But already we know that the planks of our ship were not edge-joined as in the earlier Roman ships. They were nailed to frames in the modern way, and then probably calked. We had found the earliest evidence of modern ship construction.

Much work is yet to be done during this summer season of 1963: raising more wood, and the anchors; and looking further under the sand. Perhaps we will find more of the rigging.

The wreck on which our barge anchor had caught after the storm is also Byzantine, but we think it is about 300 years older. The excavation of its hull should fill another gap in the history of ships and shipping. THE END

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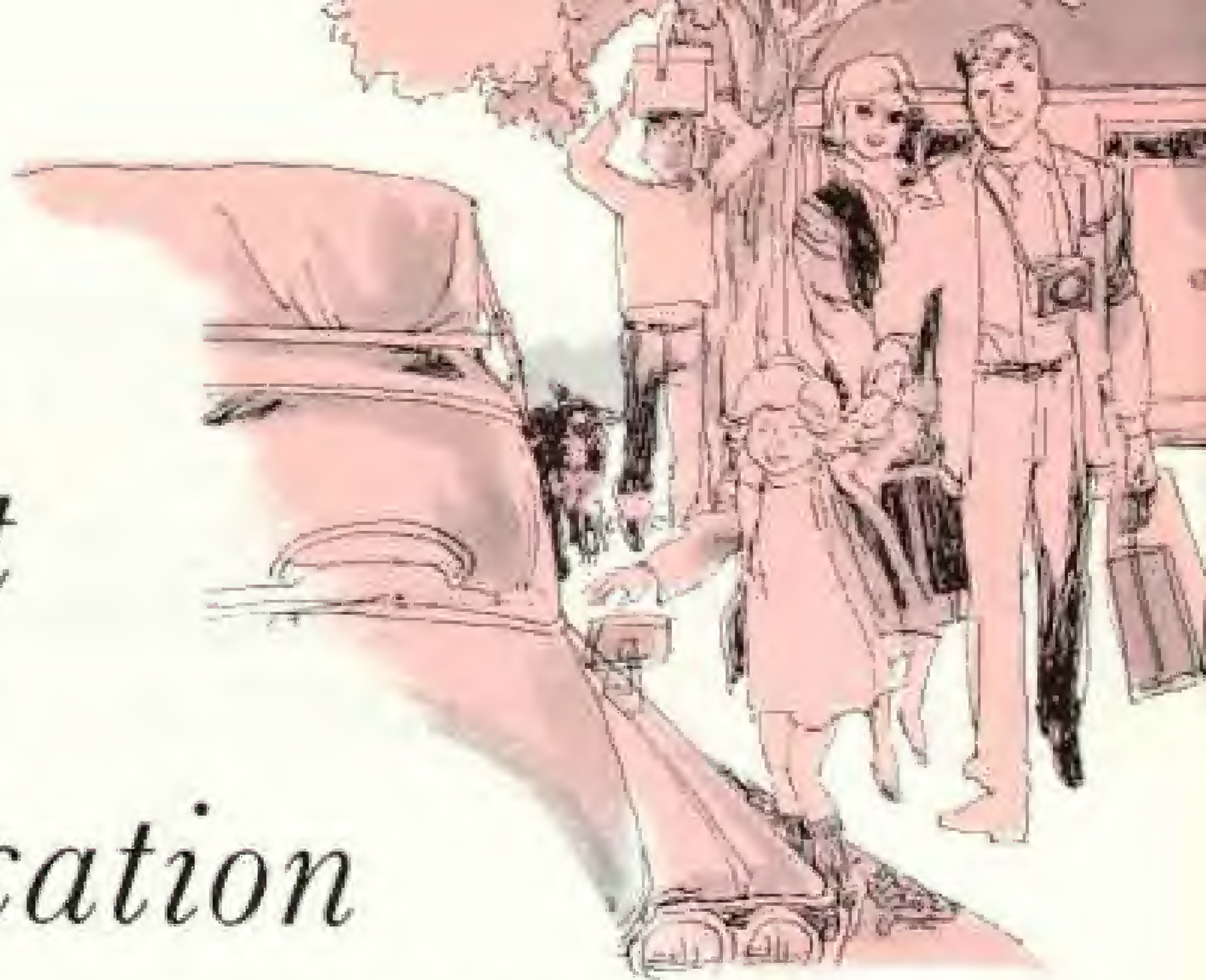

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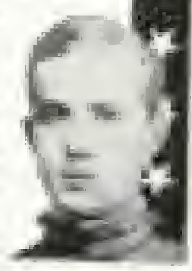

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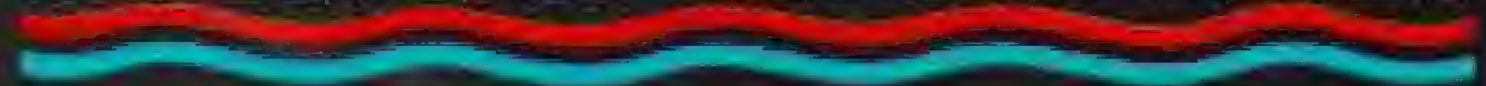

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