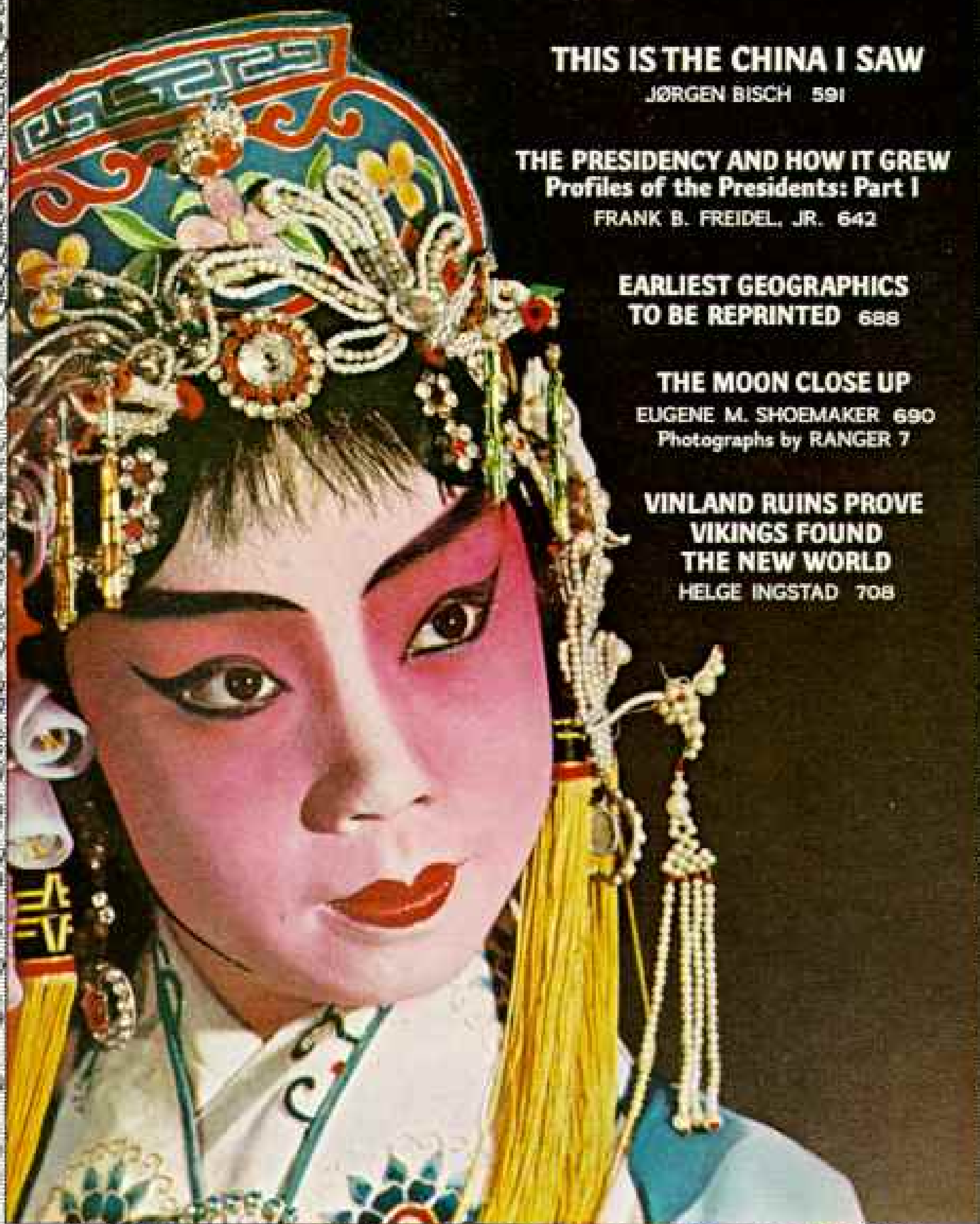


VOL. 126, NO. 5

NOVEMBER, 1964

NATIONAL GEOGRAPHIC



THIS IS THE CHINA I SAW

JØRGEN BISCH 591

THE PRESIDENCY AND HOW IT GREW Profiles of the Presidents: Part I

FRANK B. FREIDEL, JR. 642

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THE MOON CLOSE UP

EUGENE M. SHOEMAKER 690

Photographs by RANGER 7

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◀ COVER: In hangings and baubles, a painted heroine plays her role in the Peking Opera School (page 595).

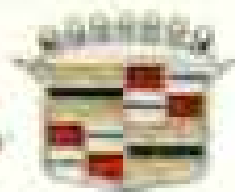


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It's just now beginning to be seen at the most important events . . . on the nation's roadways . . . in the driveways of America's fine homes. It's Cadillac for 1965—the newest and most exciting automotive personality of the decade. Its totally new styling attracts attention wherever it goes—and its brilliant new performance is the talk of the highways. Cadillac's great Turbo Hydra-Matic is now standard on all eleven models. An exclusive new accessory, the tilt and telescope steering wheel, adds a new dimension to driving comfort. And the car's quietness and levelness of ride are a revelation. See and drive this great car soon. It is, without any question, the new Standard of the World.

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Your watch was destined to be wrong. Accutron is not.



Old-fashioned balance wheel is still used in all wind, self-wind, and electric watches. It is not used in the Accutron movement.



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Sooner or later, the watch you have is going to take more or less than 24 hours to get through the day.

This is because a watch is a small piece of machinery with parts that make other parts do things.

Now, this is a clumsy arrangement, compared to the things they're doing with electronics these days. And the Accutron movement is electronic.

A battery sends power through a circuit to operate a tiny tuning fork.

Time is kept by vibrations of this tuning fork. There are 360 of these vibrations a second, which is splitting a second into pretty small pieces.

You can imagine how precise a timepiece this makes.

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'65 Chevrolet
Impala SS Coupe



'65 Chevelle
Malibu SS Coupe



'65 Corvair
Corsa Sport Coupe



'65 Chevy II
Nova SS Coupe

Let Chevrolet put you in beautiful shape for '65

Now, a Chevrolet that makes everything over, under and around you beautifully different. A completely new Corvair with its first big change in five years. A Chevelle that doesn't hold back on anything but cost. And a Chevy II that's turned into the most powerful tightwad in town!

For 1965, the big luxurious Chevrolet could almost get by on looks alone. But that's far from all that's new.

It's longer, lower, roomier, heavier, more luxurious than any Chevrolet before. Completely new from the sleek Impala Super Sport Coupe roof line all the way down to the Jet-smooth suspension.

More expensive looking outside, richer looking inside, more shoulder room, more leg room up front — all in all, we think it's the *best* Chevrolet we've ever built.

'65 Corvair

Corvair's rear engine has never had so much excitement to look forward to. Inside, there's more shoulder room. More comfort. The effortless handling only a

rear engine and new independent suspension can give.

All wrapped up in seven models, including the brand-new top-of-the-line Corsa.

New performance, too—up to 180 hp that you can order in the Corsa Series.

Wait till the ones who always wait till next year see this!

'65 Chevelle

There are enough changes in Chevelle to make it, too, feel like another whole new car from Chevrolet.

New ride, new style, and an engine that will make *you* feel young again — a 300-hp V8 that you can order in all twelve Chevilles.

And its smoother ride and extra body insulation make things as quiet as the day the kids went back to school.

And if that's too quiet, order an AM-FM Stereo radio.

'65 Chevy II

Our economy is on the up-swing!

For '65, Chevy II has a dressed-up front, back, interior and a smart new roof on sedans. Plus two new V8's available: a 250-hp and a 300-hp.

Underlying it, though, are those things that have made Chevy II such a tightwad these past years.

And as your Chevrolet dealer will show you, Chevy II's now the most *exciting* tightwad in town. . . . Chevrolet Division of General Motors, Detroit, Michigan.



"You can expect delays on certain routes..."



...and you do want to do business early in the day...

...accommodations are a little inadequate...



...but the place does have diversion...



...a few of the clubs won't honor your membership...



...still others will be glad to take you."

The Gold Rush, as seen by a travel agent.

It doesn't look quite like any trip you'd take. But we do bring it up for a good reason—too many people never think to use a travel agent.

It may not even cost to use one. Or if it does, it's never much: a few telegrams, phone calls, etc.

That's because a travel agent gets his commissions from airlines, ship companies, railroads, hotels, car rentals and the like.

You almost always pay the same prices on these whether he sends

you or you send yourself.

A travel agent can guide you through the maze of travel plans being offered this time of year.

He knows the best hotels, shopping, restaurants and entertainment, for what you want to pay. (Lots of times even less than you thought you'd have to pay.)

He'll tell you what to take, what not to take. And when the taking's best.

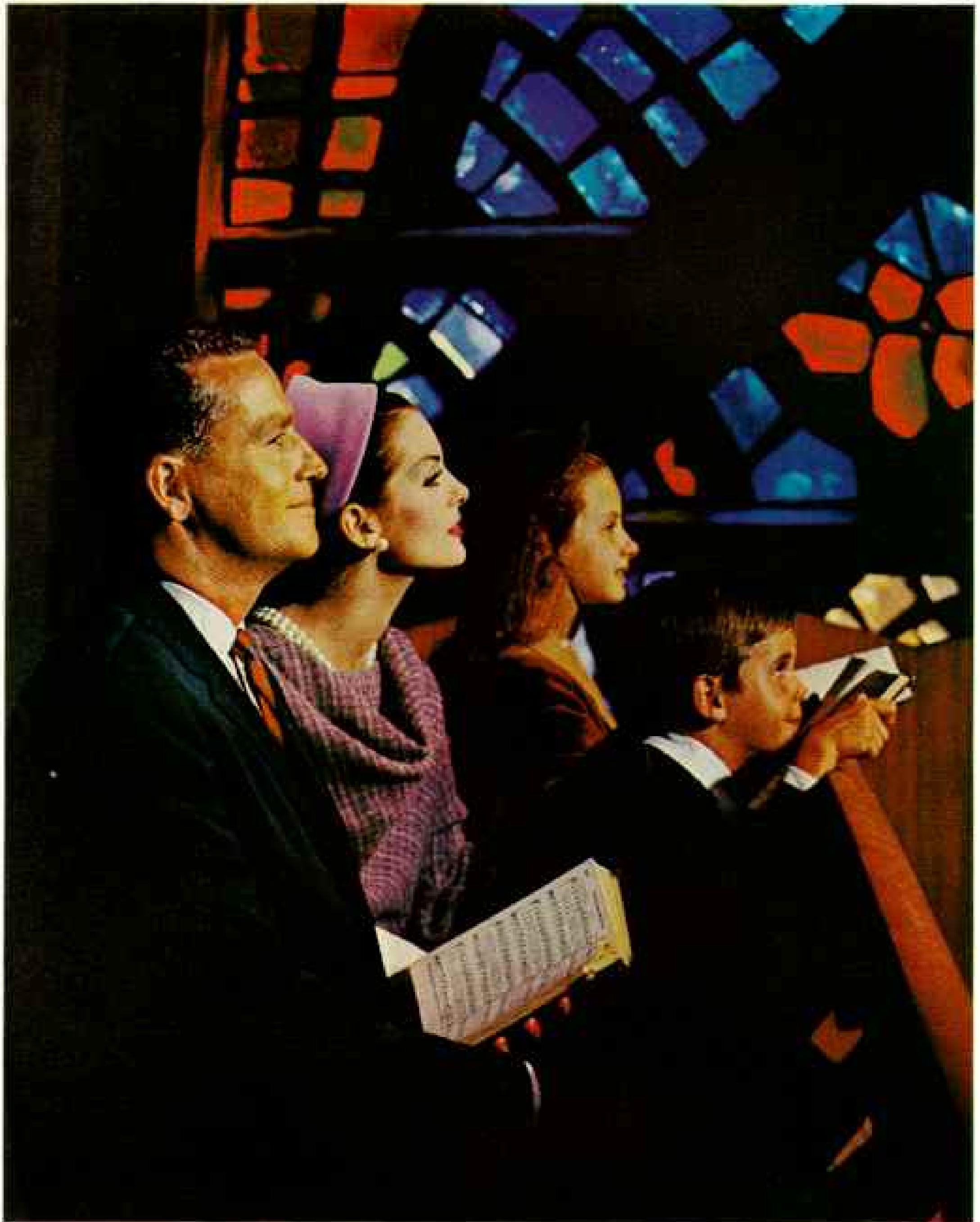
And when last year's great place

becomes this year's social disaster, there are two ways to find this out.

The travel agent is the easy one.

If you're wondering why we've done all this explaining about the travel agent, it's because we can fly you to any of 50 cities in the United States, Canada and Mexico—and if a travel agent handles the details, you'll get the best of any one you choose.

American Airlines



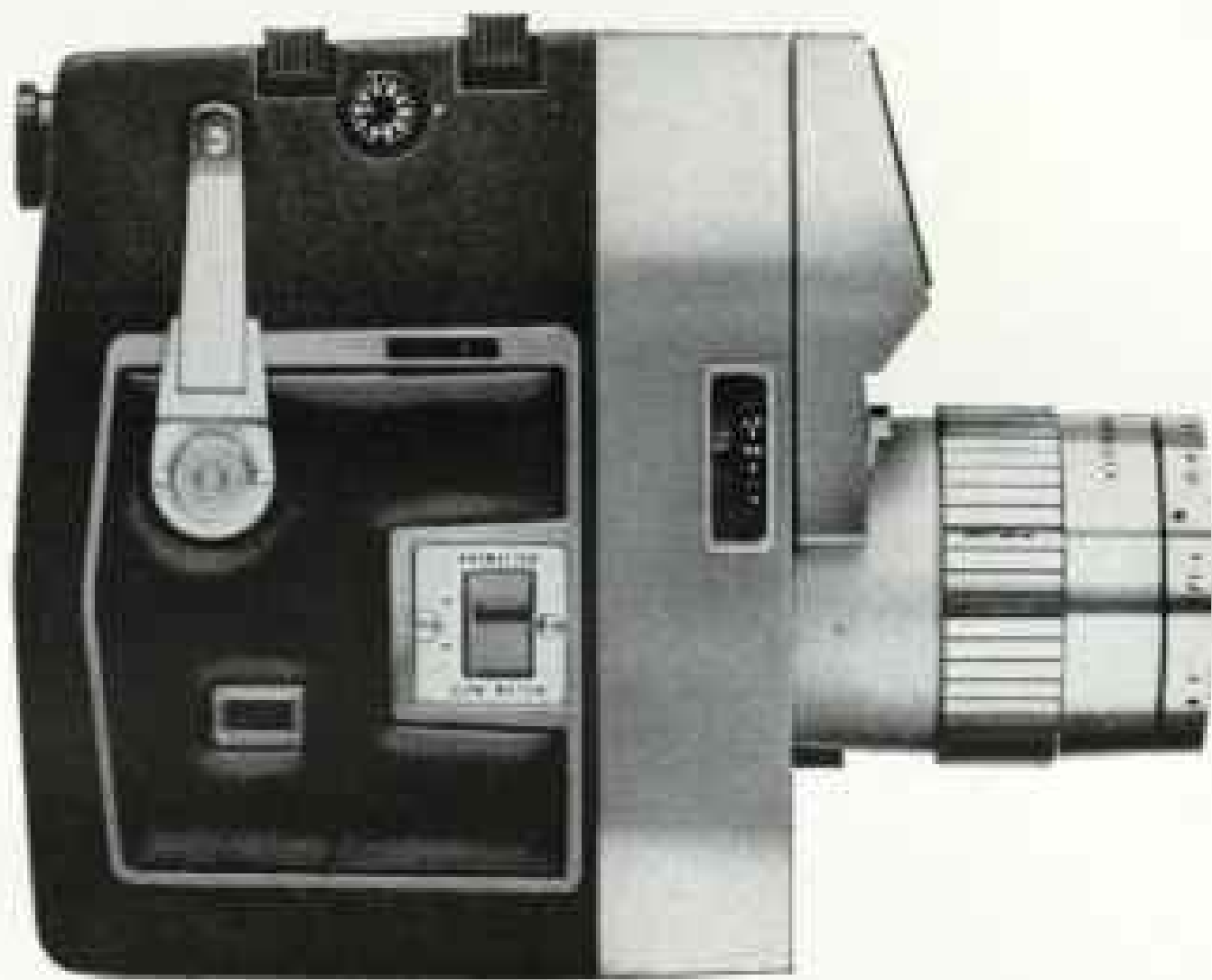
...and let us also give thanks

*for the human dignity which we enjoy as free individuals...
for the preservation of the peace...for the prosperity of our great nation...
for its thrifty and self-reliant citizens...for our homes and the family happiness
they bring...for the challenge of the unlimited opportunities which lie ahead.*

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So we don't build just cameras.

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Bell & Howell photographic instruments are extraordinarily precise. They perform without deviation from a rigid set of self-imposed standards. They're virtually incapable of error. They measure light and distance exactly. They control film perfectly, holding it flat in exact focus, corner to corner and edge to edge.

The Bell & Howell 418 movie camera shown here is a good example. The electric eye, which sets your exposure automatically, is *inside* the lens. Precisely where the light strikes the film, so that it responds only to the light that's in your picture. In subtle lighting, the difference can be enormous. In not-so-subtle lighting, it can turn "good enough" movies into movies to be proud of.

You shoot through a precisely-ground 11-element optical instrument with built-in filters. You view directly through the lens. You zoom in and out as smooth as cream, with gentle pressure on a button. You load with a refillable cartridge.

Now, does all this exactitude mean that a Bell & Howell instrument is difficult to use? Not at all. For we think that part and parcel of our products' function is ease of operation. Pistol grips fit your hand neatly. Controls fall easily to your fingers. Viewfinders show exactly how you're zooming.

You might expect a photographic instrument to cost somewhat more. And you'd be right.

But look how much more a photographic instrument can do for you.

**Bell & Howell builds photographic
instruments a little better
than they really have to be.**

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This is the Lincoln Continental for 1965: America's most distinguished motorcar.
It is the luxury automobile that stands apart from all other cars.
It distinguishes you among fine car owners.



You will notice refinements in styling for 1965. Yet you will also recognize this luxury motorcar as unmistakably Continental. Unique in its classic look. Singular in its luxury and comfort. Unequaled in its ride. Lasting in its investment value. Built only to the world's highest standards. Available in a deliberately limited edition of models: the classic four-door sedan and America's only four-door convertible. Among luxury cars, there continues to be only one Lincoln Continental. What does your car say about you?

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If an accident or illness kept you from working, what would your family live on?

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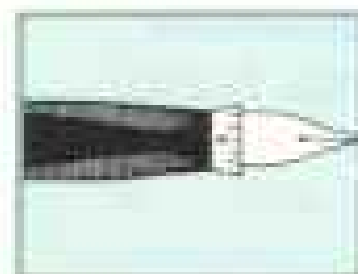
Give the New Parker 75...in solid sterling silver

The first personal-fit pen tailored to write his own way

Magnificently sculptured in sterling silver, this newest Parker can be tailor-made to the writer—to conform precisely to his natural handwriting, to become as personally his as his fingerprints. It costs twenty-five dollars.*

He takes the Parker 75 from his pocket, and once again he is reminded of you—of your thoughtfulness, of your clearly evident admiration for him, and of your good taste, most of all.

For with the Parker 75 you succeeded in giving him a gift that is personal, memorable, and fully in accord with his own standards of judgment. No other gift can be so completely custom-fitted to the individual who receives it.



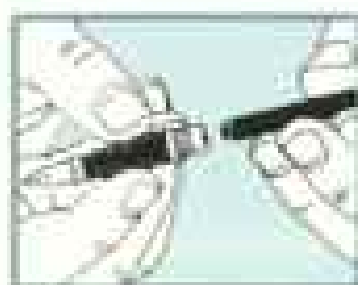
The beautifully sculptured grip nests his fingers in its curvatures. There is less pressure as he writes. His fingers do not tire; each letter flows easily and gracefully.



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We urge you to see the Parker 75 at better department stores, jewelry, pen, or stationery stores. If you can't find one, write us —The Parker Pen Company, Janesville, Wisconsin.

 **PARKER**

LOOK WHAT DOUGLAS IS DOING NOW!



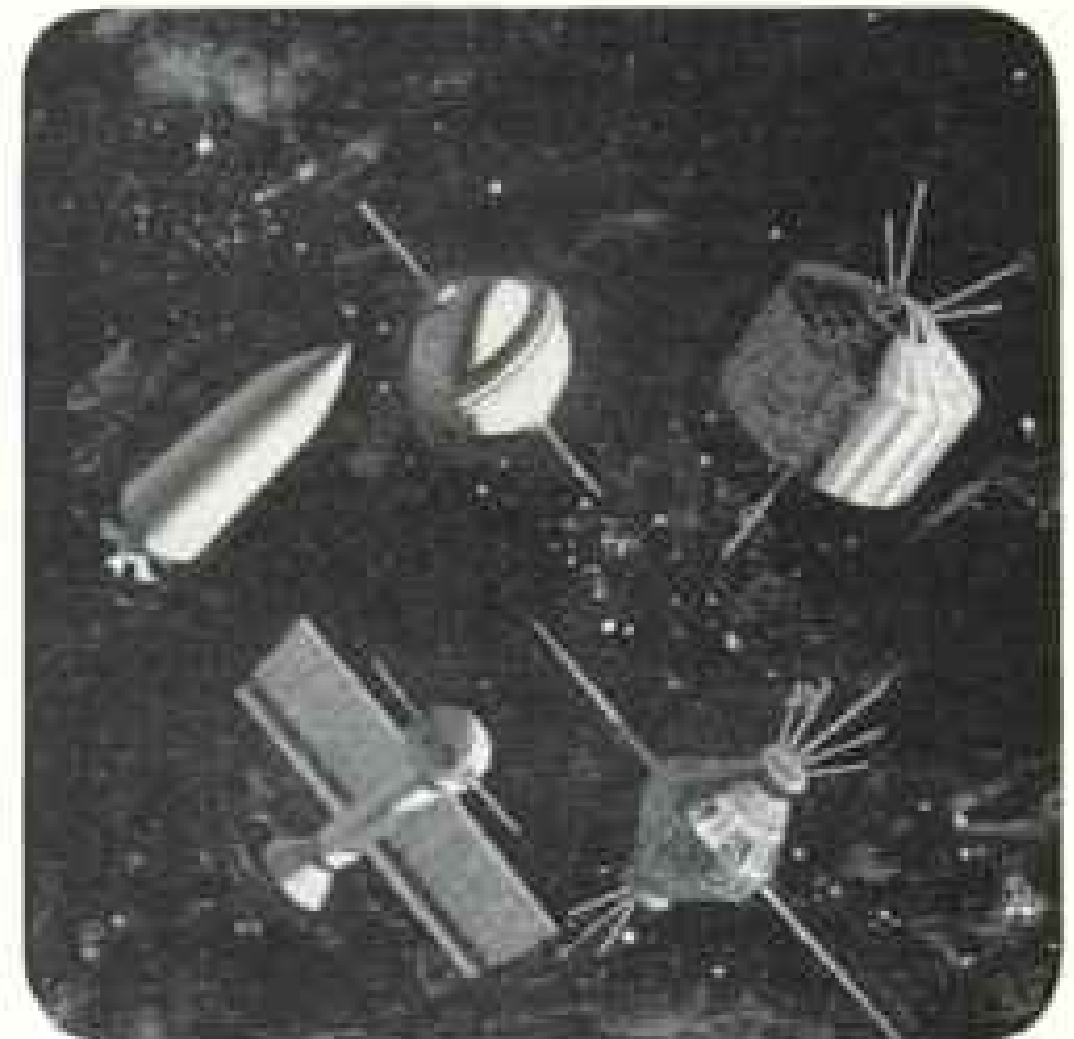
FINAL ASSEMBLY OF MAMMOTH SPACE-CRAFT is taking place in this huge tooling tower complex at the Douglas Space Systems Center. Here, the S-IVB stages of the NASA Saturn moon rockets are being assembled, tested and given complete system checkouts.



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PROVIDING MORE PUNCH PER POUND of airplane than any other combat jet, the Douglas/Navy A-4E has a payload of more than 8,000 pounds. Fully loaded, it combines outstanding stability and control at all speeds with fine maneuverability.



OUR BOOSTERS HAVE LAUNCHED MORE SATELLITES than those of all other companies combined. The NASA/Douglas *Delta* alone was responsible for boosting a record twenty-two satellites in succession into orbit, including *Syncom*, *Telstar*, *Tiros*, *Relay* and *Ariel*.

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Are we extravagant for lavishing all these looks on a car all this quick and agile and driveable?



Of course not. It's the '65 Pontiac, and we couldn't hide such a quick and nimble car under a what's-that body. So we don't, as you can plainly see. Everything you can't see is new, too, Wide-Track excepted. Our Trophy V-8s breathe deeper now,

step off just a little quicker. Then you can specify Turbo Hydra-Matic, the new automatic transmission that shifts smooth as cream but sure as taxes. You're worried the quick new Pontiac won't get along on your budget? Don't fret. Our economy

rear axle gobbles up so much highway on a tank of gas, you'll wish your credit card were good at toll booths. Try a short trip soon, starting at your Pontiac dealer.

PONTIAC FOR 1965
THE YEAR OF THE QUICK WIDE-TRACKS

Pontiac Motor Division • General Motors Corporation



Don't wait for your favorite season to come to you,



go to it.

Whatever time of year it is, there can be a snowy trail or a sandy beach waiting for you at the end of a Boeing jetliner flight. Boeing jets, in fact, fly to more than 200 cities in 100 countries where many an attractive bargain awaits the off-season traveler. (Not to

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707 - 200 seats 707 - 200 seats 707 - 200 seats 707

Buick
'65
Buick



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It got even better.

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Buick has always put more into its cars—and '65 is no exception.
The accent is still on plus-quality engineering, design, styling.
And if it means that we have to spend a little more to give
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on our Electra 225, on our Wildcat, LeSabre, Skylark and Special.
Like we did on this Riviera—on the shielded headlights, for instance.
Camouflaged by masks that flip open wide at the touch of the light switch.
Like we did in adding a hill-climb range to our Super Turbine transmission.
Buick cares more. Does more. And Buicks ride quieter, smoother.
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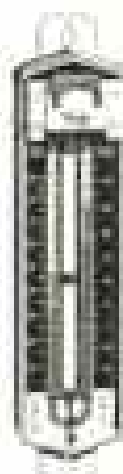
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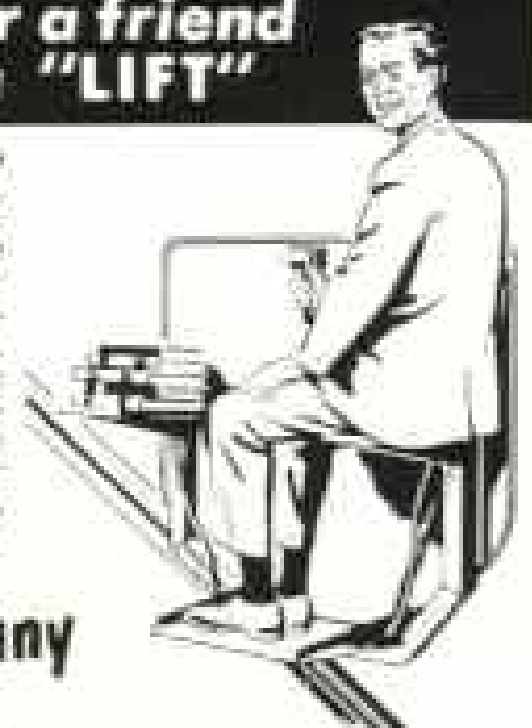
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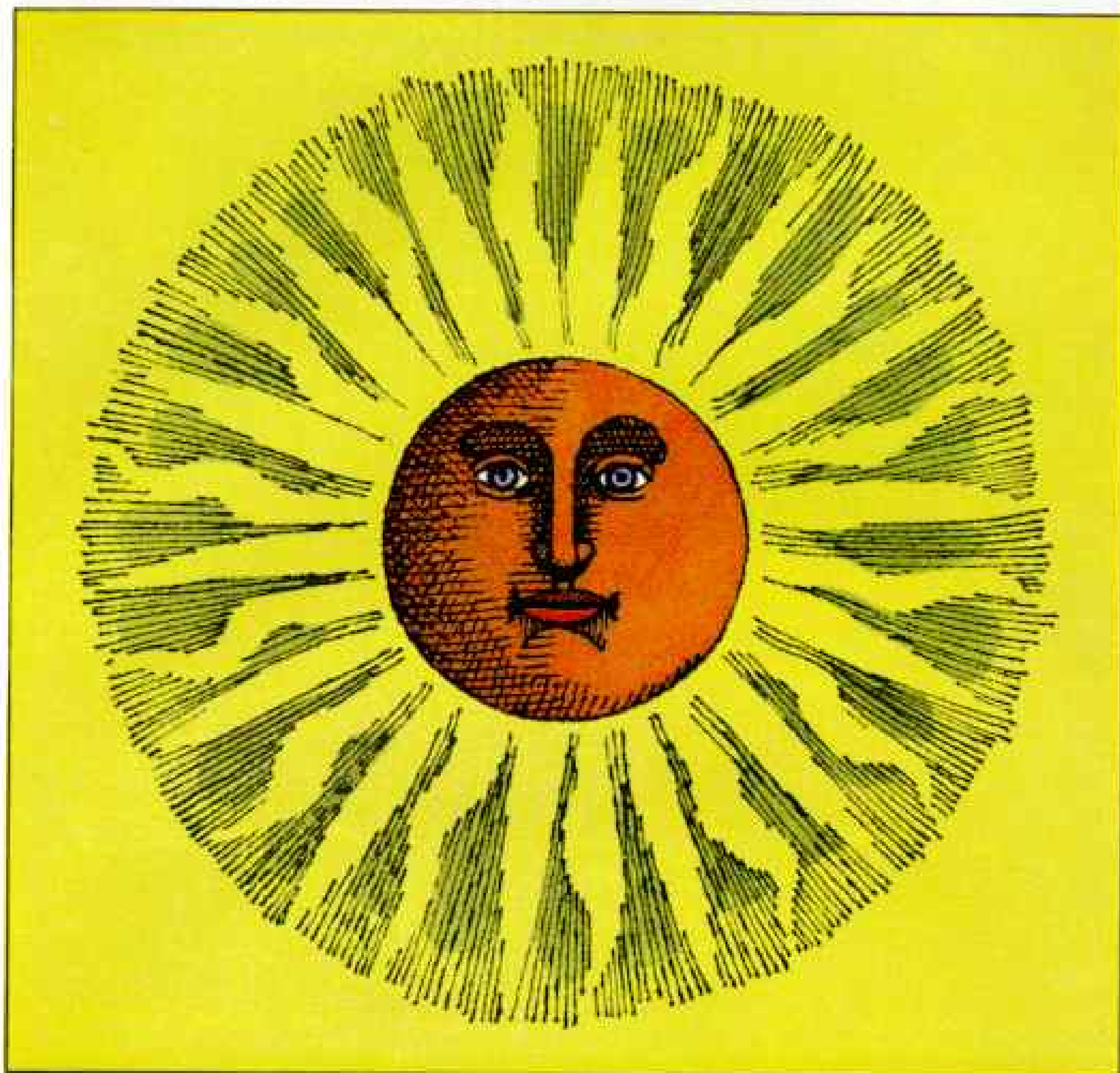
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November, 1964

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This Is The China I Saw

By JØRGEN BISCH

Photographs by the author

FOR MORE THAN A DECADE the world's most populous country has been virtually closed to American eyes. Communist-ruled mainland China, teeming with 700 million people, has admitted only a handful of carefully selected reporters from the United States. Since 1957, the Department of State has negotiated with the Red Chinese in Warsaw for an exchange of U. S. and Chinese journalists, but the People's Republic of China refuses as long as the United States Government supports Nationalist China on Formosa.

This year, however, a previous contributor of photographs to NATIONAL GEOGRAPHIC—the Danish writer-photographer Jørgen Bisch—gained admittance to the People's Republic of China. In the following report he tells how rigidly—and sometimes ludicrously—the Chinese sought to control his opportunities for observation and photography. He was allowed to visit only certain places, and inevitably his report on life behind the Bamboo Curtain is based on what the Chinese wanted their visitor to see. Nevertheless, this energetic and resourceful reporter was able to include many candid shots among his photographs.—THE EDITOR

WHEN MY AIRPLANE touched down at Peking on a sunny morning this past May, I was met by a delegation of eight Chinese officials. I hastily pointed out who I was, thinking it was a case of mistaken identity.

But the only error was mine.

This reception—this instant envelopment by government representatives—proved typical of my six-week trip through the People's Republic of China. I found myself on a conducted tour, always accompanied by four to fifteen guides eager to expound the Communist viewpoint.

The places I was allowed to visit were rigidly circumscribed, but in a 15,000-mile

journey I crisscrossed the country from Canton in the south to remote Tatung in the north, from Shenyang in the east to Sian in the west (see map, page 600, and the 11-color Atlas Map, China, a supplement to this issue).

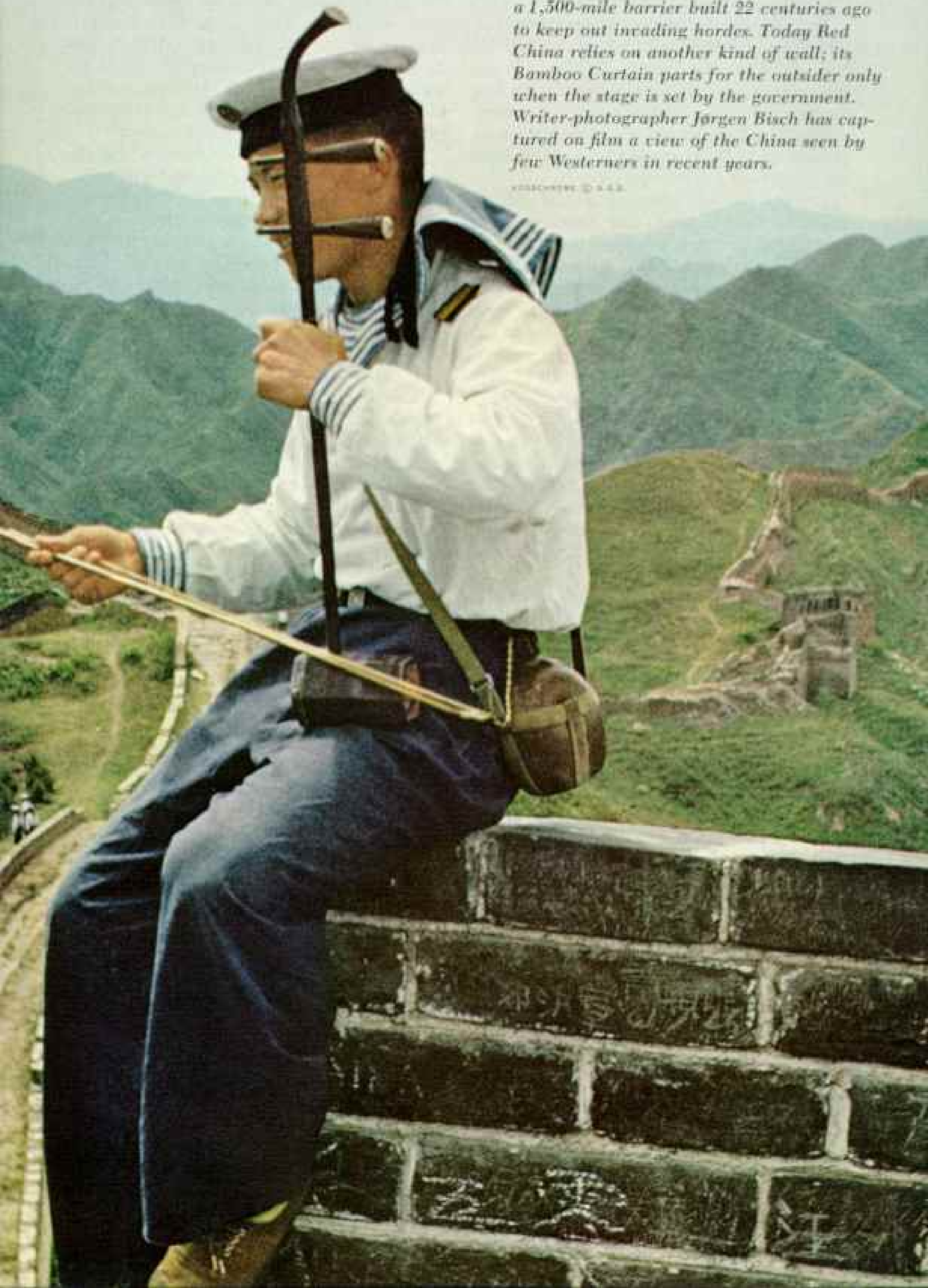
I had first visited China in 1958, for only 20 days. While duly impressed by monuments such as the Great Wall (following pages) and Peking's Forbidden City, I found the people looking poor and working very hard. Swarming through fields and factories, clad in drab blue uniforms, they had elicited the title "blue ants" from critical visitors.

This time food seemed more plentiful, and many trees had been planted in Peking. The drab work clothes had largely given place



SHRILL WHIMPER of the *erh hu*, a Chinese fiddle played by an off-duty sailor, sounds across ramparts of the Great Wall, a 1,500-mile barrier built 22 centuries ago to keep out invading hordes. Today Red China relies on another kind of wall; its Bamboo Curtain parts for the outsider only when the stage is set by the government. Writer-photographer Jørgen Bisch has captured on film a view of the China seen by few Westerners in recent years.

© 1964 J. B. B.



to more individual and attractive attire.

Early in my second visit I was granted an interview in Peking with Marshal Chen Yi, Vice Premier and Foreign Minister. I was determined to request a statement from him that I could take whatever pictures I wished.

The Vice Premier met me at his office door in an open-necked rumpled shirt, and invited me to take off my own jacket.

He had recently received several cabinet ministers from a newly free African nation, and though he strongly favored the independence movement, he was disturbed by its non-Communist character. The ministers had admitted to him that their income was more than a hundred times higher than that of the common people.

"And of course that is bad," Chen Yi said. "I told them I do not receive much more money than a common worker in China, and I am quite happy that way."

Chen Yi laughed, and he certainly looked happy. From the marks on his belt, I could judge that his measurements had increased about five holes since he'd got the belt—but, of course, I didn't know how many years he had worn it.

Next he gave me half an hour's lecture on Communist politics—quite anti-Khrushchev. Finally, I succeeded in asking my key question: "What may I photograph and what may I not?"

"You can photograph whatever you like," Chen Yi said.

First Request Sparks Conflict

Thereafter, whenever I had disagreements with my guidance committee, I cited the Vice Premier. My first opportunity came the next day. The President of Yemen, Marshal Abdulla al-Sallal, was to arrive at the airport in the afternoon. I had heard that a quarter-million people would meet him with red flags, artificial flowers, dancing teams, and more than 300 brass bands. I wanted very much to photograph this vivid spectacle.

I consulted Hsu Yu, my German-speaking interpreter, a tiny girl of 26 who looked about

18. She habitually wore the blouse and the gray slacks that seem to be a Communist status symbol. I thought her oddly named to be a photographer's interpreter. Hsu Yu means "Happy Rain," and rain brings no joy to photographers. In any case, she dampened my hopes of covering al-Sallal's arrival.

I then appealed to Mr. Cheng Yueh, the most distinguished of my "aides," who had a high post in the Committee for Cultural Exchange with Foreign Countries. He was about 40, a little stouter than the ordinary Chinese, and I wondered whether he did the annual month of agricultural work normally required by the Party.

Photo Frustrations Set a Pattern

It did me no good to cite Chen Yi to him. His view was that Chen Yi, by saying I could photograph anything, had meant I could photograph anything I was *allowed* to photograph. But he agreed to ask his superiors.

The answer was no.

Irritated, I said, "Please go and ask again."

Thus began the long series of frustrations that marked my journey. Over and over, my guides echoed Chen Yi, telling me I could photograph anything. But when I aimed my camera, as often as not they would gently intervene. Had I asked the child's permission? . . . An uninteresting landscape, really not worth the film. . . . But, Mr. Bisch, these houses are so old! Kind, friendly, but always firm.

That first time, however, I managed to prevail. "Please, Mr. Cheng," I said, "ask again. It is very important to me."

When this request, too, met blunt refusal, I thought it wise to establish my independence vis-a-vis the Chinese once and for all. So I told Mr. Cheng exactly what I thought.

"But, sir," he said, obviously distressed, "we are friendly and polite to you—"

"Mr. Cheng, I am also friendly and polite to you. But I know that other foreigners will be covering Marshal al-Sallal's reception. Why can't I?"

"Mr. Bisch, you are an author, you write

Red Paint Bespeaks a Heroine in a Performance by the Peking Opera School

In jeweled headdress and brocaded gown, the student actress spins a tale of old-time romantic adventure. Such roles may eventually disappear from the stage; the government recently decreed that traditional themes, popular for centuries, must give way to contemporary ones that "serve China's socialist revolution." After nine years of intensive study, the school's foremost graduates go into the famed Peking Opera Company.



books, and the other gentlemen going to see al-Sallal's arrival are journalists."

"But I would not like to report," I said gently, "that this country discriminates against authors."

Off went Mr. Cheng again to do battle with bureaucracy. While I waited, I heard the first bands marching past the hotel. Masses of people followed them.

Red, pink, and green banners billowed in the breeze, and children waved bright paper flowers. Peking, so drab during my visit in 1958, had now exploded in color. I hurried out into the street for a closer view. Within a few minutes, a breathless Hsu Yu caught my arm and excitedly led me to a taxi.

Cheng greeted me at the door. "Mr. Bisch, as a special favor, we have arranged for you to go to the airport."

Marshal al-Sallal arrived in a Russian-

made Dyushin 18, and my "committee" and I joined the motorcade of some 100 cars for the ceremonial entry to Peking (page 601).

Once in the city, we drove past 300,000 Chinese lining both sides of a two-mile-long route. They waved so many flags, so many flowers, that the wall of brilliant color all but obscured the people themselves. The crowd cheered. Dancing teams performed at short intervals. Massed drums and cymbals beat through the crowd's roar.

In the course of that drive, I had my first long look at Peking. The Communists have wrought striking changes in the 700-year-old city and former capital of the Manchu Dynasty.* The population has shot up from a 1949 level of 1.5 million to 4 million. In that

*See "The City They Call Red China's Showcase," by Franc Short, and "Peking: A Pictorial Record," by Brian Brake, both NATIONAL GEOGRAPHIC, August, 1960.



Jack-in-the-box in Peking's once Forbidden City uses a bronze cauldron for her game. In imperial days, the container held food ritually presented to the "sacred sovereign," who lived with his courtiers in the vast palace-filled enclave at right. Common people were excluded.





Etched in lights by night or sun-bathed by day, the Forbidden City's Gate of Heavenly Peace lends majesty to Tiananmen Square, where two million people can rally. Signs read, "Long live the Chinese People's Republic" and "Long live the great solidarity of the people of the world."





Marble balustrades encircle the Temple of Heaven in Peking. Within these sacred precincts, the Emperor, Son of Heaven, worshiped at dawn, making obeisance before an open altar and sacrificing silk, jade cups, and bullocks to the Supreme Being.

598

Circular wall near the Temple of Heaven carries sounds; visitors can hear whispers from far side of the ring.





BEIJINGERS FLORID, OPPORTY AND AMBITION © NATIONAL GEOGRAPHIC SOCIETY

Communist-exhorted volunteers in the Forbidden City weed the courtyard of the Palace of Heavenly Purity, where the last Manchu Emperor (pages 634-5) was married in 1922 at age 16. His wedding marked the dynasty's final event of imperial splendor.

same period the government has planted 9 million trees, transforming the once stark streets into leafy, shaded thoroughfares. By razing walls and buildings, the Communists have also enlarged the focal point of Peking, Tienanmen—or Gate of Heavenly Peace—Square, from 27 to 100 acres. Now 500 yards across, the square can accommodate two million people in the massive public demonstrations so dear to Party leaders' hearts.

But my schedule permitted little time to wander Peking's historic byways. After the al-Sallal reception, guides whisked me from factory to factory to factory. As in other underdeveloped countries I've visited, China

is eager to impress strangers with industries.

I knew my fate. "Yes, sir, thank you very much indeed," I said politely when Cheng invited me to visit Textile Factory No. 3.

The mill covered two city blocks. A committee of five officials escorted us to a huge reception room where green tea and trays of cigarettes were served. While sipping, I wrote down the facts as given to me.

The mill has 5,500 workers—average age 26. Its 19,000 spinning units and 3,200 weaving machines, all made in China, produce 123,000 pounds of cotton cloth per day.

As we walked into the factory halls, all the workers applauded and, as is the local



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custom, we all applauded back. The leaders pointed out that the halls were air-conditioned, with "spring temperatures." In view of this pride, I felt it would be impolite to comment on the white snow of cotton dust falling steadily through the air.

Wages Provide Few Luxuries

An official explained that 65 percent of the workers were women. The birth of a child brings a working mother a 56-day holiday and a congratulation premium of four yuan—about \$1.70—for each of the first two children. Should both parents work there, the factory nursery cares for the child free of charge during working hours, and the mother gets time off twice a day to nurse the baby.

Amid the clatter of the machines, I questioned one elderly man about his earnings. His family, he told me, numbered 14—he and his wife, five daughters, one son, two sons-in-law, and four grandchildren. Five of them worked at the factory, earning a total of 366 yuan, about \$150 a month. All 14 shared a four-room furnished apartment, for which they paid 15 yuan per month. Food came to 166 yuan, clothes to 51 yuan, other

Crisscrossing mainland China, the author glimpsed many of the 700 million people who crowd earth's most populous country. With 3,691,500 square miles, China ranks below only U.S.S.R. and Canada in area. Kublai Khan set up his capital at Peking and, except for intervals, the city has remained the center of government.

Danish adventurer Jørgen Bisch, seen in Shenyang, claims honorary membership in an African pygmy tribe, counts friends among headhunters in South America and jungle devils in Borneo, and once passed as an Arab after dyeing his skin and disguising his blue eyes with brown contact lenses. Such derring-do has filled six books printed in 15 countries. His recent survey of the Far East will be published soon under the title *Why Buddha Smiles*.



STATIONERS ILLUSTRATED AND COURTESY BY JERRY B. BISHOP, PH. © A.S.P.

Rolling out the Red carpet, Peking welcomes Abdulla al-Sallal (center), President of Yemen. Liu Shao-chi (left), Chairman of the People's Republic of China, walks with his guest between cheering, streamer-twirling throngs of schoolgirls, who received a holiday for the occasion.

Barrel drums ride to the al-Sallal parade on pedicabs, a mode of transportation reputedly on the wane. Policeman directs traffic from his box at left. Because Chinese are encouraged to report the misdeeds of their fellow citizens, fewer police have less and less to do nowadays.



Feast or famine? Food remains China's gravest problem.



PHOTOGRAPH BY THE AP/WIDE WORLD PHOTO SERVICE, INC.



SEEKING AN ANSWER to the food question, recent Western visitors have reported that China today knows neither overabundance nor downright hunger. While few Chinese are fat, no one seems underfed. But meanwhile arable land remains limited, and each year China has more mouths to feed. The Red regime now buys wheat from the West.

Any rise in crop production represents progress in a land periodically plagued by starvation. As recently as 1959 and 1960 "natural calamities" took the blame for tripping the Great Leap Forward, a grandiose plan for industrializing an agrarian society. At the same time millions of people thrust into farm communes saw all their produce claimed by the state and their lives severely regimented.

Faced with disaster, China's Communist bosses backed down. They restored incentive to farmers, who received a chance to till private plots in their spare time and sell produce for personal gain. Laborers formerly recruited for undeveloped industries were sent back to the land.

Last spring a French correspondent in Peking reported that the rice allotment had doubled, meat and fish were plentiful, and vegetables seemed unlimited.

These pictures reflect the changes.



Stall in a Peking grocery (opposite, upper) offers radishes, onions, Chinese cabbages, tomatoes, and cucumbers, all probably grown near Peking in a garden belt 7½ miles wide. For winter production, the belt boasts 900 hothouses.

Flycatcher in fish market (opposite, left) uses long-handled swatter to knock insects into his net. With so vast a labor force to keep occupied, China's leaders applaud efforts at make-work, and the newspapers congratulate flycatchers of unusual skill.

Whole hogs and cut pork (left) need no refrigeration; the supply sells out in a day.

Boy and his grandmother (upper) dine out of doors in their courtyard near Peking.

expenses to 94 yuan. Left over—40 yuan, to be used for small luxuries like the theater or motion pictures.

To a Westerner this income seems very low, but the Chinese point out that no tax is levied on it and that workers receive numerous benefits, such as free medical aid. Further, most commodities cost little: \$2 for shoes, \$2.50 for a good shirt; a few cents for a six-pound basket of vegetables or a pound of fish. A large bottle of beer—a luxury to most Chinese—costs 12 cents. Prices, I noticed, had dropped considerably since my visit in 1958, while wages had held steady.

After washing the cotton dust out of my throat with more cups of green tea, I left Textile Factory No. 3 to see other—but in my hosts' view far lesser—attractions of Peking. These sights included such imperial relics as the Temple of Heaven, the Summer Palace, and the Forbidden City.

Once these graceful retreats had been the private precincts of the Dragon Throne. The Forbidden City—with its golden-roofed palaces—had housed the emperor's thousands of eunuchs, his hundreds of doctors and servants. The Temple of Heaven was his sacred place of worship (page 598), and in the Summer Palace—half a day from Peking in the time of the Manchus, but today half an hour by car—he had passed the hot months of June and July.

"For an admission of two cents," said Cheng, "thousands may share pleasures once reserved exclusively for emperors."

I often saw these thousands there, quiet and wondering. They came not only on weekends but even on their homeward routes after the factory whistle. Wandering from the Palace of Earthly Tranquillity to the Palace of Heavenly Purity, they passed among precious paintings, mosaics, and ceramic figures. Small noisy boys played football in temple

Flag-waving Student Leads His Class on a Walk Through Ancestral History

Stone elephants and pagodalike roofs adorn the tomb of the Manchu Emperor Tai Tsung, who died in 1643 and was buried near Shenyang, the former Mukden in Manchuria. Ridgepole figures on the Shrine for Epitaph (foreground) frighten away devils.

In claiming that their revolution is a renewal rather than a denial of Chinese heritage, the Communists take special care of the imperial regime's antiquities and encourage sightseeing. Mr. Bisch found the paint too bright on many age-old treasures:

courts where once brocaded princesses had minced on tiny bound feet.

I could see that living conditions had improved since my 1958 visit. Several large department stores—though not nearly so impressive as those of Europe or the United States—were nonetheless well stocked. In one such five-story establishment I saw about 200 different models of shoes and boots, not only sturdy work shoes but also frivolous styles. The frivolity, however, stopped short of spike heels or golden sandals.

Although cloth is rationed—approximately five yards per person per year in Peking—customers jammed the textile department. The quality and color range of the fabrics



had improved since the 1958 era of sober blue work suits for all.

During my first visit to Peking, all the women wore long loose slacks and jackets. But this year, as spring warmed Peking, some had the courage to appear in skirts. The traditional Chinese sheathlike dress with split skirt, however, I saw only on the stage.

Cosmetics also seem to be virtually taboo. Except on the stage and on days of official celebration, I never saw a woman wearing makeup of any kind. Oddly enough, though, I often saw tiny girls—aged about six or seven—decked out in rouge and lipstick.

The puritanism of the regime even affects the boy-meets-girl relationship. I never saw

a young couple kiss each other or make any public display of affection. I did see couples strolling together, or sitting on park benches, but always a prudent distance apart.

Except for the fresh green of the thousands of trees planted on the broad avenues, Peking strikes the visitor as a gray city. As before the revolution, some of the secondary streets remain unpaved, but now, at least, those streets have hard surfaces of tamped earth.

Some 1,400 new electric buses—all manufactured in China—glide quietly through the main avenues, carrying workers to and from their jobs for fares of less than a penny. I saw few automobiles, and all seemed to be government-owned cars or taxis. While the number



CHINA

MOST POPULOUS NATION on earth, with about one-fourth of the world's people, China has long felt itself the center of the world, thus its traditional name of Chung Kuo, or Middle Country. Tracing a history



of 4,000 years, the Chinese have given us paper, the printing press, and gunpowder. A 22-year civil war that ended in 1949

brought a Communist government—still unrecognized by the United States—to power. The new regime has mounted a massive campaign to industrialize this sprawling nation, traditionally dependent upon small-scale agriculture. Parts of the Yangtze Delta still support 2,000 people per square mile.

OFFICIAL NAME: People's Republic of China. **AREA:** 3,691,500 square miles. **POPULATION:** 700,000,000 (1964 estimate). **LANGUAGE:** Mandarin Chinese used by 400,000,000; Shanghai dialect by 50,000,000; Canton dialect by 40,000,000; remainder speak a multitude of other dialects. **RELIGION:** Confucianism, Buddhism, Taoism. **ECONOMY:** Agriculture: rice, wheat, tea, tobacco, sugar cane. Minerals: coal, iron ore, tungsten, antimony, tin, copper. Industry: steel, textiles, chemicals. **MAJOR CITIES:** Shanghai (pop. 7,000,000), port; Peking, capital; Tientsin, port. **CLIMATE:** In north, warm, humid summers; long cold winters. Extreme south is tropical in temperature and rainfall.

of taxis had more than quadrupled since my earlier visit, they remain far beyond the means of most citizens.

Weary strollers, however, can still hire a pedicab—a three-wheeled contraption (page 601). But these, like the vanished rickshas, still remind Chinese of the evil old days of colonialism, and they dislike seeing a Westerner riding in one.

Jail Stands on Self-Renewal Street

"Would you like to go to jail?" Mr. Cheng said one afternoon.

I was shocked for a moment—I felt I'd been a model of docility for the past few days—but then I realized this wasn't a threat but an invitation.

The Peking Municipal Prison, fittingly enough, looms at the end of Self-Renewal Street. Grim and weather-beaten, it could have been another of the faceless factories.

Naturally we began with a tea party in the prison's sitting room. The warden had writ-



Idle Youths and a Lonely Grandfather Congregate on a Main Street in Tatum

ten a script, which he read to me at length.

I noted the facts. The prison, built at the turn of the century, held 1,800 prisoners—among them only 100 women.

"Have women less tendency to be criminals than men in China?" I interrupted.

The warden didn't think so. Men simply had more opportunities. Forty percent of the prisoners were "reactionaries"—or anti-Communists. The rest were ordinary criminals.

"Our program for making better people of these criminals is divided into three sections," the warden said. "First, ideological reschooling teaches the prisoners that criminal offenses are the result of capitalism, and



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One of the few Western visitors to Tatung since the Communist take-over, Mr. Bisch attracted crowds wherever he went. Forbidden by his

instructs them in proper socialistic ideology. Then comes the political information: They learn to trust in the ultimate victory of socialism, and, of course, the total destruction of the capitalistic system. Finally, there is work: They learn the happiness of working, the skill of working, and the habit of working. We also give financial help to the families of prisoners. And if a prisoner behaves well, his family may visit once a month."

We went to the cell block. The 20 chambers I saw were empty, since the occupants were working. The cells were neat and clean and were free of bars. When I commented on that, the warden said, "Prisoners understand they

guides to stop, he shot this picture from the window of his moving automobile. Red paint brightens the block. Wine bottles fill a store window.

are here for their own benefit, and it would do them no good to try to escape. That is also why you don't see many guards."

It was true that there weren't many guards. I saw only two, both at the jail entrance. But the wall around the jail was topped by an electrified fence.

We entered the jail factory. To judge from their faces, the hundreds of prisoners tending the machines had not yet mastered Lesson One on the happiness of work. But they had certainly learned to work; they produced 90 percent of the socks sold in Peking. Working eight hours a day, each prisoner earned two to five yuan per month.



"We have 400 workers who aren't prisoners any more," the warden told me proudly. "But they like conditions here so much they prefer to remain."

After dodging a few factories, I was next taken to the Peking Opera School. Here carefully chosen young people undergo a rigid training course—ranging from acrobatics to rhetoric—that perfects them in China's oldest, best-loved theatrical art—the Chinese opera. Years ago men played all the roles in this fascinating amalgam of song, dance, and pantomime; but girls now portray female characters (page 595).

Old Opera Faces Intrusion

Patronized 1,250 years ago by the Emperor Hsuan Tsung, the opera occasionally stages seven-hour programs. Themes tend to be ancient romances with generous doses of blood, thunder, and true love. Recently, however, the Party has enlisted this traditional entertainment as propaganda, and side by side with a drama set in 200 B.C., *Farewell to the Favorite*, operagoers can see latter-day entries such as *After Reaping the Bumper Harvest* and *Grandma Sees Six Different Machines*.

But if Party doctrine is tarnishing the opera's ancient glitter, I learned in my formal farewell to the city—a feast in the Empress's Garden Palace of Pei Hai—that the glories of Chinese cuisine have survived intact. We were a total of nine at the government reception house, including my interpreter Hsu Yu.

Inevitably, we began with tea. Next we had "Empress's Sweets." My principal guide, Cheng, proudly explained that this costly dish, now eaten by the representatives of the proletariat, had been the favorite of the late Empress Dowager. The chefs had provided a post-imperialist improvement, however—a glowing red star of sugar atop each sweet.

Then came the cold dishes, among them eggs that had been pickled for half a year. The yolk turns black and the white turns green. Although I attacked the eggs warily, I found them quite palatable.

Next we sampled sweet-and-sour pork, beef prepared several different ways, beans, radishes, seaweed, and sweet-tasting shark fins.

Then pork with onions, pigs' knuckles, pork and vegetables, fish with tomato and onions, sweet-and-sour fish, sesame-seed rolls and Chinese bread, fried soya cakes, fresh-water shrimp, lotus seeds, and a tasty chicken-and-vegetable soup.

Usually a Chinese meal ends with soup, but dishes kept arriving: Mushrooms and beans, mushrooms and bamboo shoots, vegetables mixed with eggs, octopus soup, and "rice with eight precious ingredients." And to wash it all down—hot rice wine, 60-proof rice vodka, and beer.

"We apologize for having no more dishes," Cheng said primly. "The empress would have had more, but New China doesn't believe in luxury."

Such banquets, however, are far from the daily fare of the Chinese worker. No citizen starves, so far as I could see, but few wax fat. Rice, vegetable oil, and fuel were rationed, and no one received more than a pound and a half of meat a month, but rationing varies by region and season. Poultry and eggs, while unrationed and widely available, sold for very high prices.

Railroads Remain Class-conscious

From Peking I traveled 500 miles by train to Shenyang, once known as Mukden, in Manchuria. With me went Cheng and Hsu Yu; the three of us shared a sleeping compartment. I felt guilty at taking Hsu Yu away from Peking. Shyly, she had told me that only a month before she had married a young co-worker. Throughout the trip, Hsu Yu diligently studied her Chinese-German dictionary.

The classless society has not quite engulfed the Chinese railroads. As in Russia, you can buy a first-class ticket entitling you to a "soft" seat, or a second-class fare consigning you to a "hard" seat.

Each neat green-painted coach had a young girl attendant who plied the passengers with frequent draughts of green tea. And at each station the girls, their braids swinging down to their knees, hurried out with brush and water bucket to wash the coaches. At the same time, harangued by a voice on the loudspeaker, many passengers streamed out onto

Hand bestowing tranquillity, a Buddha of the Future endures 1,500 years at Yun Kang, near Tatung. Captive artists under the Northern Wei Emperors carved the 42-foot figure out of a sandstone cliff (next page). Makeshift repairs disfigure the image. Wall paintings and carvings portray Buddhas, bodhisattvas, monks, and *apsarases*—wingless dancing angels.



*Buddhas Brood in the Ageless Twilight
of Their Cave Temples at Yun Kang*

More than twenty giant images carved in the cliff between 414 and 534 represent some of the finest works of art by China's early Buddhists. In the



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cave left of center, a seated Buddha inspired prayers and ceremonials but left little room for assemblies; another stands in the cave at right.

Monks once lived in bare cells cut out beside the temples. Today attendants hired by the Communist state keep watch over the treasury of sculpture.



EXHIBITION © NATIONAL GEOGRAPHIC SOCIETY

At rigid attention, arms clasped behind backs, students at Sian begin their day with a reading lesson. Red scarves identify members of the Pioneers, a Communist youth organization.

Communist propaganda bears fruit: a child's drawing shows an American in an Uncle Sam hat disdainfully turning his back on a Negro. The author saw the cartoon posted in a Sian school.



the platform and did their gymnastics individually or in teams.

Mao Tse-tung, Chairman of the Chinese Communist Party, has pronounced "body building" good, so one sees Chinese exercising everywhere (pages 628-9). I saw factory workers exercising between shifts, and even restaurant customers while waiting for service. Later, in Shanghai, every morning at five o'clock I saw hundreds of citizens performing calisthenics on the wide stone esplanade along the Whangpoo River. In the same place, old masters of sword dancing and other traditional gymnastics taught their art to any eager child free of charge.

"The Americans think only about painting their faces or buying fancy clothes," Cheng told me. "We think about building healthy bodies."

At six o'clock in the morning, the train's loudspeaker ushered in the new day by blaring out the official march "Socialism Is Good." After our tenth serving of tea, we arrived in Shenyang, and within hours, I found myself again behind a teacup, this time in Shenyang's wire factory.

Factory Greetings Mass-produced

My retinue had swelled with so many local guides that we had to sit around a huge table in the middle of the reception hall.

The manager of the factory spoke first, in Chinese.

Hsu Yu: "The leader wants to say something."

I: "O.K."

The leader says something.

I: "I also thank you, for wanting to see me."

Hsu Yu: "But I didn't translate what was said! Do you suddenly understand Chinese?"

I: "No, but I've learned that the introduction is always—'On behalf of the factory and workers, I want to express our joy at greeting our Danish friend.'"

Little Miss Happy Rain has difficulty keeping a straight face, and she has even more difficulty explaining my extensive knowledge of Chinese.

Then she continues: "The leader of the factory wants to give you some facts."

Even before it is uttered, I know how it will start: Before the liberation, there was a very small and poorly equipped factory here with a tiny production that the capitalists exploited. The workers were badly paid. Then came the Japanese and Kuomintang of

Chiang Kai-shek and the factory came to a standstill. Weeds grew around it. But after the liberation, the workers gained a new spirit, a new confidence, knowing they need no longer slave for a capitalist. Now thanks to the Party and two Five Year Plans, production has increased by x percent.

My interpreter gives me a questioning glance. I think she has translated the introduction while my thoughts were elsewhere.

"Please tell them I am very happy that the factory is improving, and please ask my standard questions about the percentage by which they have exceeded their production quota and so on."

Statistics Pose a Chinese Puzzle

After the briefing comes the tour. Like most other Chinese factories I have seen, this one is gigantic. Thousands of machines hammer, turn, whirl, and thump to spin cables and wires—some tinier than a hair, others wrist-thick. I am told that the daily production could encircle the globe.

Only I don't know, and nobody will tell me, China's yearly production of cable and wire. Further, I will never know how much cable and wire is needed in this vast country. Another state secret. The statistics at an individual plant, in such a context, become meaningless. I have seen that the Chinese can produce nearly everything. The only question is how close their production can come to the nearly unlimited demand of China. That no one could tell me.

Next, my hosts wish to show me the factory kindergartens, three factory clinics, and a sanitarium. They are disappointed when I tell them I have already seen five kindergartens, several hospitals and sanitariums, and that will do.

Their mournful faces sadden me, but I am exhausted with factories. After my refusal, all are silent. An abrupt change of program upsets the Chinese. I feel I have been too hard.

Then one of the workers asks me: "Wouldn't you like to see my home?"

"Yes, and my home," says another outstanding worker. "We are neighbors."

The two men are so pleasant, I cannot refuse. Soon our motorcade zooms toward the workers' quarter.

It seems we are expected, because children line the sidewalk for a mile before the apartment house. They sing, wave, and shout

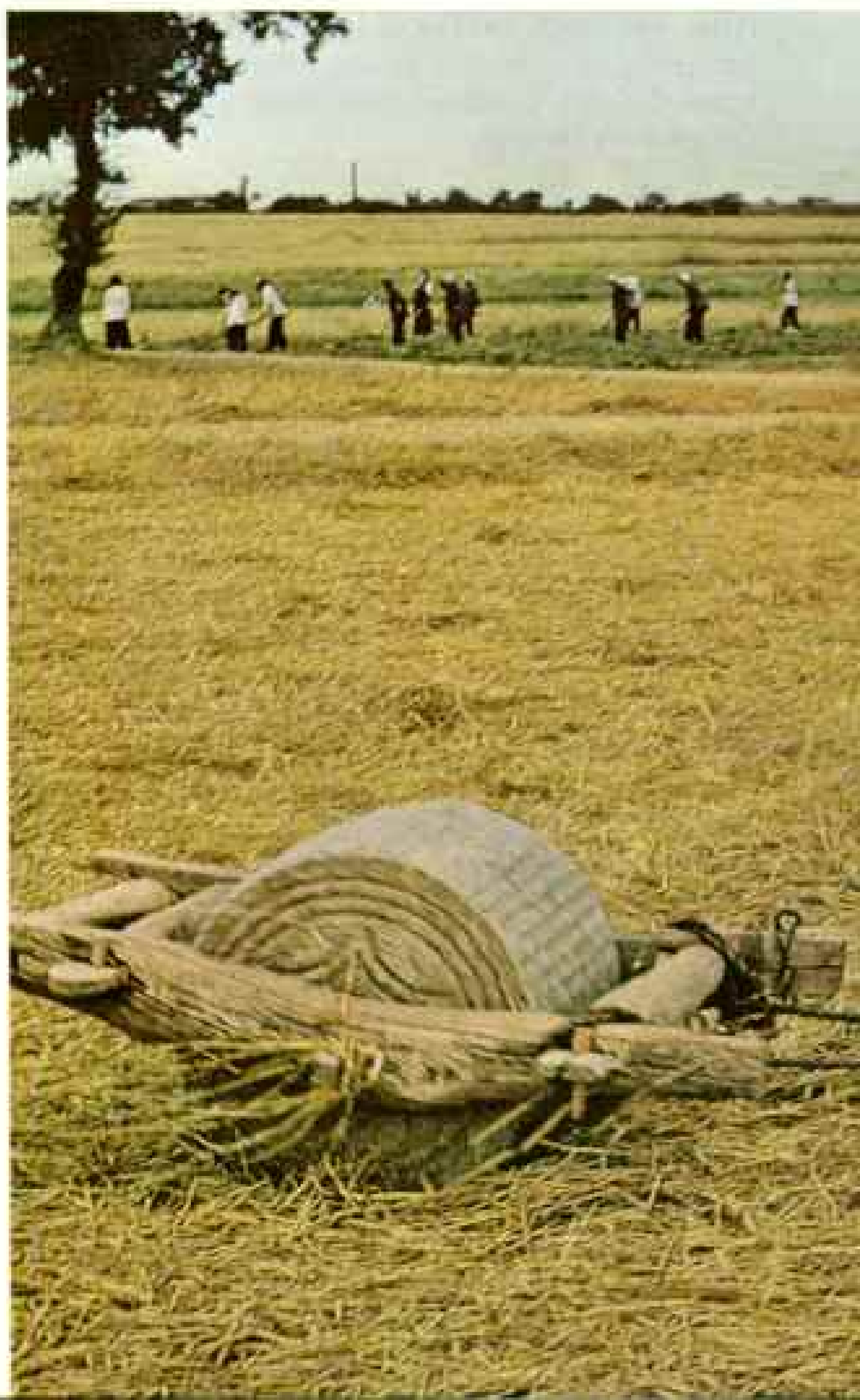


Fording a stream between Sian and Yen-an, the author's Polish-made car stalls midway, but mule and man-pulled cart cross without trouble. Chinese themselves describe their economy as "backward" and their modernization as "herculean." Yet the land's vast potential beckons the Party bosses. As Mao Tse-tung, China's strongman and sometimes poet, has written:

*The earth is so charming,
Like a red-faced girl clothed in
white.
Such is the charm of these
rivers and mountains,
Calling innumerable heroes to vie
with each other in pursuing her.*

Reining His Electric Horse, a Farmer Threshes Wheat

"Village pride," as Mr. Bisch called this contraption, is a motorized stone roller once pulled by bullocks. Members of a Sian commune discovered that the motor was powerful enough to pull yet another roller (left) and thresh twice as fast. Rope in the harvester's left hand steers the machine; cable leads to a power line overhead.



"*Huan ying*," or "Welcome," and clap gaily. Naturally I clap in return. The closer we get, the more children, until the end of the street is completely blocked.

The worker, his wife, and two children inhabit a big airy one-room apartment, with two beds, a table, and three chairs. On the whitewashed walls are pictures clipped from magazines and a few water colors. The kitchen is shared with another family living in the adjoining room.

"Would you do us the favor of having dinner with us?" the worker asks me.

"It's far too much of an inconvenience to your wife; I don't want to burden her with 14 extra mouths."

"Oh, please."

I ask Hsu Yu, and she says I ought to accept. The worker beams as I accept.

"But we are not at all prepared for visitors. Could you be kind enough to come back in an hour's time?"

An hour later, we sat at a heaping table.

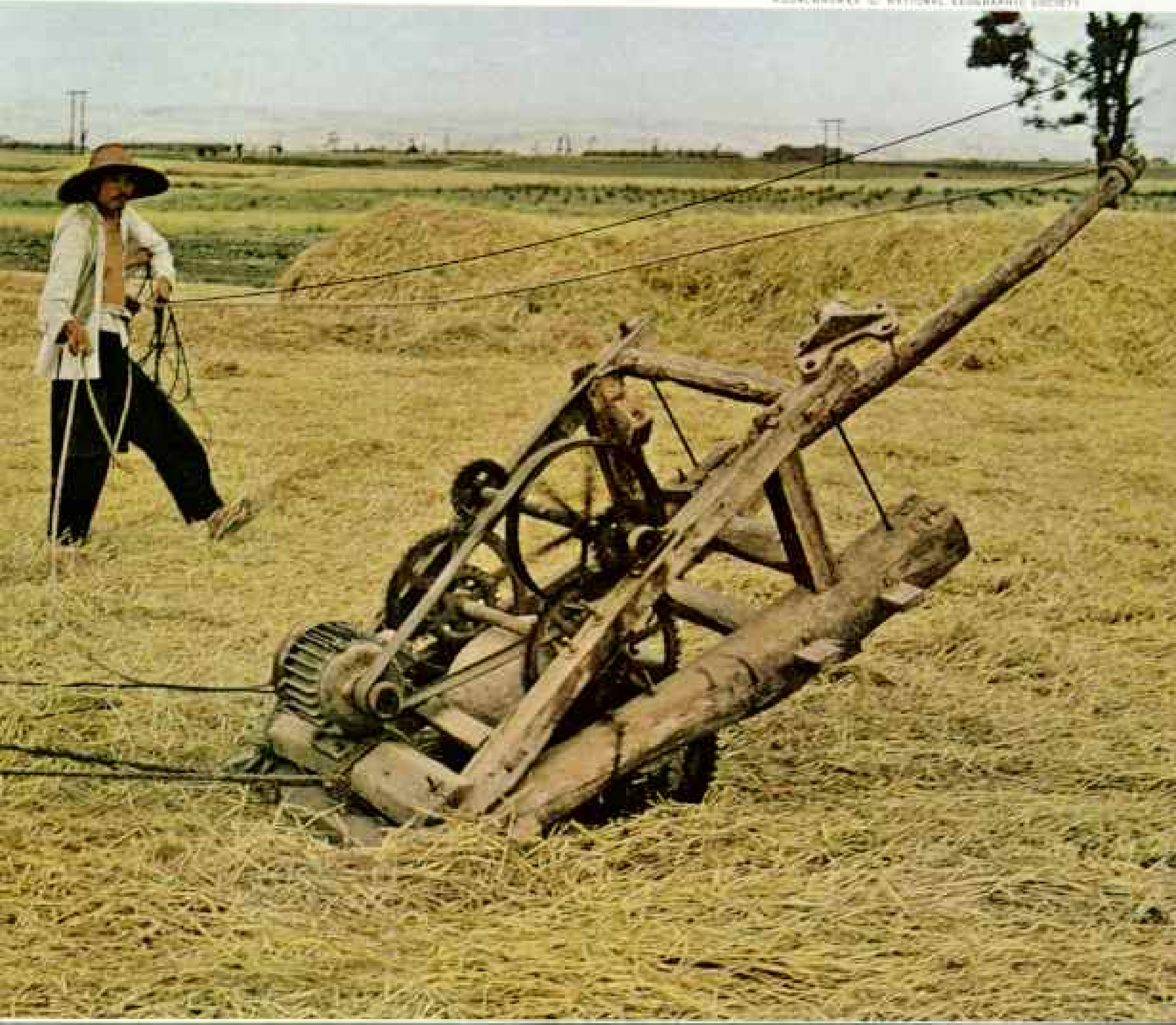
Now there were only five of the most important of us, for the rest of the delegation had discreetly withdrawn. We ate one tasty dish after another, while the housewife prepared still more dishes in the kitchen. Beer was served, and then the housewife found time to come to the table and hear our praise of her culinary talents. But she hadn't time to eat, because now the soup had to be served!

Through the open window we could hear waves of applause as the crowd in the street saluted us untiringly.

As we were leaving, I asked my host, "Where did you live before the revolution?"

He looked at me levelly. "I was very poor," he said. "I slept in the streets."

A visit to Tatung, 265 miles west of Peking, came next on my program. It is an ancient city of 250,000 inhabitants, and Cheng told me that no non-Communist Westerner had passed through for many years. He seemed to be right. When I strolled through the old quarter, such a huge crowd collected that I





Wheat Frosts a Layer-cake Mountain
on the Author's Route to Yanan

"We clear the grasses and trees; we plow and carve the land. . . Splendidly, splendidly the young grain shoots forth. . . So glory shall come to the land." Thus sang a Chinese poet three thousand years



PHOTOGRAPH BY JIMMY WALKER FOR NATIONAL GEOGRAPHIC SOCIETY

ago. As in the past, so today: China yearns for the glory of abundance. With only a tenth of her area under the plow, she hopes to convert more land to agriculture and improve the yield of exist-

ing fields by scientific farming. On this motor trip, the author was repeatedly denied the opportunity to take photographs; his guides invented vague excuses while refusing to stop.

couldn't take photographs. We could hardly make our way back to the hotel through the throng, and for more than an hour hundreds of people milled outside the main entrance, hoping to catch one more glimpse of the strange bearded creature from the West.

The old quarter of Tatung charms the visitor with its tile-roof houses, each different. Glossy red paint—once common in China but today rarely found except on temples—brightened doors and pillars (pages 606-7).

The city's main streets, however, led out through a great wall to a host of new factories blooming on the outskirts. These, of course, were the chief charm of Tatung for my committee.

Giant Buddhas Stare From Caves

I think that most Westerners, though, would find the famous Buddha Caves of Yun Kang, ten miles southwest of Tatung, more of an attraction than any factory. Here during the Northern Wei Dynasty, 15 centuries ago, gifted craftsmen carved more than a score of huge Buddhas within man-made caves. Opposite each statue, they cut a window, creating a fascinating play of light across the gold-covered faces of the contemplative Buddhas (pages 608, 610-11).

Cheng did not miss the opportunity to point out a headless Buddha. "The American capitalists stole that, and they now show it in a museum," he claimed.

A railway journey of 1,000 miles brought me to Sian. From there, I learned with joy, we would continue to Yenan by car. I expressed the hope that this would afford an
(Continued on page 623)

Traffic Trickles Down Shanghai's Bund, Onetime Crossroads of the World

China's most populous city, pre-Communist Shanghai reigned as mistress of the Orient. Here Britain opened China to Western trade in 1843 and Europe followed, creating the alien-ruled International Settlement and French Concession. Here along the Bund, named for the Whangpoo River embankment, European investment reared skyscraping banks and hotels and reaped privileges granted by China's Imperial Court.

Today the waterfront, once jammed with thousands of junks and merchantmen from ports around the world, seems strangely quiet. And Shanghai's seven millions, so individualistic as to be called "untamed" by their rulers, struggle to toe the Party line.





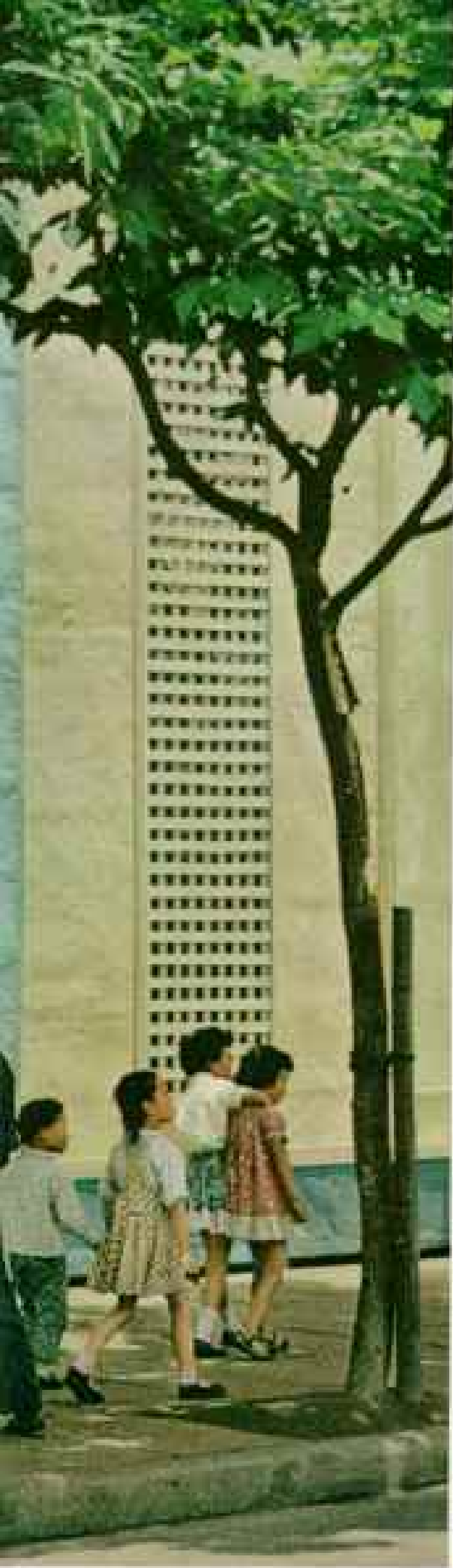


**Billboard Bombast in Shanghai
Issues a World-wide Call to Arms**

"We are firmly determined," says the sign, "to support the struggle against imperialism by the people of Asia, Africa, and Latin America." The author saw the same propaganda poster displayed in all the cities that he visited. Chinese Communists appeal to color prejudice to win support in emerging nations throughout the world.

Squinting home guard at Sian obliges the photographer by drawing a bead on him during compulsory training.





Severed arm of a worker made Chinese medical history last year when Dr. Chen Chung-wei (below) and a medical team successfully sewed it into place. Here in Shanghai's Hospital No. 7, Dr. Chen studies an X-ray of the limb, which was torn off in an industrial accident. Six months later the doctor examines the patient, who has regained use of the arm. Boston surgeons in 1962 successfully performed a similar operation on a 12-year-old boy.



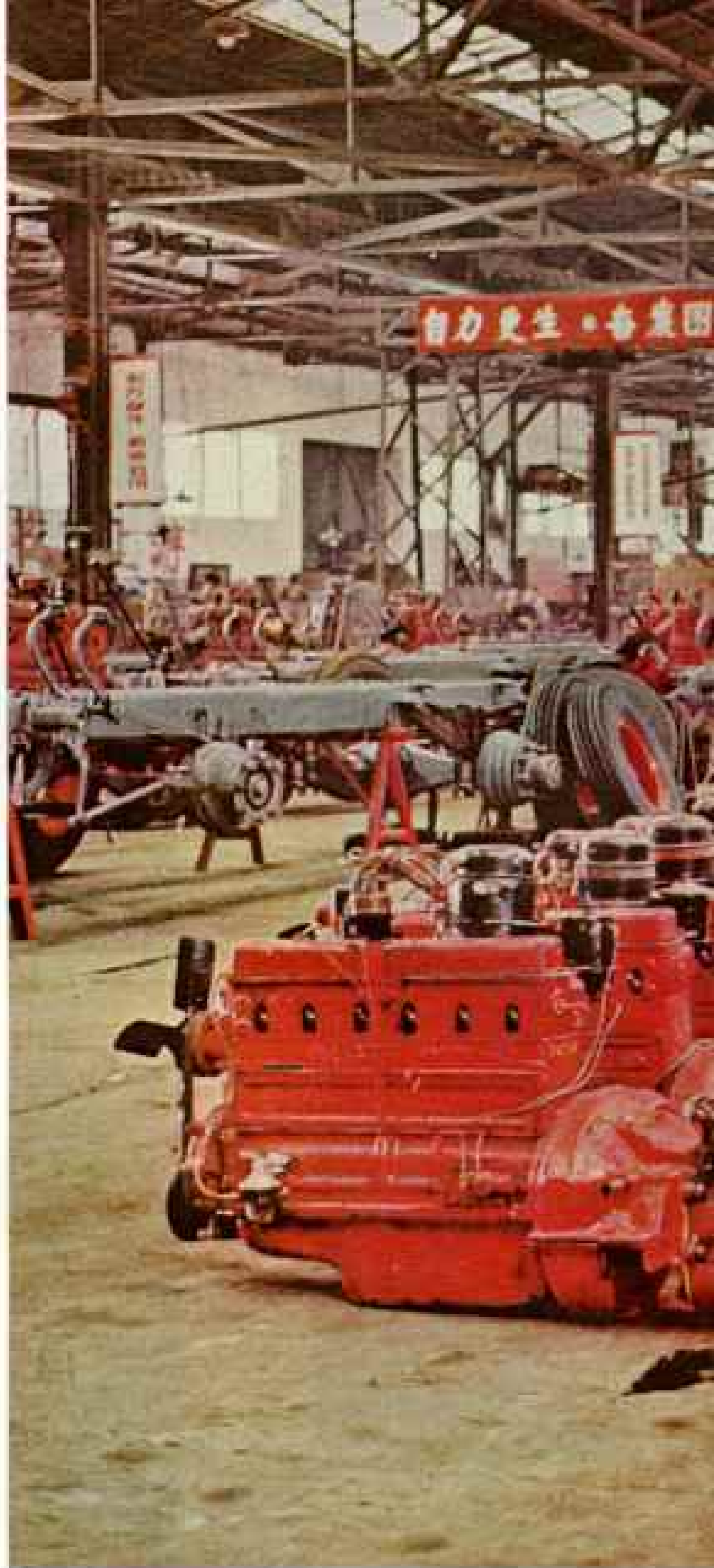
RODACHENBERG (OPPOSITE) AND ESTABLICHOWSKI © NATIONAL GEOGRAPHIC SOCIETY



"Strive for improved production!" a banner exhorts workers at a Shanghai truck-repair and construction factory. Engines are lined up ready for installation. Employees manually assemble some 600 trucks a year. Manufacture and reconditioning of spare parts to save vintage vehicles occupies most of the workers' time. China has cut back its ambitious industrial expansion to concentrate on agriculture.



Earning men's wages for doing men's jobs, women weld a truck frame. Author Bisch saw women digging ditches and operating giant cranes.



Finished product: Trucks await consignment. Transport to speed goods between farm and city remains one of the country's greatest needs.





FATEHPUR (ARVU) AND TECHNIQUES © NATIONAL GEOGRAPHIC SOCIETY

opportunity to photograph the countryside.

We set out early in the morning, beneath a clear sky studded with fleecy clouds—an ideal day for landscape photography. As we wound through a canyon, I asked the driver to stop. He didn't react. Then I asked Hsu Yu. She asked Cheng. He asked the Cultural Committee from Sian.

All conferred earnestly. Three or four miles later, far from the landscape I had wanted to photograph, they finally told me we could not stop because a ferry was waiting for us. Later, I learned that the ferry ran every 15 minutes.

Repeated requests brought repeated refus-

als, and my frustration grew. Then we skirted a beautiful valley where a river glittered in the sun. A gang of workers was busily repairing the road, a marvelous shot against that green-and-silver background.

"Please do stop here."

Again a long discussion.

"Could you please at least stop the car while you're talking?" I pleaded. "Then, if your final answer is no, I shall not take any photographs."

"Mr. Bisch, it is much too dangerous to stop here. Some stones might fall down from the mountain."

"But there must be 300 Chinese workers



Soldering a radio, a Shanghai girl works in a foreign industrialist's former residence. Today the house serves as a "children's palace"—recreation and training center for two thousand youngsters. China has converted other mansions into museums.

repairing the road; if it were dangerous, would they be here?"

Again a discussion, and half a mile farther on came a firm, "No, sir, it's too dangerous."

Three miles later the car stopped.

"Sir, you can take photographs from here."

"I'm not at all interested in this scene," I said curtly.

"Mr. Bisch, nothing means more to us than your safety. And it was dangerous to stop in that other spot."

"I don't believe you," I muttered. The tension between us became almost electric.

But the officials in Yen-an received me with such friendliness that my bad mood evaporated. The next day they showed me the caves where Mao Tse-tung, Chou En-lai, and other leading revolutionary figures had lived during the most difficult period of the Communists' 22-year struggle against both the Chinese Nationalists of Chiang Kai-shek and the Japanese.

These caves, gouged in the harsh and lone-

ly hills of northwestern China, are now a national monument. Within one I saw Mao's scarred field desk, pencil still ready to write some wartime dispatch.

Only the greatest tenacity had led the Communists to Yen-an. In 1934, a well-equipped Nationalist army of 900,000 had isolated the Reds in an abortive Communist state they had created in the southern Chinese province of Kiangsi. Mao's followers fought their way out of the Nationalist vise and for one solid year trekked 6,000 miles to reach the wild fastness of Yen-an.

Steam rises from *chung-tze*, a meat-and-rice



More than 90,000 men started on the epic Long March. They crossed 24 rivers and 18 mountain ranges, averaging a battle a day against harassing Nationalist forces. When the Reds finally staggered into Yen-an in October of 1935, their ranks had been thinned to fewer than 20,000. But that slender roster included almost every high-ranking official of the present government.

My delegation, wearied by the long railway trip and the bickering drive, retired to their rooms after lunch in the village.

"May I go take some pictures?" I asked.

"Of course." My drowsy Chinese friends voiced the eternal, meaningless formula: "Go wherever you want and take pictures of whatever you like."

Leaving the hotel, I noticed a young man leaning against a tree. As I passed, he fell into step behind me. I had heard much about visitors being shadowed in China. I stopped; so did he. I walked; he followed. I bent to tie my shoelaces; he paused behind me. I turned abruptly and strode off in the opposite direction. Another young man seemed to pick me up. I stopped to watch some children playing;

delicacy, prepared by a farmwife near Shanghai. "Be careful when using fire," says the sign.

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EXTREMELY HOT! AND DANGEROUS! BY JACQUES HENRI, FOR © NATIONAL GEOGRAPHIC SOCIETY







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he stopped too. When I went on, he followed.

I met a grandfather carrying a little child with red cheeks and sparkling chestnut eyes. I indicated to the old man that I would like to take a picture of the cheery, colorfully clad little boy. He understood and, through signs, gave his approval. He placed the child on the ground, and I aimed.

Suddenly a young man ran past me. He addressed the grandfather in a harsh voice, and pushed him roughly. The old man, completely cowed, gathered up the child and hurried away. So did the young fellow—and I after him.

The young man lengthened his pace as he went around a corner. I started running, and he ran too, disappearing into a house.

Still seething, I took a few stealthy shots of Yenan's beautiful old houses with their paper windows, gracefully patterned dark framework, and tiled roofs. I soothed my conscience by recalling that I did have Chen Yi's permission to shoot what I wanted.

Reds Arrest the Author

Determined to learn exactly what was going on, I returned to the hotel, loaded the camera with fresh film, and went out again. This time, I went through an elaborate pretense of taking pictures, but actually I never once tripped the shutter.

Suddenly it happened. Two girls of 11 or 12, wearing the red scarves of Young Pioneers around their necks, stopped me. Pioneers, carefully selected by Party leaders, serve as good examples to other children and are themselves prospective Party members. One of the girls grabbed my arm and said something in Chinese. A man of about 30 approached immediately, adding his voice to the accusations. He pointed at my camera and indicated that I should follow him; I seemed to be under arrest.

Massed choirs of students accompany a uniformed troupe enacting a revolutionary drama of the "war of liberation." Three thousand actors entertain a Shanghai audience of 12,000. Slogan above the stage extols Mao Tse-tung. Art in the service of socialism gives the regime one of its most potent propaganda weapons. Workers, farmers, and soldiers are the heroes and heroines of the new theater.

Joyful blue-trousered farm girls dance against the stage's backdrop of power lines.





SHANGHAI. © NATIONAL GEOGRAPHIC SOCIETY



He led me to the hotel, where he and the two Young Pioneers went directly to my committee. There, before an embarrassed Cheng and Hsu Yu, they accused me of having photographed a "bad house," a woman washing clothes in the river, and two men pulling a cart loaded with stone. Obviously, I was gathering reactionary propaganda. Everyone became grave, and I had a brief vision of myself escorted out of China in disgrace. But now that my trap had sprung, I felt a surge of righteous anger.

Chinese Bridle at Reactionary Phrase

I started my defense by describing the young man who had scuttled off after pushing the inoffensive old man. "He ran away like a dog with its tail between its legs," I said.

Cheng leaped to his feet and screamed—something he never did before or after.

"You cannot say that a Chinese runs like a dog! This is a capitalist expression! Do you know, Mr. Bisch, that before the liberation, when Europeans controlled Shanghai, there was a sign at a garden park. It said 'No Chinese and Dogs Admitted.' Do not compare us to dogs!" (Thus an old legend persists: Old China hands deny ever having seen such a sign, but one of them adds, "Chiang Kai-shek used to take credit for the same reform.")

All the Chinese were pale and angry. But I too was fed up. I banged my fist on the table, upsetting a teacup.

"I never dreamed of comparing Chinese with dogs," I said. "I meant only that the young man had run away like a coward. And these other accusations are all nonsense. I have taken no photographs. None! I insist that you take my film for development."

Mollified, the Chinese refused to accept the film. So I tore it out of the camera, stepped on it, and went to my quarters.

Half an hour later, the delegation came to see me. They apologized. Over more green tea, we shook hands.

Nonetheless, driving back to Sian I had the usual trouble taking photographs. Gloomily I thought of giving up further travel in China. But suddenly I remembered a journalist in Peking. He had assured me that every letter going in or out of China would be censored. If so, that might be the best way to channel my complaints.

I wrote to a friend in Denmark, explaining how kind my Chinese friends were, but how little a conducted tour benefited a writer. I concluded, "Oh, had I only a Chinese author to guide me!"

Two days later, arriving in Shanghai, I found the usual committee. But this time it included the head of the Writers' Association, and one of Shanghai's outstanding authors. Funny coincidence, I thought. But later in Hangchow two more authors met me. In Canton I was introduced to three.

Heart of Shanghai's shopping district, Nanking Road boasts big department stores and numerous specialty shops. Once called the Times Square of China for its bustling crowds and mammoth traffic jams, the avenue retains a Western atmosphere only in its architecture. Today the scarcity of automobiles and taxis allows bicycles and scattered pedestrians to move at leisure.

Shadow boxers greet sunrise in a Shanghai square. They perform one of many intricate movements of *Tai chi chuan*, a ritual based on Taoist philosophy. Balletlike movements stress the individual's harmony with nature. All forms of exercise, from calisthenics to sword dancing, have become a national routine.



Swirl of goldfish delights visitors in a garden park in Hangchow. Ancestral home of the wild goldfish, China established the colored varieties. Results of experiments with grotesque mutations show below.

Jaunty red pompons adorn lionhead goldfish in the Peking zoo. Misshapen, swollen skin forms the topknots.



Shady Lane of Feathery Bamboos Enchants Residents of Hangchow

China grows more than 160 kinds of bamboo, some of delicate fragrance. Love of bamboo pervades Chinese life; the tall grass is a favored subject of painting and poetry. People use its wood for chopsticks, its tender fibers to weave sandals. China's extensive "green-up" program, as Reds call their tree-planting drive, impressed the author. These 15-year-old plants stand in a reforestation area.

In Shanghai, one of Cheng's first questions was, "Would you like to meet a Chinese capitalist?"

He was not joking. Leo Nyeng turned out to be the most Communistic capitalist I have ever met. He was also the only Chinese I saw who wore a necktie and a Western-style suit. He and his wife received us at the door of his two-story brick house.

"Nice house you have, sir," I said.

Mr. Nyeng, who had attended Cambridge University, responded in English. "Well, it is really too big. So my wife and I live only on the second floor and rent out the ground floor."

Communist Principles and Interest

"Sir, do you consider yourself a capitalist?"

"Yes, indeed. My father owned many factories and a bank. When he died he left me a very large match factory."

"How can you run a capitalistic factory in a Communist country?"

"Before the liberation, I did run the factory in a capitalistic way. Now I can see how bad I was. I competed, and I was very happy any time I could drive a competitor out of business. I did not consider the poor workers becoming unemployed." Mr. Nyeng spoke with all the fervor of a reformed sinner.

"How do you run your factory now?"

"A committee, of which I am a member, directs it. The state gives me an annual dividend of 5 percent on the capital I have invested in the factory."

"How much interest does one receive in the bank?"

"Accounts on one year's notice receive 5½ percent."



"Then why shouldn't you put your money in the bank?" I asked.

"Well, my money is tied up in the factory, not in cash."

"Do you get 5 percent whether business is good or bad?"

"The 5 percent is guaranteed by the state. So I am thankful to the state. Before the liberation, sometimes I would make 8 or 9 percent, but in other years only 2 percent. Now I know for certain."

Shanghai "Catholic" Ignores Rome

It seemed to me that Mr. Nyeng was less a capitalist—by one-half of one percent—than any Communist with money in the bank. But I did not want to wound him by saying so.

"What will become of your huge fortune when you die? You have no children."

"Oh, money—money doesn't mean anything to me now. I never thought of that. The Party can take care of that better than I!"

"How many capitalists like you are there in Shanghai?"

"Well, we are several—we are many—I don't know how many."

Later, I met some Swedish students and, another day, some journalists. They too had interviewed a Chinese capitalist. His name was Mr. Nyeng.

In Shanghai I also met a practicing priest.

Using a bamboo scoop, a farmer spreads water on rice seedbeds. Vegetable plots surround the electric power pole.

Winter melons, *tung-kua*, move by sampans to Canton on a muddy waterway. Cantonese make a savory soup from *tung-kua* and serve it in the melon's hollowed halves.





DETACHMENT (AROUND THE BACKGROUND) BY JIMMYE BISH, PH. © N.S.S.

Cheng told me that, according to the constitution of the Chinese People's Republic, anybody is free to believe in any religion or in no religion, though, he explained, only old fools went to church.

On Sunday I attended the 7 a.m. Mass at the Roman Catholic Church of St. Ignatius. Though it seats about 800, I expected to see only a handful of "fools," particularly at so early an hour. At least 75 worshipers appeared, and not all of them old.

In the rectory, I met one of the priests, an earnest-looking Chinese of 35. The wall displayed a large picture of Mao Tse-tung and a smaller one of the Holy Virgin.

Even before I could ask a question, the priest began to preach:

"Before liberation, the poor of Shanghai starved in the streets. The foreign capitalists employed only those who attended Christian services. Therefore we had throngs in the churches, but they were not real believers. Now we have 100,000 sincere and faithful Chinese Catholics. Thanks to the Party and to Chairman Mao, it is now possible to obey the commands of God. Today the people of China can exist without stealing."

"Do you go out to the villages and preach the word of God, as Rome expects of its priests?"



Using methods perfected centuries ago, workers tend silkworms at the Swei Tang factory near Canton. Once a family enterprise, sericulture is now a state monopoly. Most silk is exported for needed capital.

Mating silk moths (*Bombyx mori*, above), have all but lived out their lives. Females lay 300 to 450 eggs. Larvae hatch in a week.

Trays of fresh mulberry leaves (upper) are fed to hungry worms four times a day. Voracious worms gorge for 24 days. Two glands in their bodies secrete a viscous fluid that hardens into silk on contact with air.

Silken cocoon (opposite, upper) is spun in three days from a continuous filament 800 to 1,300 yards long. Two to three thousand such shells yield a pound of fiber. Girls sort the heavier female cocoons:

"No, we don't," responded the Chinese priest. Half rising from his seat, he exclaimed, "Rome is no good! Catholics in China supported the enemy during the revolution. The foreign missionary fathers supported Chiang Kai-shek, and the church discriminated against the Chinese priests. We were assistants, nothing more. Thanks to the Communist system, we now have a church of true believers and owe nothing to Rome!"

Later I checked the records. At the time of "liberation," Chinese bishops presided over 30 Catholic dioceses, and the College of Cardinals included in its number Thomas Tien, Archbishop of Peking. It hardly seemed like discrimination.

The most striking case of the effectiveness of Communist self-criticism, or brainwashing, is that of His Imperial Majesty, Hsuan Tung, last emperor of the Manchu Dynasty.



Silk culture



I found his story in a copy of *China Reconstructs*. The emperor, now called simply Pu Yi, described in a signed article how he advanced from being the sacred Son of Heaven to a post as common gardener in Peking's Botanical Gardens.

"The most memorable day of my life was December 4, 1959," he began. That was the day when, after ten years of "re-education," he received a special pardon from the People's Republic. He had been condemned as a war criminal for his role as emperor of the Japanese puppet state of Manchukuo.

He described his emotions—no bitterness, only gratitude; he had come to see "how thoroughly soaked in crime and evil" was the first half of his life. He had experienced "revelation and rebirth."

When he lived in the Forbidden City, 1,000 eunuchs, more than 100 physicians, 200 chefs,

and 200 guards had attended his every whim. But that remembered luxury paled before the pride he felt when he made his first paper box for a pencil factory—not a good one, but made with his own hands. Pride became triumph when he achieved his best total of eight boxes in two hours.

To celebrate this achievement, the warden gave him a treat of candy, and it "tasted better than all the sweets I'd ever eaten."

As a climax to his article, he wrote: "For the first time in my life, on May 9, 1960, I marched in the ranks of a million people of our capital, shouting my support for the struggle carried on by the Japanese people against the signing of the Japan-U. S. Treaty of Military Alliance."

Poor Pu Yi—once a Japanese puppet, now a Chinese puppet.

At Shanghai's People's Hospital No. 6, I

was received by Dr. Chen Chung-wei, China's most famous surgeon. "He is the doctor who rejoined the worker's amputated hand to the arm," Cheng told me proudly.

Dr. Chen, one of the handsomest men I have ever seen, had blue-black hair and a pleasant shy smile. Although he spoke excellent English, he chose to converse in Chinese—through an interpreter—in deference to the Party representatives who noted his every remark.

In all interviews throughout my trip, I observed this same phenomenon. Party representatives were always present and had to be privy to the proceedings. When they spoke no foreign language, the subject of the interview invariably retreated into Chinese.

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The doctor told me of the famous case:

"A worker caught his right hand in a machine and it was chopped off. The factory manager rushed him to the hospital in a taxi; moments later a fellow-worker arrived in another taxi carrying the hand itself in a paper sack. He knew the value of a worker's hand in the struggle to build socialism.

Party Chief Authorizes Surgery

"I immediately telephoned the Party secretary," the doctor continued. "He approved an attempt to reattach the hand. Now all of socialist China stood behind me. I called specialists from other Shanghai hospitals. We went to work, and seven and one-half hours later—thanks to the Party—we had



replaced the hand. If you have time, I shall be happy to screen a color film for you showing the whole case."

The film proved to be of perfect technical quality. First I saw the severed hand and the pitiful bleeding stump.

In the next scene, the handsome doctor hurried toward the telephone. . .

Fadeover. . .

The Party secretary sits behind a massive desk. His telephone rings. His jaw tightens at the news, then he unhesitatingly bestows the blessings of Marx on the project.

Doctors and scientists stream to the hospital in taxis. Group meetings. Long-distance telephone calls.

Close-up . . . The pale face of the anesthe-

tized patient, a worker in the prime of life. Syringes, clamps, needles, forceps, blood. Steady hands join arteries and nerves.

Months later the worker happily returns to the factory, now trained to use his healed hand again.

The film faded out, the door opened, and in stepped a worker who proudly gave me a firm handshake.

He was the same patient that I had seen in the film.

Later, Dr. Chen introduced me to another man, still in a hospital, whose severed arm had been restored (page 621).

Were these scientific hoaxes? I don't think so. Several such cases have been reported in the United States, and, although most West-

ern surgeons doubt that full use of a severed member can ever be restored, Dr. Chen's reports had a ring of authenticity.

Twenty miles from Shanghai, I visited the Tang Yuan People's Commune—one of some 75,000 such collectives scattered throughout the People's Republic. A "labor force" of 10,300 works the Tang Yuan fields, supporting a total of 20,000 members in 4,677 families. The commune has a radio station, several hospitals, fishing ponds, and a yearly production of 11,800 pigs.

Each Chinese commune is a small world

Monsoon Rains Peeled Shallow Pavement

Yen Po People's Commune, 20 miles south of Canton, has no vehicles except bicycles. Shops serving fifteen thousand farm families face the main street. Poles carry power from a new generator, the farmers' pride.

A pool of manpower, the commune mobilizes every facet of life—agricultural, political, social, commercial, and military. Mao Tse-tung terms the commune the "basic unit of society."



unto itself. The commune staffs its own schools, factories, restaurants, and shops. Every person living within its boundaries must be a member.

Life in a commune is hard and drab. Holidays are few, and food, sometimes served in huge community dining rooms, is only adequate. But most of the Chinese I saw tilling the fields seemed to have a sense of security. Tonight they would sleep beneath a roof; tomorrow they would eat, no matter how little.

If the part of China I was allowed to visit was a fair sample, the Communists have at least raised the poor from their timeless misery. Nowhere did I see starvation; nowhere did I see a beggar. And, while I saw numerous men and women with fascinating patterns of patches on their blue working trousers, I saw none in rags.

Cities boast hundreds of new schools. The number of universities has multiplied. Even the humblest villages have hospitals and clinics. Machinery is still scarce, and most heavy earthmoving depends upon thousands of workers lugging buckets of stones, sand, and clay. Yet I saw dams rising throughout China at an impressive pace.

Silk Farm Produces Six Tons a Month

My committee and I entrained for Hangchow, an ancient city full of temples, palaces, and lovely gardens with lotus flowers and goldfish, all once reserved for the emperor. Today it is a tourist lake resort where worthy Communists are sent for rest (pages 630-31).

From Hangchow we flew to Canton, then taxied 40 miles to the Swei Tang factory, famous for silk production.

"Each female moth lays 300 to 450 tiny eggs," the factory leader told me. "They hatch in about a week. Then come the silkworms."

These are kept in huge flat baskets on shelves; one might fear they would crawl all over, but like everybody in today's China, they seem well-organized and disciplined.

"If fed enough mulberry leaves, they will remain in the baskets," the leader said.

After 24 days, the worms spin their cocoons. These are sorted by weight; the female cocoons are heavier and yield more silk than the male. Most cocoons are brought to the silk

processing mill, but a small portion is moved to other baskets, to hatch into moths, so the farm's cycle continues (pages 634-5).

Cocoons to be used for silk are brought to the silk mill where they are boiled to kill the pupae and soften the silk. Girl workers join the nearly invisible thread of five to seven cocoons and feed it into a spinning machine. The factory's total production, I was told, is six tons of raw silk per month.

Farewell on the Bridge

The time had now come for me to leave China. In Canton, crowded and bustling beside the broad Pearl River, I attended a farewell party in the Canton Garden, a delightful restaurant built over a pond. More dishes than ever before, more and better wine, more *kan-peis* (toasts) to friendship between the Chinese people and the people of the Western World.

The next morning, the local Cultural Committee and several local authors saw me to the railway station, where more officials had gathered to say goodbye. They expressed the hope that my writing would create more understanding between the Chinese people and the West.

Hsu Yu and Cheng accompanied me on the three-hour train ride to the Hong Kong border, the last leg of our long six-week odyssey. At the bridge separating China from the British Crown Colony, they insisted on carrying my baggage to the middle of the span—as far as they were permitted to go.

There, I slung all the cameras on my shoulders, and we exchanged farewells. Continuing over the bridge, I turned around several times.

My two friends still stood there, waving. As a nonconformist in China's world of conformity, I had been a long trial to them. We had fought our ideological battles, and, I think, emerged with a mutual respect.

What will Hsu Yu and Cheng and all my other Chinese friends think when they read this article? Will China, so sensitive to the criticism of foreigners, forever close its Bamboo Curtain on me? Or will my outspokenness make us better friends than ever?

I hope it will.

THE END

Startled by a bearded Westerner and his camera, a patron clutches a half-eaten slice of watermelon. Hole-in-the-wall shop in Canton advertises melon at 5 cents a portion. Attendant wears his food handler's hygienic cotton mask. This store may be privately owned; reports indicate that numerous small businessmen still manage to carry on.

ETICHONG © NATIONAL GEOGRAPHIC SOCIETY



地
貴州味
五成生



New Look at Changing China

TAERHHANMAOMINGANLIENHOCHI. This tongue twister, containing as many letters as the entire English alphabet, typifies the problems that beset National Geographic map makers who produced the Society's newest World Atlas sheet, *China*.^{*} Combining the names of two ancient tribes, the almost unpronounceable place name in Inner Mongolia is only one of some 2,000 changes made by the Communist Government of the world's most populous land. In evaluating data gleaned from recent Russian and Chinese maps, U. S. Government sources, and a vast assortment of periodicals and books, the Society's cartographers have re-labeled much of the changing face of China.

Chinese Secrecy Plagues Map Makers

The location of new roads, railways, dams, and other man-made features proved particularly difficult in a land so shrouded in secrecy (see "This Is The China I Saw," page 591). But exhaustive research and painstaking cross-checking produced accurate information.

The southerly province of Yunnan jabs fingers, veined with new roads, toward the "rice bowl" of Indochina. Other roads lead beyond the Burma border and into northern Laos, and toward Thailand's Mekong River boundary. Some 700 miles to the north, red arteries from Szechwan cities converge in Tibet. These routes supply Chinese soldiers on the borders of Kashmir, India, Nepal, Sikkim, and Bhutan.

Spanning 2,650 miles east to west, and with a third of her land mountainous and another third desert, China relies on rail transportation to move the bulk of her freight. On the coursing black lines rides a large share of her economy; on the black-dashed lines, representing railways under construction, ride her hopes for a more prosperous future, now dimmed by the withdrawal of Russian help.

China's first Five Year Plan, beginning in 1953, included laying the first track of the Lanchow-Sinkiang railroad, via the north-western city of Yumen, major oil-producing center and pipeline terminal.

A north-south line is being built from Chengtu in central Szechwan Province to

Kunming in Yunnan. It will skirt Minya Konka, towering 24,900 feet, and 21,190-foot Mount Grosvenor.

Blue symbolizes China's waterways, which nourish her crops or—in floodtime—bring her sorrow. The Huang (Yellow) and Yangtze Rivers, stitched together by the centuries-old Yun Ho—the Grand Canal—water the eastern plains, where the bulk of China's 700 million people live. The biggest areas of blue are the lakes—including new Chinchiang Reservoir—in the Yangtze Valley. They irrigate terraced fields of rice and wheat.

At the mouth of the Yangtze sprawls Shanghai, largest city on the Asian Continent. Ocean-going vessels can navigate 600 miles up the Yangtze to Hankow.

The silt-laden, unnavigable Huang many times has broken through its dikes and changed its course, bringing famine with flood. In recent years the Chinese have tried to harness its power by building giant hydroelectric dams, notably at Sanmenhsia in Honan Province and at Luchia Gorge near Lanchow. But work came to a standstill with the departure of Russian engineers in 1960.

Beyond the ancient Great Wall, indicated by a tongue-and-groove design, trouble smolders all along China's border. Peking, the capital, also questions the 19th-century treaties which ceded to Russia the territories north of the Amur River.

Formosa Charts New Public Works

An inset, scaled 55 miles to the inch, portrays Taiwan, better known as Formosa, haven for the Chinese Nationalist Government and 11,750,000 residents.

The "Beautiful Island" wears a necklace of rails and new roads dangling from Taipei, such as the 17-mile MacArthur Expressway linking the capital to the seaport of Chilung. Taiwan has two other international seaports—recently opened Hualien, on the east coast, and Kaohsiung, facing the mainland a scant 200 miles away.

THE END

^{*}Additional copies of *China*, and of other Atlas Series Maps published as supplements to NATIONAL GEOGRAPHIC, may be ordered for 50 cents each from Dept. 206, National Geographic Society, Washington, D. C. 20036.

Working junks, their lugsails like weathered tents open to the wind, ply the Whangpoo River out of Shanghai. Bamboo battens brace canvas sails. White circles on prows symbolize eyes, the vessels' guiding spirits that look for distant dangers.

THE PRESIDENCY AND

WHEN MRS. JOHN F. KENNEDY organized the White House Historical Association in 1961, your National Geographic Society was asked to produce a guidebook to the Presidential mansion. The Society made this contribution as a public service. The book has sold more than a million copies.

Proceeds of the volume (\$1 a copy or \$1.25 postpaid) accrue to the White House Historical Association, to be used for the purchase of antique furniture, paintings, and further restoration of the White House.

Mrs. Kennedy also suggested a second book, presenting the official White House portrait of each President with a brief biography. Your Society has produced that volume, which goes on sale at the White House this autumn (50 cents a copy or 75 cents postpaid).

Mrs. Lyndon B. Johnson, as enthusiastic as was Mrs. Kennedy about the project, has given her full cooperation.

Working with this fascinating, patriotic material, we became so enthusiastic that we have prepared an expanded series of these

ILLUSTRATION BY H. B. SAUNDERS FROM A SCULPTURE BY T. H. MATTHEW © N. S. S.



HOW IT GREW

By FRANK FREIDEL

Professor of History, Harvard University

Presidential profiles. They will appear as four articles in different issues of NATIONAL GEOGRAPHIC. Illustrated with full-page paintings of our 36 Presidents, portraits of First Ladies, and photographs of Presidential homes and memorabilia, they also feature contemporary engravings of historic moments in the lives of the Presidents.

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MELVILLE BELL GROSVENOR, EDITOR



ON THAT APRIL DAY in 1789 when President George Washington, hands trembling with emotion, delivered his first Inaugural Address to the First Congress, he was well aware of the momentous nature of the enterprise upon which he and the fledgling United States of America were embarked.

"The preservation of the sacred fire of liberty, and the destiny of the Republican model of Government," he pointed out, "are... staked on the experiment entrusted to the hands of the American people."

At the heart of that experiment was the Presidency. Washington was well aware that he must carry a large part of the responsibility for the success or failure of the new Government. The framers of the Constitution had provided in outline for a strong Chief Executive but had filled in few of the details. They had simply envisaged Washington as the first President and were ready to rely upon his judgment and discretion. Generations of Americans have relied similarly upon his successors, as slowly the modern Presidency has evolved with the modern Nation.

After eight years, Washington turned over to John Adams the office he had so effectively established. Adams in turn further molded the Presidency, as indeed have all 36 Presidents of the United States. Each has accepted the office as a solemn responsibility; each has brought to it the best of his talents.

No change has been more spectacular over the past 175 years than the sheer increase in the scope of the office. The Nation of four million agricultural people, which began as a hazardous experiment in the Age of Enlightenment, now has a population fast approaching two hundred million; moreover, it has become the prime bulwark of democracy throughout the world.

Long hair powdered white, George Washington delivers his Inaugural Address in New York City on April 30, 1789. So nervous that his voice often was inaudible, he apologized that he was "unpracticed in civil administration" and announced that he would accept no salary.

President John Adams, more than a century and a half ago, thought the demands of the office were serious enough. "A peck of troubles in a large bundle of papers, often in a handwriting almost illegible, comes every day," he complained to his wife Abigail.

Yet even during the quasi war with France, Adams spent long summer months at his farm in Massachusetts. To be sure, even George Washington criticized President Adams for doing so, but the volume of business was so slight that Adams could conduct it from a single stand-up desk in which he allotted a pigeonhole to each department.

As the Administrative Branch of the Federal Government has grown, Presidents have been forced to slough off many of their earlier routine duties; they no longer sign a fraction of the documents that confronted John Adams, or even Woodrow Wilson.

Some Presidents regarded their years in the White House as an exciting adventure; some found the office onerous. Years before he himself became President, Franklin D. Roosevelt liked to recount how, as a child, he had been ushered in to see Grover Cleveland, who solemnly expressed the hope that the boy would avoid the fate of growing up to be President.

With few exceptions the Presidents have felt themselves peculiarly representative of all the American people, regardless of party or sectional differences.

"In a government like ours," Thomas Jefferson wrote in a private letter in 1810, "it is the duty of the Chief Magistrate . . . to endeavor, by all honorable means, to unite in himself the confidence of the whole people. This alone, in any case where the energy of the nation is required, can produce a union of the powers of the whole, and point them in a single direction, as if all constituted but one body and one mind . . ."

Jackson Called "King" by Angry Whigs

How vigorously the President should assert his powers in behalf of the people was a subject of debate through much of the 19th century and into the 20th.

When Andrew Jackson began to make extensive use of the Presidential veto to thwart his opponents in Congress, and through asserting his party leadership tried to shape Congressional actions, he came under vehement attack. His enemies dubbed him King Andrew I. Seeking an analogy with British Parliaments which had fought against royal

usurpations, they labeled themselves "Whigs."

Several 19th-century Presidents, most notably William Henry Harrison, accepted the Whig view that they should not tamper with the policy-making prerogatives of Congress. Abraham Lincoln as an Illinois Congressman in 1848 concurred, but later as President in 1861 he stretched the powers of the Presidency to the utmost.

His successor, Andrew Johnson, vetoed the Civil Rights Act of 1866 and Reconstruction legislation, but Congress repeatedly overrode his vetoes, and, through impeachment, almost removed him from office.

Most Presidents after Johnson were more amenable to Congress, but James A. Garfield, during a dispute over patronage, wrote privately: "It better be known, in the outset, whether the President is the head of the Government, or the registering clerk of the Senate."

Loneliness Marks Times of Decision

Strong Presidents came into the ascendancy with the advent in 1901 of Theodore Roosevelt, who assumed energetic command in shaping both domestic programs and foreign policies. He too had to face a recalcitrant Congress. In 1936 the second Roosevelt recalled seeing his distant cousin clench his fist and exclaim, "Sometimes I wish I could be President and Congress too." Franklin D. Roosevelt added, "Well, I suppose if the truth were told, he is not the only President that has had that idea."

Like Washington, succeeding Presidents have felt an overwhelming sense of responsibility. Harry S. Truman jauntily displayed a sign on his desk, "The buck stops here," and confessed in his memoirs: "To be President of the United States is to be lonely, very lonely, at times of great decisions."

Since the day that Washington took his oath of office, the American Presidency has inspired awe both in its incumbent and in beholders, combining as it does effective power with enlightened responsibility. The Presidency, in combination and interaction with the Congress and the Supreme Court, repeatedly gives fresh manifestation that in the American Republic a free people can govern themselves with competence and vigor without sacrificing their traditional rights.

The "sacred fire of liberty" to which Washington dedicated his first administration glows on with undiminished brilliance, a beacon to all mankind.



ENGRAVING FROM A PAINTING BY FRANCIS B. CARPENTER, LIBRARY OF CONGRESS

Lincoln's cabinet hears the Emancipation Proclamation. He expanded the powers of the Presidency.



WIDE WORLD

Cleveland tells 4-year-old Franklin D. Roosevelt: "... I wish for you that you may never be President..."



HARVARD COLLEGE LIBRARY

Theodore Roosevelt, a cousin of F. D. R., said of the Presidency: "Ripping, simply ripping!"



Happy to be rid of the burdens of the White House, Taft smiles at Wilson's Inauguration.

LIBRARY OF CONGRESS (LEAGUE) AND WIDE WORLD



WIDE WORLD

F. D. R. in Galveston, 1937, meets a young Texan he will support for Congress. Lyndon B. Johnson, who became the 36th President.

Serious steps at Camp David, Maryland. Kennedy (left) seeks Eisenhower's advice after the Bay of Pigs invasion of Cuba in 1961.



George Washington

FIRST PRESIDENT 1789-1797

GEORGE WASHINGTON, as generations of school children have been taught, was the Father of his Country, and, in the words of Henry Lee, "first in war, first in peace, and first in the hearts of his countrymen." Olympian among Presidents, Washington even in his own lifetime was almost obscured as a person by the awe-inspiring legend enveloping him. But behind the legend stands an impressive human being who, foremost among that gifted coterie of Founding Fathers, wrought a new United States and guided it through its first years.

Decades of training prepared Washington for his leadership in the Revolution and the establishment of the new Republic. Born in 1732 into a planter family in Virginia, Washington received from his parents and half brothers schooling in the morals, manners, and body of knowledge requisite for an 18th-century Virginia gentleman. His birthplace at Wakefield is commemorated with a reconstructed brick mansion on the original plantation site in Westmoreland County. It is now a national monument.

In his youth, Washington pursued two

intertwined interests that gave direction to much of his life—military arts and western expansion. War was almost a normal condition of affairs in those days, as the rivalry between England and France erupted intermittently into lengthy conflict. Washington's half brother Lawrence served in an expedition against Cartagena in Colombia, one of the possessions of the French ally, Spain, and named his estate on the Potomac in honor of the commander, Adm. Edward Vernon. In time, Washington acquired the property and retained the name, Mount Vernon.

At 16 Washington helped survey Shenandoah lands for Thomas, Lord Fairfax. Thereafter he spent much of his life in the saddle, surveying or soldiering in the wilderness.

In 1753, when French soldiers trespassed on lands claimed by Virginia in the Ohio country, Governor Robert Dinwiddie sent the 21-year-old Washington to warn them away. The following year, commissioned a lieutenant colonel, he fought the first skirmishes in what grew into the French and Indian War. The French defeated Washington and his force of about 300 men, and in 1755 surrounded and routed the British regulars under Gen. Edward Braddock. Washington, who served as an aide to Braddock, escaped injury, although four bullets ripped his coat and two horses were shot from under him.

Young Washington holds a surveying instrument while his companion pays out chain to fix distance. At 14 Washington surveyed his neighbors' fields. At 16 he plotted Lord Fairfax's lands, sleeping under "one thread Bear blanket with double its Weight of Vermin. . . ." His surveyor's office at his father's Ferry Farm estate near Fredericksburg, Virginia, is open to the public. Wakefield, the farm on which Washington was born, is now a national monument.

Giant of his time, Washington stood six feet two and weighed 200 pounds. Gilbert Stuart's portrait is the only object in the White House that has been there since its occupancy in 1800. Dolley Madison in 1814 delayed her flight from the invading British until she safeguarded the canvas.



ENGRAVING BY H. H. WELLS FROM A FACSIMILE BY F. D. L. HARLEY, LIBRARY OF CONGRESS © M. D. C.



For several years thereafter, as a colonel commanding a force of only 300 Virginians, he undertook the difficult task of defending a 350-mile frontier against Indian raids.

From 1759 to the outbreak of the American Revolution, Washington enjoyed a placid life, managing his lands around Mount Vernon⁹ and serving in the Virginia House of Burgesses. Married to a widow, Martha Dandridge Custis, he devoted himself to a busy but happy round of life among his stepchildren and friends, enlivened by fox hunts and much entertaining.

Like his fellow planters, Washington felt

⁹See "Mount Vernon Lives On," by Lonelle Aikman, NATIONAL GEOGRAPHIC, November, 1953.

himself exploited by British merchants and hampered by British Government regulations. His experiences both as a planter and as a military leader made him increasingly dissatisfied with the Crown.

As the quarrel between the colonists and the mother country grew increasingly acute, Washington moderately but firmly voiced his resistance to British restrictions. He warned, "... more blood will be spilt . . . if the ministry are determined to push matters to extremity, than history has ever yet furnished instances of in the annals of North America."

Washington and his fellow Virginians were of no temper to stand by while British troops stifled liberty in the colonies. He was elected

Rebuilt stockade and storehouse revive Fort Necessity near Union (now Uniontown), Pennsylvania. Washington built the fort in 1754 while leading an expedition against the French. His march out to surprise a French detachment touched off the French and Indian War. When he returned to Fort Necessity, a 900-man French force attacked. After a day's fighting in a driving rainstorm, he surrendered and returned to Virginia with his disarmed men. The defeat—Washington's only formal surrender—induced Great Britain to send an expedition to Virginia under Gen. Edward Braddock. Washington joined him as an aide.

Washington reads the burial service over General Braddock. Ignorant of frontier warfare, Braddock rejected the idea of fighting French and Indians with their own guerrilla tactics. As he advanced on Fort Duquesne (Pittsburgh) in 1755, he and half his men fell in battle. Retreating wagons ran over Braddock's grave to obliterate all signs lest Indians dig up the body for its scalp.

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a delegate to the Second Continental Congress. By the time it assembled in Philadelphia in May, 1775, the battles at Lexington and Concord had taken place. Now a southerner was needed to command the minutemen assembled at Cambridge. Such a leader would bring the backing of all the colonies to the struggle thus far confined to New England. Of all the delegates to the Continental Congress, Washington was most imposing in his chosen blue uniform as a Virginia militia commander, and Congress elected him Commander in Chief.

On July 3, 1775, at Cambridge, Massachusetts, Washington assumed command of the ill-trained army and embarked upon a war

that was to last six grueling years. The unwillingness of the British Government to grant concessions soon made apparent to Washington that this must be a war for independence—a viewpoint Congress confirmed on July 4, 1776.

Washington faced discouraging obstacles. The new state governments were usually lukewarm in their support, and Congress, often suspicious of Washington's military power, seldom gave him the men and supplies he needed. Washington, far from assuming dictatorial powers, was compliant with the orders of Congress, even, at times, when they went against his military judgment.

Working such long hours that biographers

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EXTREMES BY ELYSE BARK © NATIONAL GEOGRAPHIC SOCIETY





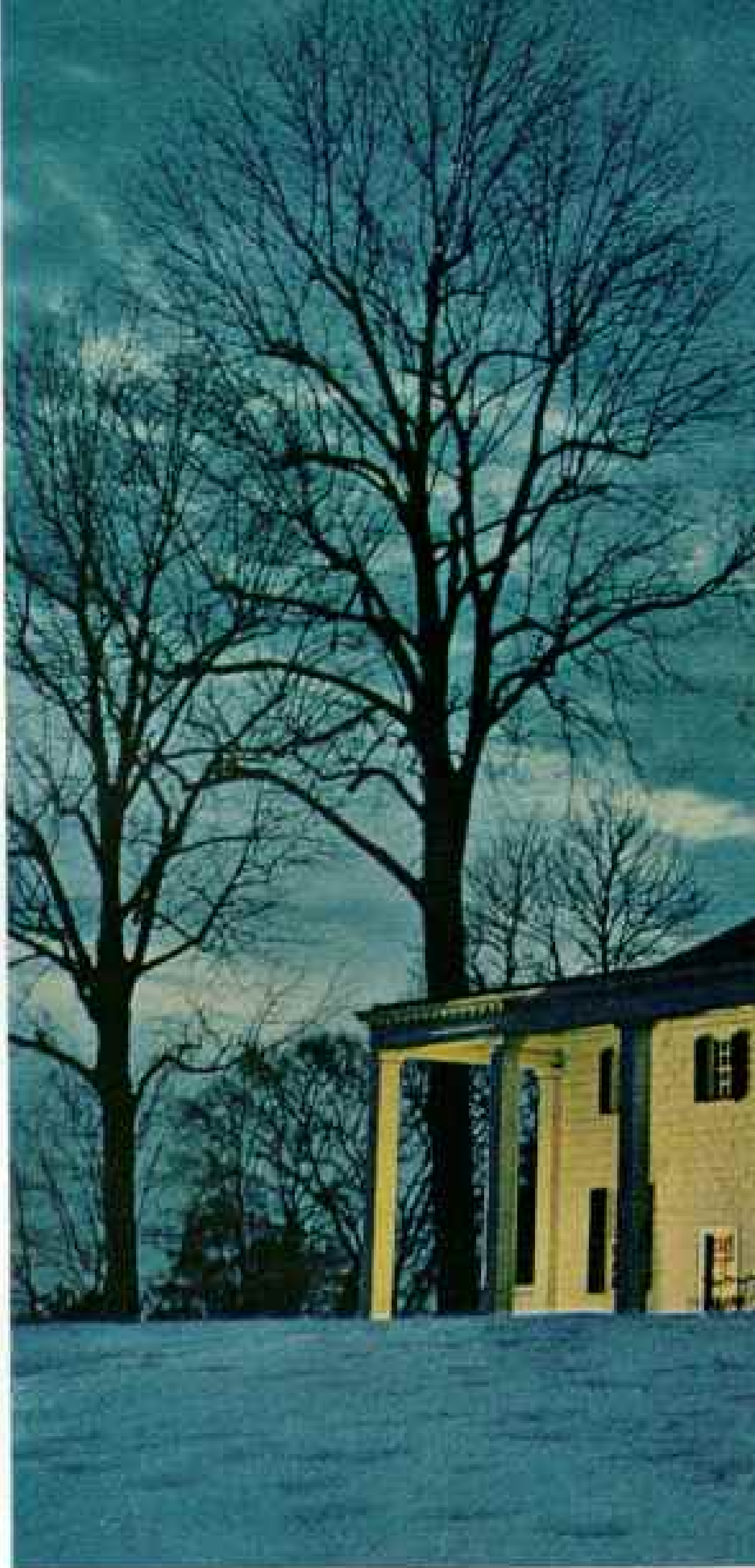
THE MOUNT VERNON LADY'S ASSOCIATION

First First Lady. Martha Washington paid \$18 to Charles Willson Peale to paint this miniature in 1776 when she was 45. Later she described herself as an "old-fashioned Virginia house-keeper, steady as a clock, busy as a bee, and cheerful as a cricket."

Mount Vernon yearly receives more than a million visitors, who respond to Washington's own invitation: "I have no objection to any sober or orderly person's gratifying their curiosity in viewing the buildings, Gardens, &c. about Mount Vernon." He felt "No estate in United America is more pleasantly situated" than his Potomac-side home.

have wondered when he found time to sleep, he somehow managed to build and maintain an army. He realized early that the best strategy for his weak, inexperienced troops was to harass the British rather than risk an all-out assault. He reported to Congress that "we should on all Occasions avoid a general Action, or put anything to the Risque, unless compelled by a necessity, into which we ought never to be drawn."

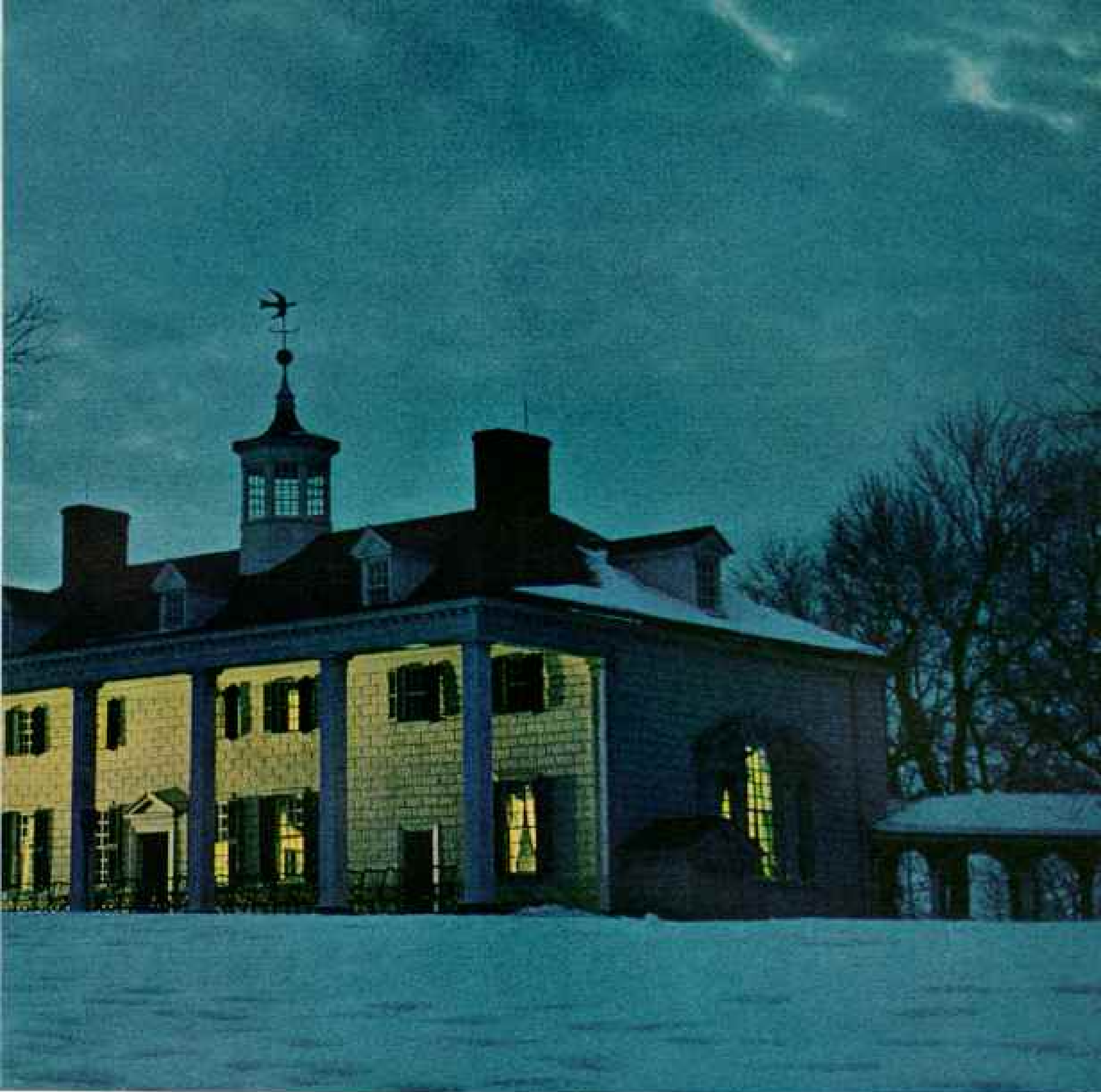
In ensuing years, from time to time he fell back slowly before superior British forces, then struck unexpectedly. It was sound strategy, and while Washington has seldom been ranked among the most skillful generals, he was an able commander.



Above all, he demonstrated his singular organizing talents and his unparalleled fortitude in the face of adversity. It was this fortitude that carried him through the bleak winter of 1777-78 at Valley Forge, its log huts now restored.⁶ It also carried him through later discouragements, even after—with the aid of French allies—he had forced in 1781 the surrender of Cornwallis at Yorktown, where earthworks still bristle with cannon.

Yorktown ended the active fighting, but the Continental Army remained unpaid and restless. To Washington's acute dismay, one of the colonels proposed making him king.

⁶See "Washington Lives Again at Valley Forge," by Howell Walker, NATIONAL GEOGRAPHIC, February, 1954.



STYLING: JANE BROWN; PHOTOGRAPHY: NATIONAL GEOGRAPHIC PHOTOGRAPHER THOMAS HERRON © N.G.P.

But, like his Roman model Cincinnatus, he wished upon the conclusion of peace in 1783 to retire to his fields.

As Washington, back at Mount Vernon, soon came to realize, the American Nation under its Confederation Government was not functioning very well. Powers were inadequate to maintain respect for American shippers and merchants overseas; to protect the frontier against incursions by British fur traders and marauding Indians, or to restrain the states from engaging in economic reprisals against each other.

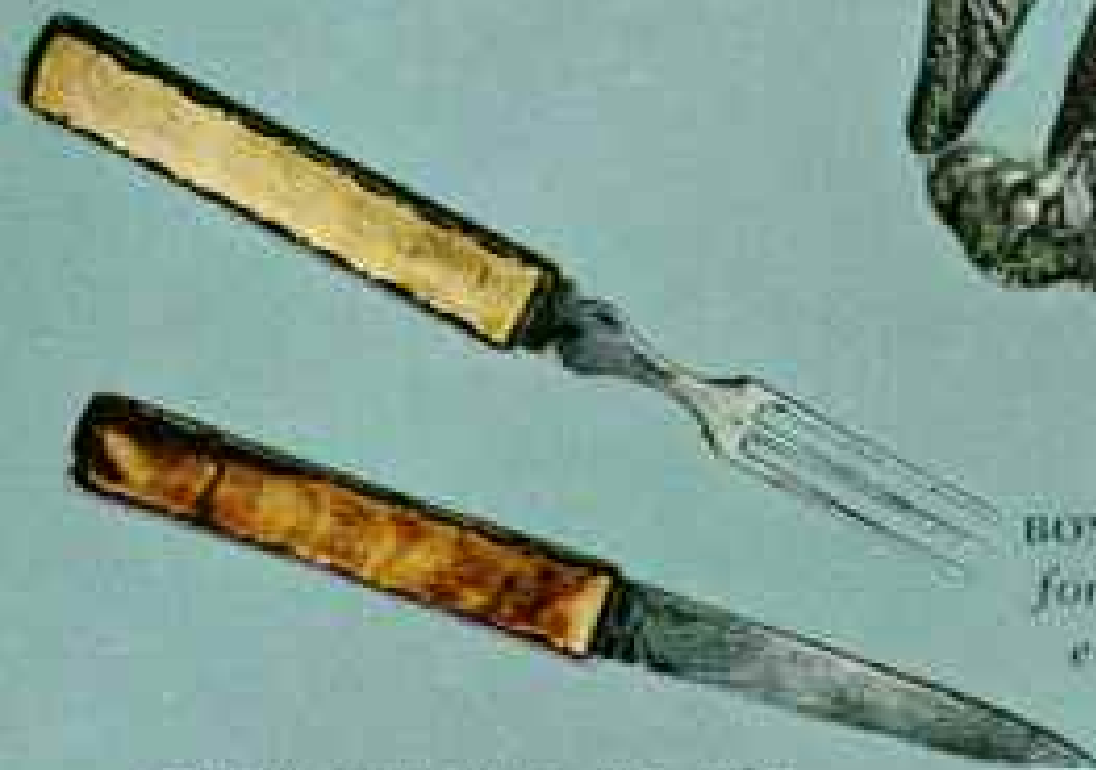
"Internal dissensions, and jarrings with our Neighbours," wrote Washington, "are not only productive of mischievous consequences, as

it respects ourselves, but has a tendency to lessen our national character, and importance in the eyes of European powers."

The news that Massachusetts farmers had taken up arms against heavy taxation led Washington to lament, "We are fast verging to anarchy and confusion!" Hence he became an influential mover in the steps leading to the Constitutional Convention at Philadelphia in the summer of 1787. Washington, presiding over the Convention, took little part in the debates, but lent his great conciliatory talents and his prestige to the framing of a stronger government.

As everyone had expected, as soon as the Constitution had been ratified and the new

SILVER EAGLE adorned a cockade on Washington's hat. This and the accessories below served the Father of his Country through the years of the Revolution. Mount Vernon displays the mementos.



BONE-INLAID KNIFE and fork went with the general on his campaigns.

SILVER SPURS were given by Washington to Lt. Thomas Lamb during cold and hungry days at Valley Forge.



IN WHIPPING WINDS AND DRIFTING SNOW, Washington and young Lafayette share their soldiers' hardships in the bitter winter of 1777-78 at Valley Forge. Only the general's indomitable will held together the Continental Army of 11,000 men.



Lord Cornwallis's army marches out of Yorktown in surrender on October 19, 1781—last battle of the Revolution. Victory marked the end of six years in which Washington fought the British in the field and withstood cabals aimed at undermining his authority. Declining salary, he paid his own expenses; Congress reimbursed him after the war. Tardy enlistments and discouraging desertions never eroded his devotion to the cause of liberty.

In John Trumbull's oil painting, displayed in the U.S. Capitol, Washington sits on a brown charger. His deputy, Maj. Gen. Benjamin Lincoln, on the white horse, conducts the British file to stack their arms. Washington delegated the honor because Cornwallis refused to appear.



UNITED STATES CAPITOL HISTORICAL SOCIETY © NATIONAL GEOGRAPHIC SOCIETY

machinery of government began to operate, the Electoral College unanimously cast its ballots for Washington for President. With considerable misgivings, Washington accepted.

On April 30, 1789, Washington, standing on the balcony of Federal Hall on Wall Street in New York, took his oath of office as the first President of the United States (page 657). When he entered the Senate chamber to deliver his Inaugural Address before the assembled Congress, his face was grave. His voice was low and the words almost inaudible.

The challenge facing President Washington and the fledgling Government gave him full reason to be grave. The United States was a weak agricultural republic in a world dominated by large unfriendly monarchies. Its population in 1790 was only 4,000,000, of whom 700,000 were slaves; its treasury was empty; it possessed no army or navy worthy of the name. The Constitution was no more than a framework, silent on many details.

“As the first of every thing, *in our situation*

will serve to establish a Precedent,” Washington wrote James Madison, “it is devoutly wished on my part, that these precedents may be fixed on true principles.”

“Washington’s Presidency was nothing if not painfully constitutional,” Clinton Rossiter has written; Washington “did the new republic a mighty service by proving that power can ennoble as well as corrupt. . . .”

Washington was of no disposition to infringe upon the policy-making powers that he felt the Constitution bestowed upon the Congress, and, except for exploring questions of constitutionality, did not question measures it enacted. On the other hand, the determination of foreign policy became preponderantly a Presidential concern.

When Washington, accepting literally the constitutional proviso that he should negotiate treaties with the advice and consent of the Senate, appeared before that body in person with a list of queries, the Senators, jealous of their prerogatives, refused to give him instant

answers. "This defeats every purpose of my coming here," Washington fumed. Thereafter he negotiated treaties as he judged best and sent them to the Senate to ratify or reject.

Again, while the Senate, according to the Constitution, had to give its consent to Presidential appointees, Washington insisted he could remove them without permission.

As Chief Executive, Washington gave considerable authority to his department heads, and gradually came to depend upon them for advice, at first through written opinions, then as a Cabinet. At these meetings, unlike most of his successors, he ordinarily did not set forth his own opinion, and unless the Cabinet was evenly divided, followed the recommendation of its majority.

This reluctance to wield executive authority singlehandedly has led many later historians to feel that Washington was eclipsed by his subordinates. It is easy to overlook the fact that Washington, while slow and deliberate, was also thorough in his analysis of problems,

and that he was more balanced in judgment than his subordinates. There was never any question at the time but that Washington was President, and that national policies had to have his approval. And Thomas Jefferson in 1796 admitted, "One man outweighs them all in influence over the people."

Jefferson spoke from firsthand knowledge, since clearly, during the years when Jefferson served as Secretary of State (and thereafter also), Washington's was the controlling hand in foreign affairs. Even before he became President, he felt strongly that it would be disastrous for the new Nation to become embroiled in the quarrels of the European titans. He wrote in 1788, "I hope the United States of America will be able to keep disengaged from the labyrinth of European politics and Wars. . . . It should be the policy of United America to administer to their wants, without being engaged in their quarrels."

When the French Revolution led to a major war between France and England, Thomas

"G. Washington" in the map title opposite shows the autograph of the 19-year-old surveyor. Four decades later, full of years and honors, the President introduced more flourishes (page 646) but still clung basically to the firm signature of his youth.

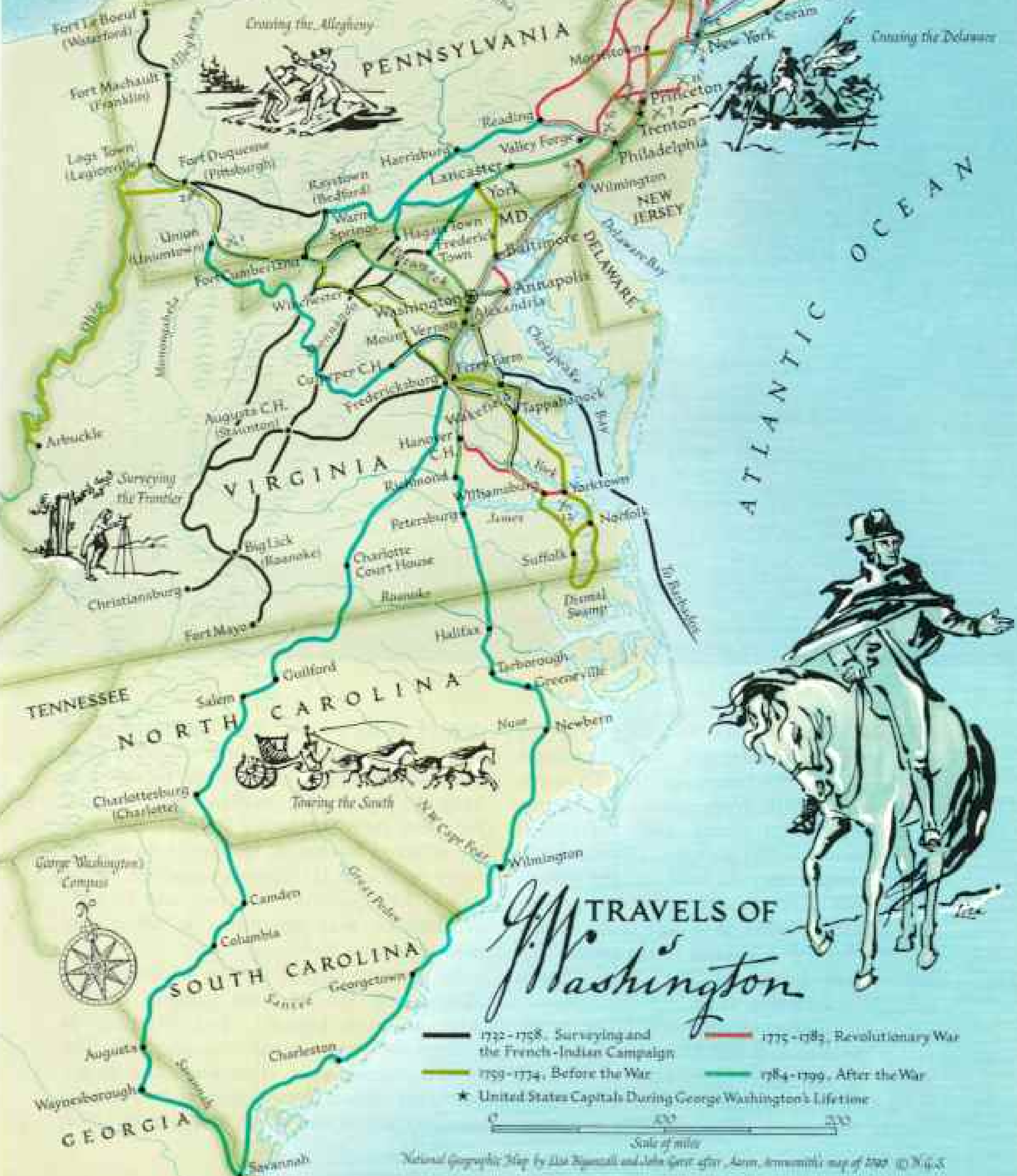
Victorious after long years of war, Washington resigns command of the Continental Army to resume the life of a Virginia squire, December 23, 1783. Edwin White's canvas hangs in the Annapolis State House, where Washington laid down his military power.



COURTESY STATE HOUSE, ANNAPOLIS, MARYLAND © A.S.S.

WASHINGTON'S MAJOR BATTLES

1. Fort Mifflin 1776
2. Fort Mifflin 1776
3. Siege of Fort Mifflin 1776-77
4. Long Island 1776
5. Harlem Heights 1776
6. Red Bank 1777
7. Germantown 1777
8. Red Bank 1777
9. Red Bank 1777
10. Red Bank 1777
11. Red Bank 1777
12. Red Bank 1777



TRAVELS OF
George Washington

- 1732-1758, Surveying and the French-Indian Campaign
- 1759-1774, Before the War
- 1775-1783, Revolutionary War
- 1784-1799, After the War

★ United States Capitals During George Washington's Lifetime





Jefferson, Washington's Secretary of State, was ardently pro-French, and Alexander Hamilton, his Secretary of the Treasury, equally pro-British. Washington insisted upon a middle, neutral course until the United States could become stronger. Given twenty years of tranquillity, he believed, the American Nation could become sufficiently powerful to "bid defiance in a just cause to any power whatever." Thanks to the course that Washington firmly set, the United States gained those twenty years.

In one respect, Washington failed to envisage the direction the American Commonwealth would take. Like many of his contemporaries, he found the idea of political parties repugnant. He expected to be "Presi-

dent of all the people" and was disappointed when by the end of his first administration two parties began to develop. He tried to keep the contending leaders, Hamilton and Jefferson, both within his Cabinet. But if he were forced to choose, his would have been more nearly the Hamiltonian position. At the end of 1793 Jefferson resigned, and by 1795 Washington was appointing to office only men of known Federalist views.

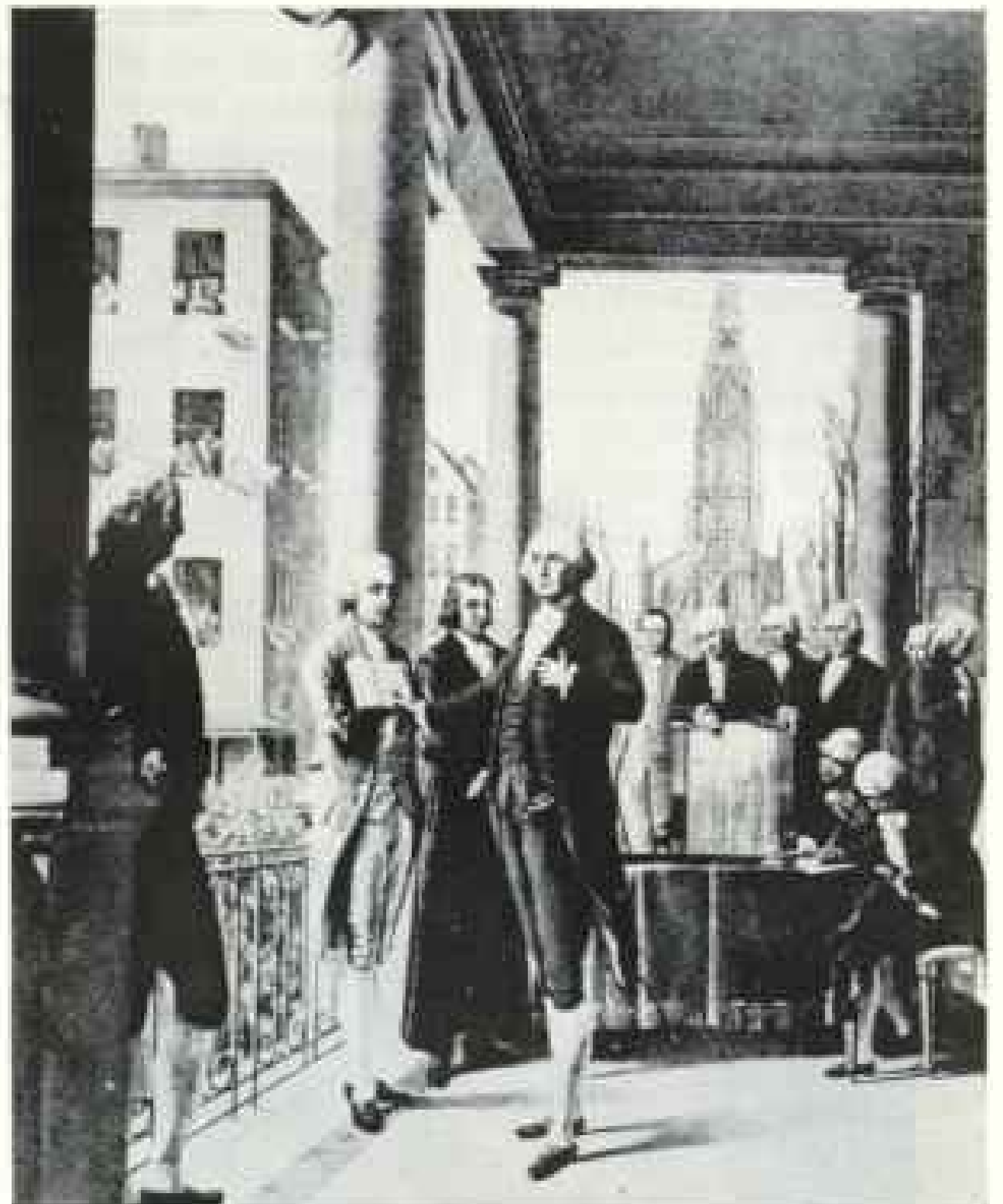
In creating respect for the United States, Washington felt he must comport himself with as much formality and ceremony as though he were a republican monarch. The firm insistence upon ceremonial had its advantages. When Washington visited Massachusetts at the end of his first year in office,



ENGRAVING BY J. BOGERT FROM A. WENYER © 1833

Master oarsmen row the Father of his Country up the East River. New York City tumultuously welcomes the hero, arriving from Mount Vernon for his first Inaugural. Washington recorded himself both pleased and pained by "the display of boats . . . the roar of cannon, and the loud acclamations of the people as I passed along."

First in peace, Washington takes his oath of office as the first President of the infant Republic, April 30, 1789. From now on, his every action will set a precedent. Hand on Bible, he stands on the balcony of a Wall Street building lent by New York City as a Federal Capitol.



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Governor John Hancock tried to force the President to pay the first call, and, failing, gave way. The President, it thus became clear, would take precedence over governors.

Countrymen Urged to Unite

Wearied of politics, feeling old and tired, Washington determined to retire at the end of his second term. In September, 1796, as his political testament, he published a Farewell Address in which he urged his countrymen to form a union of hearts and minds, foreswearing excessive party spirit and geographical distinctions. In foreign affairs, he warned against long-term alliances. The United States should demonstrate to Europe that "we act for ourselves, and not for others."

Washington enjoyed less than three years of retirement at Mount Vernon, for he died of a throat infection December 14, 1799. The four-poster in which he lay still stands in his room looking down on the Potomac.

For months the entire Nation mourned him. Orators and preachers paid tribute with flowery hyperbole, but said less than Abigail, the wife of President John Adams, who commented to her sister: "He never grew giddy, but ever maintained a modest diffidence of his own talents. . . . Possessed of power, possessed of an extensive influence, he never used it but for the benefit of his country. . . . If we look through the whole tenor of his life, history will not produce to us a parallel."

John Adams

SECOND PRESIDENT 1797-1801

JOHN ADAMS is known as the President who saved the United States from fighting a needless war. He once suggested for his epitaph, "Here lies John Adams, who took upon himself the responsibility of the peace with France, in the year 1800."

This was Adams's crowning achievement, but he was also one of the leading patriots in the long struggle for colonial rights, a prime mover for the Declaration of Independence, a valued diplomat, the first Vice President, and the second President.

Adams was a learned and thoughtful man, master of the classics and the law, and more remarkable as a political philosopher than as a politician. "People and nations are forged in the fires of adversity," he once asserted, doubtless thinking of his own as well as the American experience.

For several generations his forebears had farmed stony fields at Braintree in Massachusetts Bay Colony. There on October 19, 1735, Adams was born in a salt-box cottage.



The house still stands, the oldest original Presidential birthplace. It and the smaller house next door, where his son John Quincy was born, are preserved as historic sites in what is now Quincy (page 661).

Though early identified with the patriot cause, John Adams, a Harvard-educated lawyer, undertook the unpopular task of defending the British officer who he felt was unjustly charged with responsibility for the Boston Massacre. The officer was acquitted.

Adams Approved of Boston Tea Party

Adams was distrustful of mobs, yet considered the Boston Tea Party, which dumped cargoes of taxed tea into the harbor, "the grandest event which has ever yet happened since the controversy with Britain opened."

He became one of the most vigorous delegates to the First and Second Continental Congresses. By the summer of 1776 he was a leader in the movement for independence.

Adams spent most of the remainder of the Revolutionary War on diplomatic missions, serving in France and Holland and helping negotiate the Treaty of Peace. From 1785 to 1788 he was Ambassador to the Court of St. James's, returning in time to be elected Vice President under George Washington. Adams's two terms as Vice President were frustrating experiences for a man of his vigor, intellect, and vanity. When he suggested an elaborate title for the President, his reward was to be himself mocked as "His Rotundity."

Like Washington, Adams seldom tried to function as a party leader, leaving the organi-

Wife of one President, mother of another, Abigail Adams managed the Adams farm in Massachusetts during the Revolution. Experience in Paris and London as a diplomat's wife made her an astute First Lady. Adams's reliance on her good sense gave her the bitter nickname "Mrs. President." First mistress of the White House, she hung washing in the unfinished East Room to dry.

Burning with patriotic fire, strong-minded John Adams put oratory and law training to good use in the Revolutionary struggle. In the Continental Congress he led the floor fight for the Declaration of Independence.





zation of the Federalists to Hamilton. Adams was more moderate than Hamilton in his political thinking. Both men were afraid of the volatile masses and feared that a government responsive to them might bring on excesses like the French Reign of Terror. But Adams, unlike Hamilton, regarded government by the well-born and rich as equally distasteful. To him the British political institutions, "purged of their corruptions," seemed ideal.

Adams's stubborn moderation was badly needed as he took over the administration from Washington. The war between the French and British was causing great difficulties for the United States on the high seas and intense partisanship among contending factions within the Nation.

As Washington was leaving office, Jefferson

wrote, "The President is fortunate to get off just as the bubble is bursting, leaving others to hold the bag."

Although Adams delivered a mild Inaugural Address, promising that he would continue Washington's policies, the Hamiltonians considered him too conciliatory toward the Jeffersonians. And the party of Jefferson became increasingly hostile.

The focus of the new administration was upon France, where the Directory, the ruling group, had refused to receive the American envoy and had suspended commercial relations. Adams, calling Congress into special session, announced what in effect was a war crisis. He recommended the arming of merchant ships, the speedy building of a navy, and if necessary the recruiting of a larger



ILLUSTRATION BY DAVID S. BRYER, NATIONAL GEOGRAPHIC STAFF © N.G.S.



Spectacles and quill pen rest atop a stained diary in the John Adams House at Quincy, Massachusetts, as if the writer had merely paused to rub tired eyes. Adams in 1775 began a collection of family diaries and papers that by 1889 had mounted to 400,000 pieces and is now being published.

Wisteria climbs the Old House in Quincy, which John Adams bought in 1787. Four generations of Adamses brought furnishings from missions abroad.

Birthplaces of two Presidents began as farmhouses. Now engulfed by Quincy, they look much the same as in this woodcut of more than a century ago. John Adams was born in the wooden salt box on the right, built about 1681. His son John Quincy was born in the other cottage, dating from 1716.

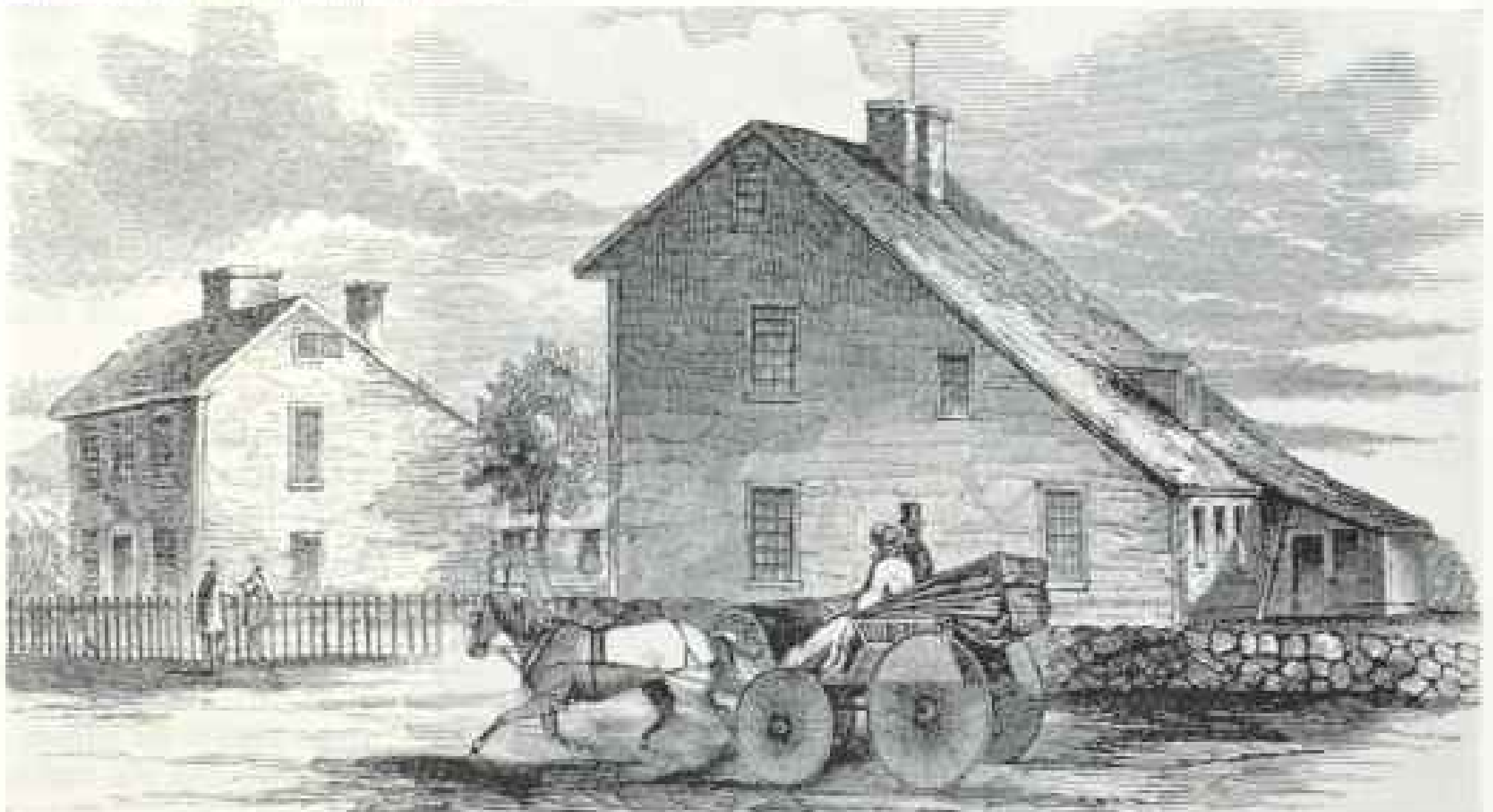


ILLUSTRATION BY DAVID S. BRYER, NATIONAL GEOGRAPHIC STAFF © N.G.S.

army. Republicans in Congress whittled the recommendations to authorization of three frigates, the calling out of 80,000 militiamen if needed, and the arming of only those merchantmen in the East Indies or Mediterranean trade.

Adams sent three commissioners to France, but in the spring of 1798 word arrived that the French Foreign Minister Talleyrand and the Directory had refused to negotiate with them unless they would first pay a substantial bribe. Adams reported the insult to Congress, and the Senate printed and distributed the correspondence, in which the Frenchmen were referred to only as "X, Y, and Z."

The Nation broke out into what Jefferson called "the X, Y, Z. fever," increased in intensity by Adams's exhortations. He stated that there was "no alternative between war and submission to the Executive of France." The populace cheered itself hoarse wherever the President appeared. Never had the Federalists been so popular. Congress appropriated money to complete the three new frigates and build additional ships, and authorized the raising of a provisional army.

President Adams did not call for a declaration of war, but hostilities began on the seas. At first, American shipping was almost defenseless against French privateers. But by 1800, armed merchantmen and U. S. warships were clearing the sea lanes. The most famous of that fleet survives today.

The *Constitution*—"Her deck, once red with heroes' blood"—is on exhibition at the Boston Navy Yard. No mere museum, "Old Ironsides" still ranks as a commissioned ship of the United States Navy.

Despite several brilliant naval victories, Adams saw the war fever gradually subside. Accompanying its defense measures, the Federalist administration had passed the Alien and Sedition Acts, intended to frighten foreign agents out of the country

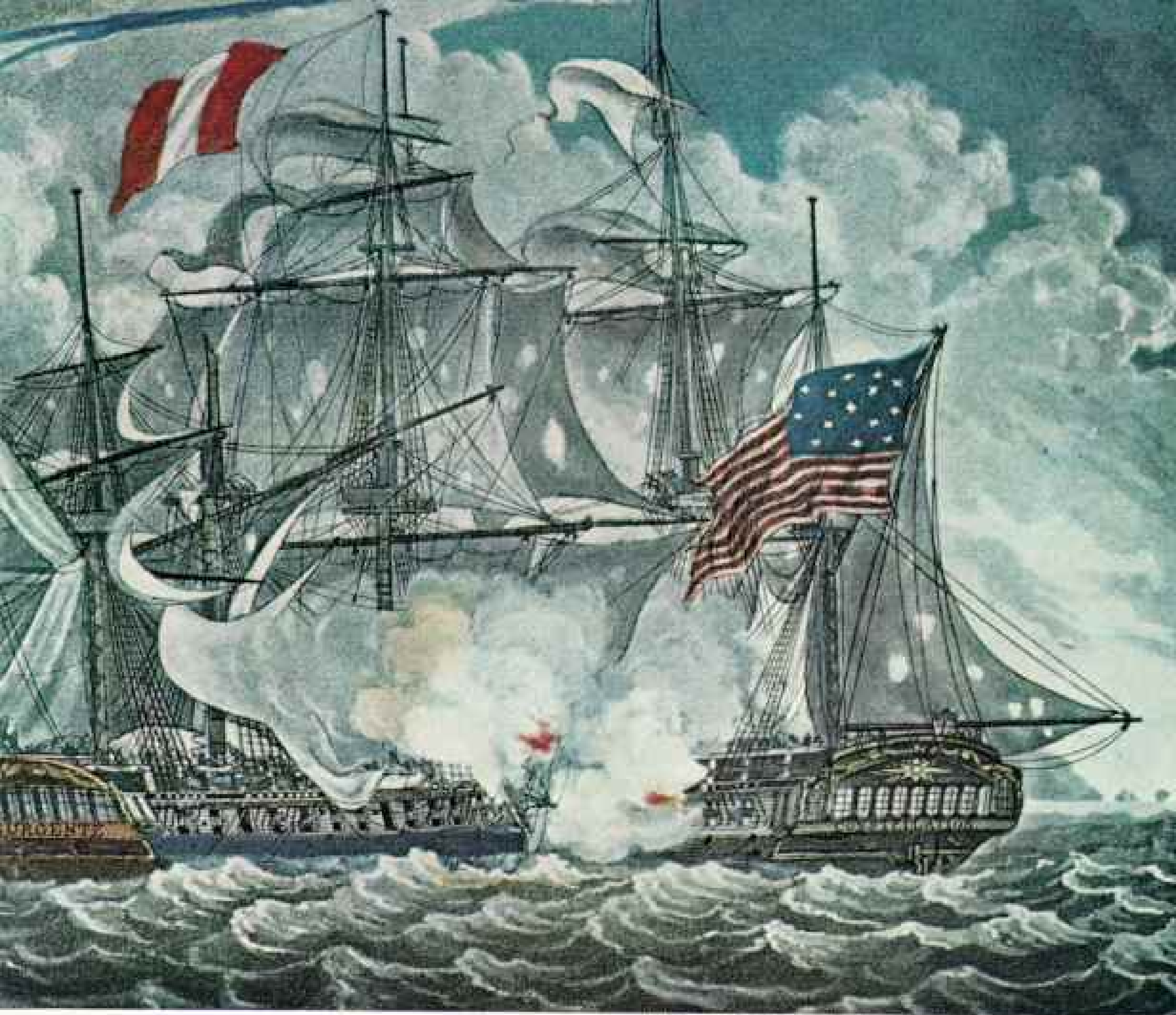
COURTESY HENRY FRANCIS DU PONT WINTERTHUR MUSEUM



Thundering guns, riddled sails, streaming flags, shattered masts—an engraving of 1800 sums up the previous year's action when the U. S. frigate *Constellation* captured *L'Insurgente* in the West Indies. The American crosses the Frenchman's bow, escaping his gunfire.

President Adams negotiated a peaceful settlement of the undeclared war with France.

Unfinished painting sketches the signing at Paris in 1783 of the treaty that ended the American Revolution. John Adams, Benjamin Franklin, and Henry Laurens sit; John Jay (left) and Temple Franklin stand. Artist Benjamin West never filled in the British delegates because one had died.



NAVY'S BLUE COLLECTION, NEW-YORK HISTORICAL SOCIETY © N.Y.S.

and to stifle the attacks of Republican editors. Harsh prosecution transformed several of these editors into martyrs and unified the Republican Party. Moreover, the French crisis was costly, almost doubling the Federal budget between 1796 and 1800 and necessitating heavy and unpopular taxes.

Soon President Adams had second thoughts about the wisdom of a war and returned to his customary moderation. Word came that France also had no stomach for war and would receive a new envoy with respect. Long negotiations ended the quasi war.

The sending of the peace mission launched against Adams the full fury of Hamilton and his devotees. In the campaign of 1800 the Republicans were united and effective; the Federalists were badly divided. Nevertheless, Adams polled only eight less electoral votes than Jefferson, who became President.

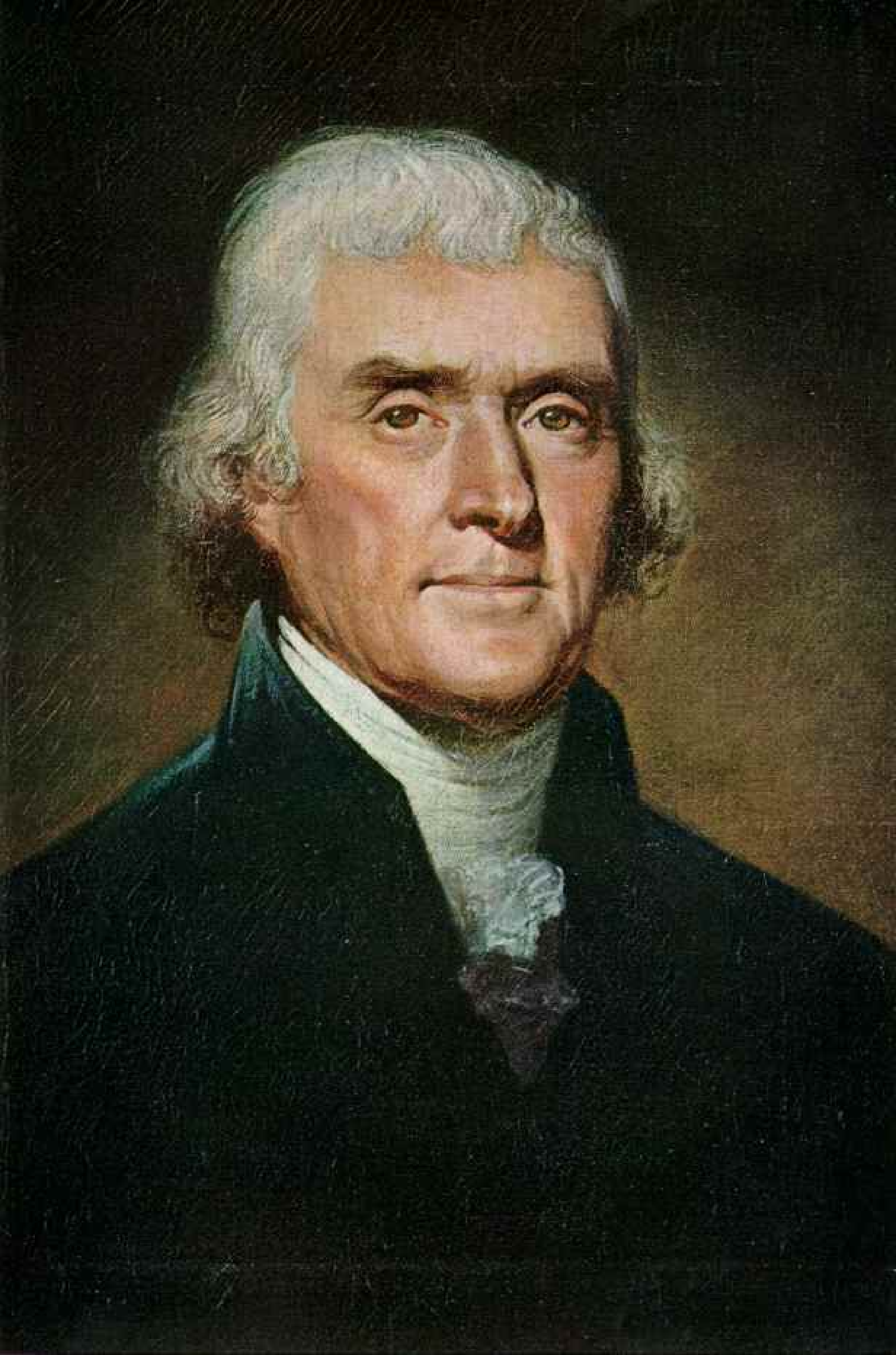
Just before the election—on November 1, 1800—Adams arrived in the new Capital City

to take up his residence in the White House. On his second evening in its damp, unfinished rooms, he wrote his wife, "Before I end my letter, I pray Heaven to bestow the best of Blessings on this House and all that shall hereafter inhabit it. May none but honest and wise men ever rule under this roof."

Adams retired to his farm in Quincy, living many years in the mansion known as the Old House, now a national historic site. From that spacious home—where succeeding generations of Adamses have added to the family archives—he penned his elaborate letters to Thomas Jefferson.

In this house, on July 4, 1826, he whispered his last words: "Thomas Jefferson survives." But Jefferson had died at Monticello a few hours earlier.

The American people were awestruck that they had lost two of their greatest Founding Fathers on the same day—the 50th anniversary of the Declaration of Independence.



Thomas Jefferson

THIRD PRESIDENT 1801-1809

THOMAS JEFFERSON, taking his oath of office in March, 1801, for the first time shifted the administration from the control of one political party to another. He came into office in the wake of years of the bitterest party strife and amidst the dire predictions of the High Federalists, who feared he would destroy the political and economic institutions so carefully erected in the previous 12 years. Quite the reverse proved true. In his Inaugural Address he proclaimed policies of moderation and tolerance:

"... every difference of opinion is not a difference of principle. . . . If there be any among us who would wish to dissolve this Union or to change its republican form, let them stand undisturbed as monuments of the safety with which error of opinion may be tolerated where reason is left free to combat it."

During Jefferson's eight years in office, despite the titanic conflict in Europe between Napoleon and his foes, the United States continued to grow in population, doubled in area, and during most of the time prospered. Jefferson was an agrarian and highly popular as the spokesman for an overwhelmingly agrarian Nation.

Less a State rights advocate than an ardent believer in the future of the American

Republic and indeed of all mankind, Jefferson's noble dream, as Julian Boyd, the editor of his papers, has pointed out, was an "empire of liberty."

This powerful advocate of liberty was born in 1743 in Albemarle County, Virginia, at that time on the outer fringe of the British Empire in America. He inherited from his father, a planter and surveyor, some 5,000 acres of land, and from his mother, a Randolph, high social standing. He studied at the College of William and Mary, then prepared himself as a lawyer; he also developed the rich sweep of interests that so distinguished him as a man.

In 1772 he married Martha Wayles Skelton and took her to live in his partly constructed mountaintop home, Monticello, with its

ENGRAVING FROM A PRINTING BY ALBERT CHAPPEL FROM "LIFE AND TIMES OF WASHINGTON," BY J. F. SCHREIBER, LIBRARY OF CONGRESS



Deliberately informal, Thomas Jefferson wore his hair without powder and gave parties without protocol. A noted scholar, he owned so many books that when the British burned the Library of Congress in 1814, he sold it some 6,000 of his volumes.

PRINTING BY ROBERT R. TAYLOR © R. S. S.

As committee chairman, Jefferson hears his colleagues' comments on the Declaration of Independence he has composed for the Continental Congress meeting in Philadelphia's Independence Hall. Committee members Benjamin Franklin (left), Jefferson, John Adams, Robert R. Livingston, and Roger Sherman altered it slightly. Congress revised and proclaimed it July 4, 1776.

sweeping view of the Valley of Virginia. He practiced law successfully and managed his large estates.

Young Thomas Jefferson, freckled and sandy-haired, rather tall and awkward, was charming among his friends and eloquent as a correspondent, but he was no public speaker. In contrast to Patrick Henry, whom he admired, Jefferson, both in the Virginia House of Burgesses and the Continental Congress, contributed his pen rather than his voice to the patriot cause.

As the "silent member" of the Congress with the "reputation of a masterly pen," Jefferson, aged 33, drafted the Declaration of Independence. It was distinguished, like his other works, less by its originality than the felicity with which it set forth the grievances of the revolutionaries and asserted their natural rights.

In the next several years Jefferson labored to make its words a reality in Virginia. Most notably, he drafted a bill establishing religious freedom, enacted in 1786. It declared

that a man should possess "the comfortable liberty of giving his contributions to the particular pastor whose morals he would make his pattern."

Way Paved for Growth of the Union

In the Confederation Congress, Jefferson made another remarkable contribution with his reports on the government of western territory, out of which came the Northwest Ordinance of 1784. It provided that western territories when sufficiently populous should enter the Union as states coequal with the original thirteen.

In 1785 Jefferson succeeded Benjamin Franklin as Minister to France. Like his predecessor, he was respected as a scientist and man of wide learning, and like Franklin he was a hardheaded diplomat. He was intimate with the moderates who were in control in the early stages of the French Revolution, and despite later excesses, which he deplored, remained basically sympathetic toward the Revolution. This sympathy led him into conflict with Hamilton, when Jefferson served as Secretary of State in President Washington's Cabinet. At the end of 1793 he resigned.

During these years sharp political conflict developed, and two separate parties, the Federalists and Republicans, began to take shape. Madison was at first the guiding force within the Republican group, focusing attention upon his friend Jefferson and his principles. During the sharp struggle between the new parties, Jefferson gradually assumed leadership, never through making speeches and seldom through pamphleteering, but for the most part through suggestions in letters to friends. When he drafted the forceful State rights resolutions for the Kentucky legislature, attacking the Alien and Sedition Acts, he kept his authorship secret.

As a reluctant candidate for President in 1796, Jefferson came within three votes of election. Through a flaw in the Constitution, which had no provision for political parties, Jefferson became Vice President, although an opponent of President Adams. In 1800 the defect took a more serious turn. Republican electors eliminated President Adams and, attempting to name both a President and a Vice President from their own party, cast a tie vote between Thomas Jefferson and Aaron Burr. A vote in the House of Representatives had to settle the tie.

(Continued on page 671)

Wounded sailor interposes his body to save fallen Lt. Stephen Decatur from a Barbary pirate's scimitar. Halting appeasement, Jefferson had sent naval forces to quell the pirates and protect American shipping.



CELEBRING FROM A PAINTING BY ALONZO GARNETT FROM "OUR COUNTRY," BY B. A. LORING, VOL. 75, LIBRARY OF CONGRESS



PRINTING BY THOMAS BETHUNE, NEW ORLEANS HISTORICAL SOCIETY © NATIONAL GEOGRAPHIC SOCIETY

Fifteen-star Old Glory rises over New Orleans as the French Tricolor descends on December 20, 1803. A musket salute echoes across the Place d'Armes, now Jackson Square. The Louisiana Purchase, outstanding event of Jefferson's Administration, added 830,000 square miles to the United States, almost doubling its size. For \$15,000,000 Napoleon parted with all French lands from the Mississippi Delta to modern Montana.



Concealed beside a fireplace at Monticello, dumb-waiters returned an empty wine bottle each time a full flask came up. Jefferson also designed a revolving chair, a portable writing desk, a letter-copying device, and a cannonball-weighted clock that told the day of the week.

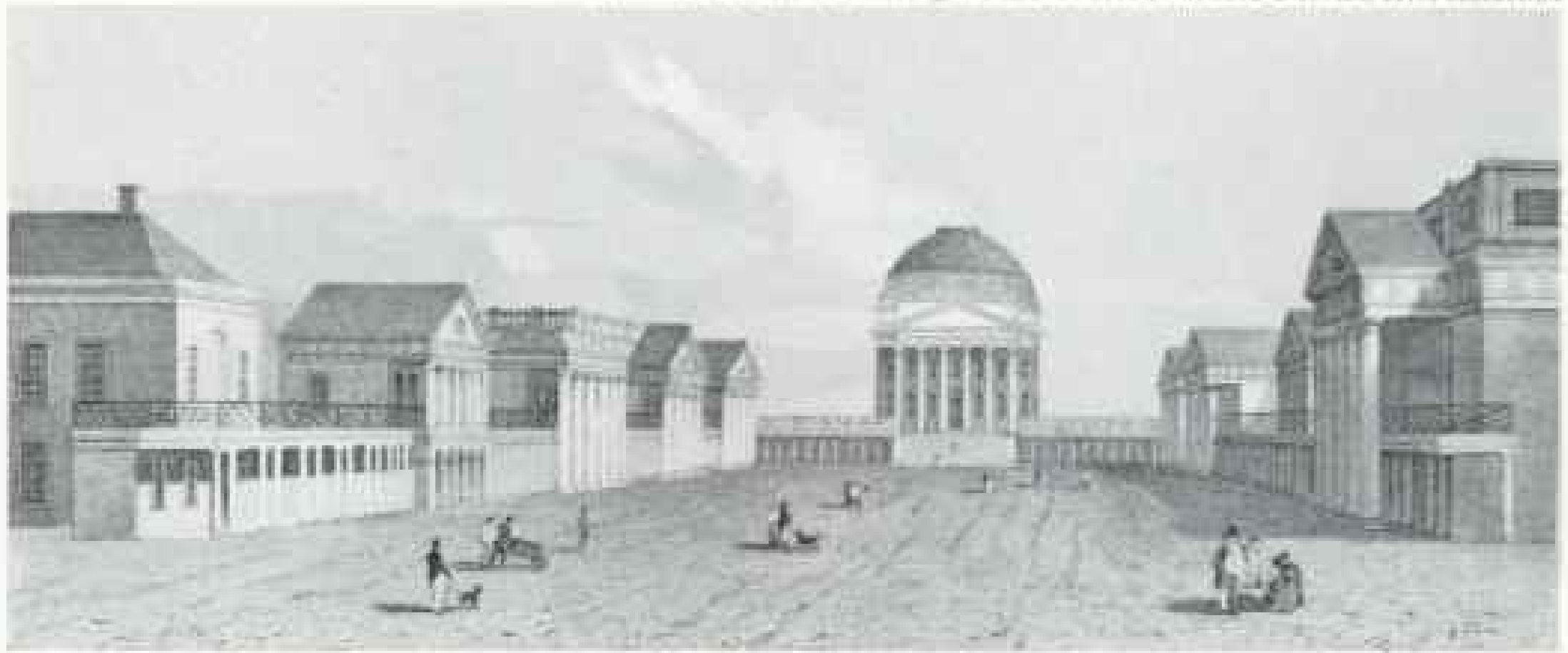
"All my wishes end," wrote Jefferson, "where I hope my days will end, at Monticello." He designed his dream house, and during 25 years he built it, near Charlottesville, Virginia. Jefferson did end his days there, observing the construction of the University of Virginia, four miles away, through a telescope. But hordes of visitors proved his undoing. His steward groaned, "I have often sent a wagon-load of hay up to the stable and the next morning there would not be enough to make a bird's nest. I have killed a fine beef and it would all be eaten in a day or two." After Jefferson's death, his daughter had to sell Monticello to pay his debts.

Stone, brick, lumber, and nails used in the house came from the estate itself.









Thus did the University of Virginia look in 1824, when Jefferson was supervising its construction in Charlottesville. Rotunda and other buildings face the central Lawn. Student riots in 1825 led two professors to resign; Jefferson helped to restore order. He died in 1826 on the fiftieth anniversary of the Declaration of Independence.

The House still had a Federalist majority. Hamilton, disliking both Jefferson and Burr, nevertheless urged his friends to vote for Jefferson. "To my mind," wrote Hamilton, "a true estimate of Mr. Jefferson's character warrants the expectation of a temporizing rather than a violent system." The House of Representatives elected Jefferson.

President Jefferson, upon assuming office, was as temporizing as Hamilton predicted. The crises in France had passed, so that he was able to slash expenditures for the Army and Navy, cut the budget, eliminate the tax on whiskey so unpopular in the west, and still make substantial payments to reduce the national debt by a third.

Several weeks after he took office he sent a naval squadron to fight the Barbary pirates, who were harassing American commerce in the Mediterranean. Further, although the Constitution made no provision for the acquisition of new land, Jefferson suppressed his qualms when he had the opportunity to acquire the Louisiana Territory from Napoleon in 1803.*

During President Jefferson's second administration, he was increasingly preoccupied

*See "Following the Trail of Lewis and Clark," by Ralph Gray, NATIONAL GEOGRAPHIC, June, 1953.

†See "Mr. Jefferson's Charlottesville," by Anne Revis Grosvenor, NATIONAL GEOGRAPHIC, May, 1950.

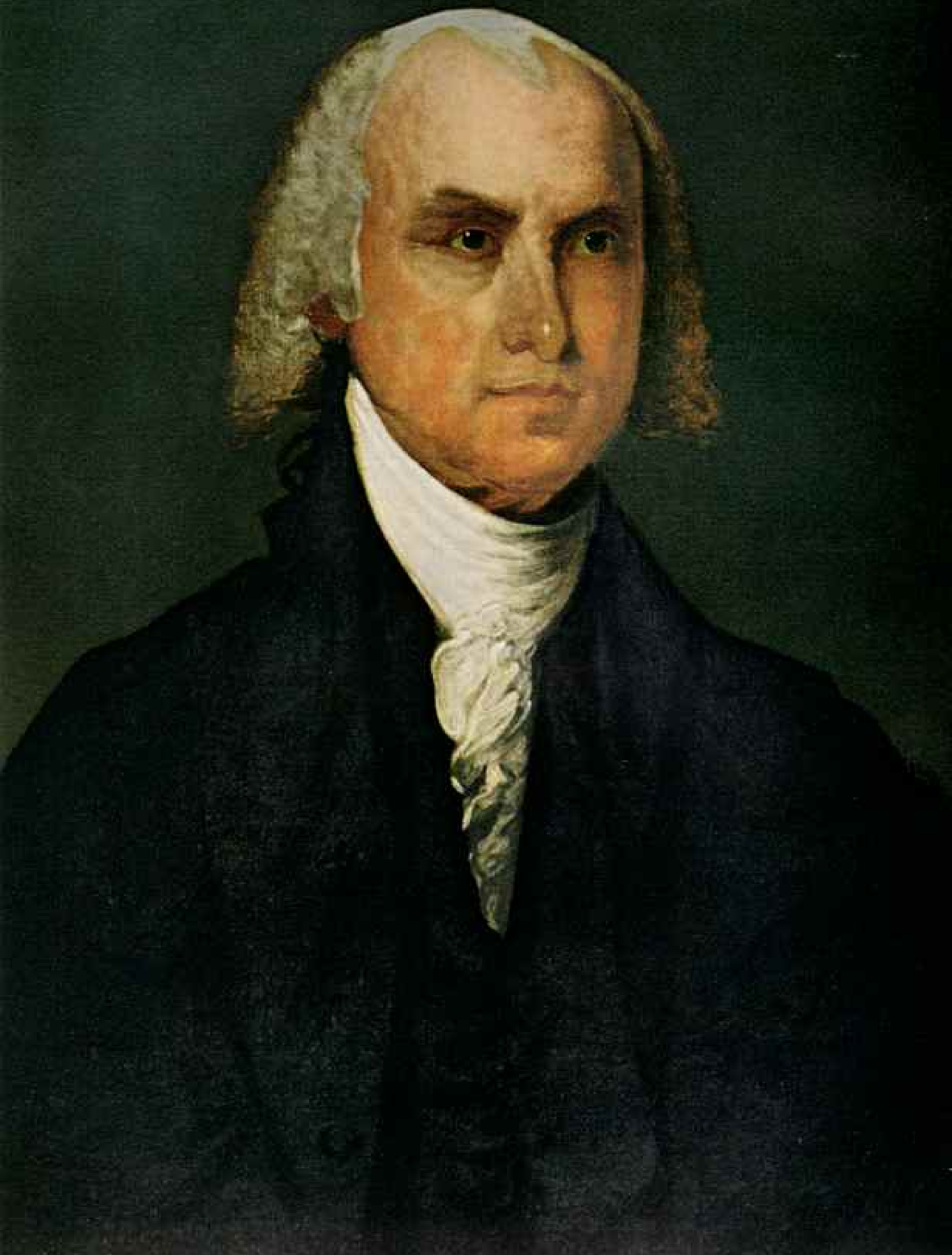
with keeping the Nation from involvement in the Napoleonic wars, though both England and France interfered with the neutral rights of American merchantmen. Jefferson's effort at a solution, an embargo upon American shipping, worked badly and was unpopular.

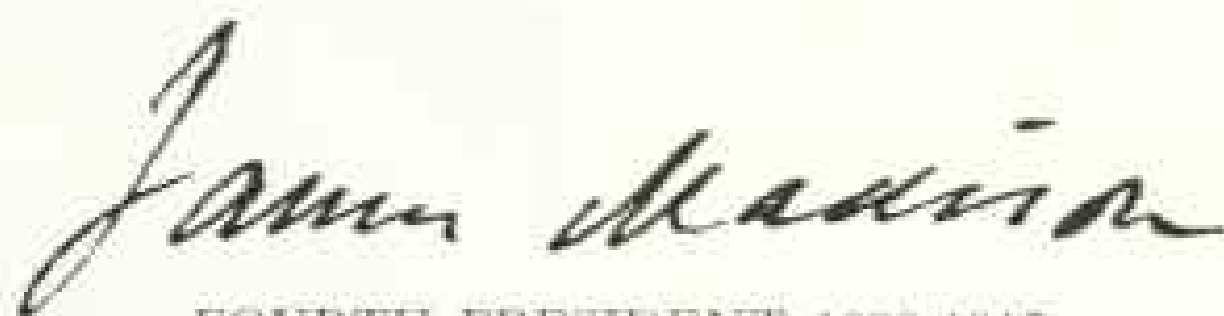
With relief Jefferson retired to his fields, his books, his architectural plans, and his inventions. In Monticello, he built his own memorial. Painstakingly preserved, the historic site dazzles tourists today no less than a French nobleman who observed that Jefferson had placed his house and his mind "on an elevated situation, from which he might contemplate the universe" (page 669).

At the pivot-top desk and the swivel chair in his study, he pondered such projects as his grand designs for the University of Virginia in Charlottesville.† There on the campus, Jefferson, in bronze, watches over the students, heirs to his masterpiece.

He is most often remembered as sage rather than President. But there was a strongly relevant interconnection between his political career and his intellectual life. In the thick of the party conflict in 1800, he wrote in a private letter the famous words inscribed on the Thomas Jefferson National Memorial in Washington, D. C.: "I have sworn upon the altar of God eternal hostility against every form of tyranny over the mind of man."

Jefferson stands today on a Liberty Bell in front of the Rotunda (above). He surveyed the sites with pegs and twine, calculated the brick and lumber needed, hired bricklayers and carpenters, and sent a scholar to Britain to scout for professors. "Mr. Jefferson," as university men still affectionately call him, loved domes, and the Rotunda was his favorite. Modeled after the Pantheon in Rome, it was completed in 1826.





FOURTH PRESIDENT 1809-1817

JAMES MADISON, the fourth President of the United States, is less renowned for his eight years in the White House than for his remarkable services at the Constitutional Convention. As a political philosopher and practical politician, he was the peer of Jefferson, and in some respects was a more original thinker. But he was always overshadowed by his older, more personable friend.

Youthful "Father of the Constitution"

Born in 1751, Madison was brought up in Orange County, Virginia, a few miles northeast of Jefferson's home. At Princeton (then called the College of New Jersey) the study of history and government especially interested him. Some years later he read law so as to have a profession in which he would "depend as little as possible on the labour of slaves." He participated in the framing of the Virginia Constitution in 1776, served in the Continental Congress, and was leader in the Virginia Assembly.

Fearing for the welfare of both Virginia and the American Nation under the ineffective Confederation Government, he took part in a series of conferences out of which he hoped would come a stronger national commercial policy. The result of these was the calling of the Constitutional Convention at Philadelphia, where he served as a member of the Virginia delegation. In preparation, he wrote a number of recommendations which helped shape the Virginia Plan that Edmund Randolph presented to the Convention.

When the delegates assembled at Philadelphia, the 36-year-old Madison took frequent and emphatic part in the debates. His meticulous notes have provided later generations with the fullest account of the sessions. One delegate wrote:

"...every Person seems to acknowledge his greatness. He blends together the profound politician, with the Scholar. In the management of every great question he evidently

took the lead in the Convention, and tho' he cannot be called an Orator, he is a most agreeable, eloquent, and convincing Speaker."

In later years, when he was referred to as the "Father of the Constitution," Madison protested that the Constitution was not "the off-spring of a single brain," but "the work of many heads and many hands."

Madison made a major contribution to the ratification of the Constitution by writing a series of essays together with Alexander Hamilton and John Jay. They first appeared in New York newspapers, and were published in book form in 1788 as *The Federalist*. In the Virginia ratifying convention, Madison's quiet, realistic arguments overcame the flamboyant oratory of the anti-Federalist leader, Patrick Henry.

Madison, as a Member of the House of Representatives, helped enact the first revenue legislation and to frame the Bill of Rights. Soon he became critical of Hamilton's financial proposals, which he felt would unduly bestow wealth and power upon northern financiers. Out of his leadership in opposition to Hamilton slowly came the development of the Republican, or Jeffersonian, Party.

Appointed to High Office by Jefferson

When Jefferson became President in 1801, he elevated his friend Madison to be Secretary of State. Madison was also Jefferson's chief adviser. Thus it was that Madison, previously inexperienced in diplomacy, wrestled with the difficult problems facing the United States as a neutral during the long war between France and England. Madison protested to the belligerents against their seizure of American ships, contrary to the international law of neutrality. The effect of Madison's activities, as John Randolph commented at the time, was that of "a shilling pamphlet hurled against eight hundred ships of war."

The administration tried to coerce the warring nations into respecting its neutral

"A small man, quiet, somewhat precise in manner, pleasant, fond of conversation," ran Henry Adams's description of James Madison. Standing only five-feet-six and weighing 100 pounds, Madison had a frail body, and an almost inaudible voice. But this Princeton graduate (class of 1772) also had the scholarship, intelligence, and cool judgment to become the Father of the United States Constitution.

Flagship Disabled, Oliver Hazard Perry Transfers His Colors to *Niagara*

During the unpopular War of 1812, scornfully dubbed "Mr. Madison's War," Master Commandant Perry went to Erie, Pennsylvania, to organize a fleet that could challenge British control of Lake Erie. On September 10, 1813, his nine vessels engaged the enemy. After a two-hour clash, Perry had to abandon his battered flagship, the *Lawrence*, ironically named for James Lawrence, the dying naval officer who had said, "Don't give up the ship." Aboard *Niagara*, Perry boldly attacked the British ships, raking them with such fire that the squadron surrendered. Perry then sent to Maj. Gen. William Henry Harrison his famous dispatch, "We have met the enemy and they are ours." The battle gave the United States control of Lake Erie and enabled Perry and Harrison to drive British troops from Detroit.

Half-burned White House still stands after pillage by the British. A storm on the night of August 24, 1814, put out the flames. Roof and interior were lost, but the walls have largely survived to this day. James Hoban, the original architect, reconstructed the mansion, but the Madisons, who left before the British arrived, never moved back.

During the looting a British soldier carried away a walnut medicine chest. A Canadian descendant returned it to the White House in 1939 as a gesture of good will.

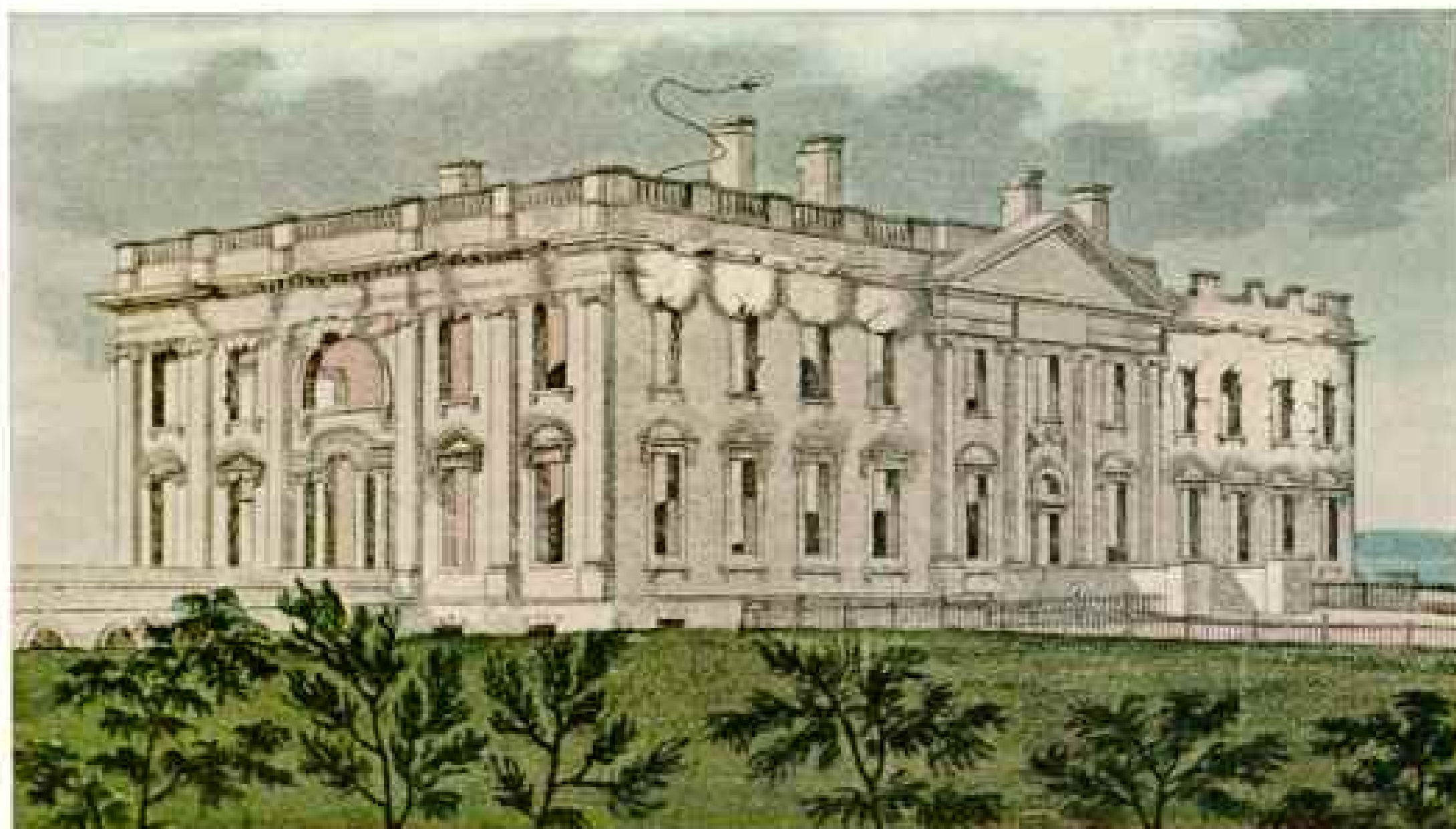


ILLUSTRATION BY A. LARSON (COPY AFTER THOMAS BIRCH, COURTESY FREDERICK S. HICKS); ART BY WILLIAM STICKLAND, LIBRARY OF CONGRESS © A.C.S.



rights through the Embargo Act of 1807, intended to keep all American shipping at home and deprive the belligerents of the foodstuffs they needed. Despite the unpopularity of the embargo, Madison was elected President in 1808; three days before he took office the Embargo Act was repealed.

At his Inauguration, President Madison, a small, wizened man who had never been impressive looking, appeared old and worn; Washington Irving described him as "but a withered little apple-John."

A frustrating and difficult eight years lay ahead of him, in which much went wrong with the United States. Later generations tended to lay the troubles at the White House doorstep and to regard Madison as a weak administrator.

Irving Brant, his biographer, has amassed

evidence to prove that Madison dominated foreign policy during his Presidency, making the best of what was a hopeless impasse abroad and at home. He was a fairly strong President. Whatever his deficiencies in charm, his buxom wife Dolley compensated for them with her warmth and gaiety; she was the toast of Washington.

"War Hawks" Press Madison

During the first year of Madison's Administration, the United States prohibited trade with both Britain and France; then in May, 1810, Congress authorized trade with both, but directed the President, if either would accept America's view of neutral rights, to forbid trade with the other nation. Napoleon pretended to comply, and in consequence, late in 1810, Madison proclaimed non-intercourse



PAINTING BY MARY EL WHITLOCK KETTER ALBERT STRAUB,
WHITE HOUSE COLLECTION

"Mrs. Madison is a fine, portly, buxom dame, who has a smile and a pleasant word for everybody," reported Washington Irving. Dolley married Madison even though he was an inch shorter, 17 years older, and at least one other lady had turned him down. She loved to wear bejeweled turbans, use snuff, play cards for money, and entertain 15 or 20 people at dinner.

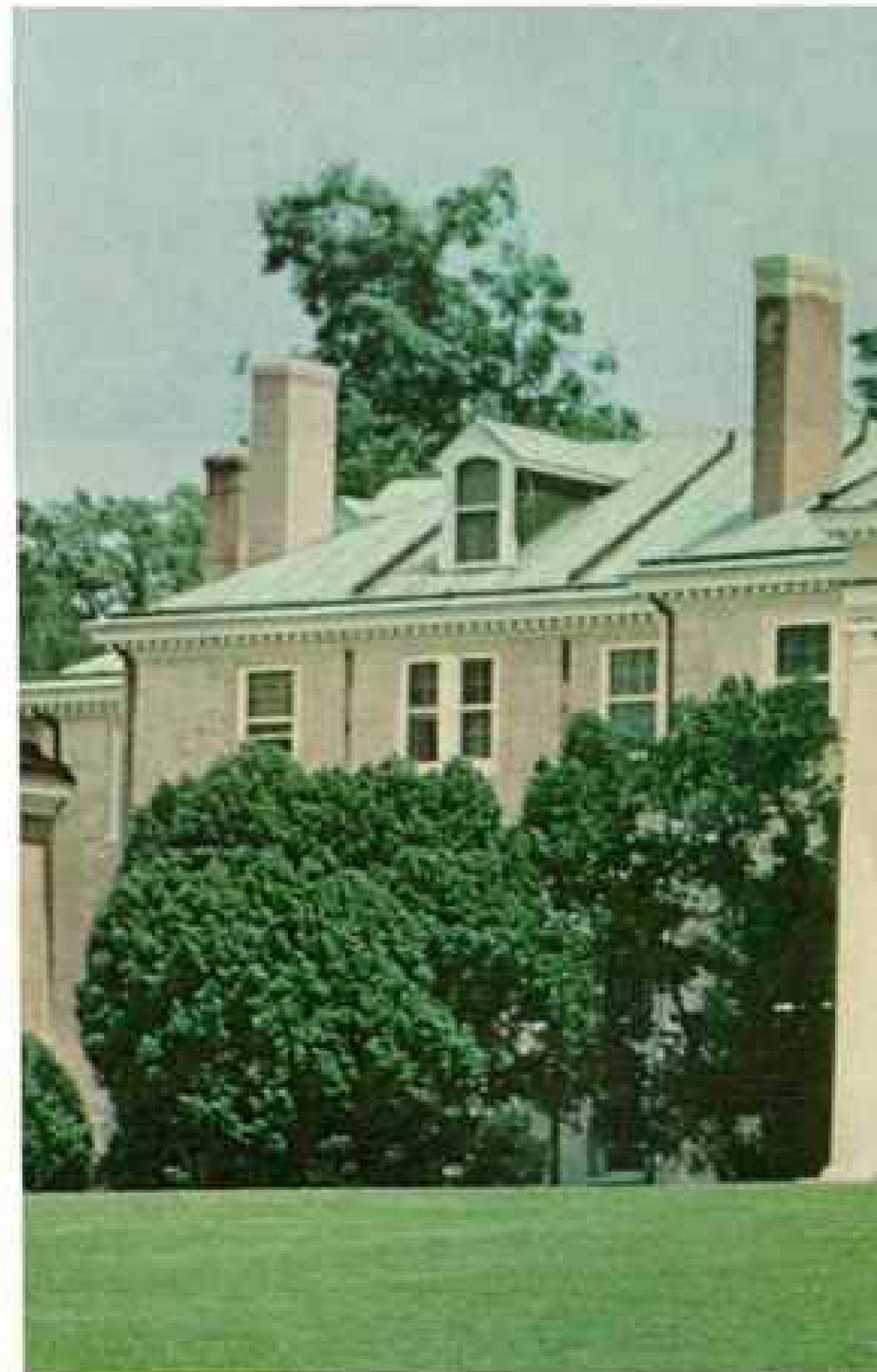
Dolley's charm made her one of the most popular First Ladies in American history. "Everybody loves Mrs. Madison," Henry Clay said to her. She gaily replied, "Mrs. Madison loves everybody."

Montpelier, Madison's home in Orange County, Virginia, was built about 1760 by James Madison, father of the President. Beginning in 1798, Dolley helped her husband modernize the house. They added the stately portico, following a suggestion by Thomas Jefferson. From France, Jefferson shipped a mantelpiece; James Monroe sent linens and furniture, bought at bargain prices from impoverished noblemen. Today privately owned, Montpelier is known for its fine racing horses. Both the President and his First Lady are buried on the grounds.

with Great Britain. Thereafter relations with Great Britain gradually worsened, while in Congress a young group including Henry Clay and John C. Calhoun, the "War Hawks," pressed the President for a more militant policy to protect the frontiers and sweep the British from the seas.

Impelled primarily by the maritime issues—the British impressment of American seamen and the seizure of cargoes—Madison gave in to the pressure and on June 1, 1812, asked Congress for a declaration of war. Had there been rapid communication, the war would have been avoided, for two days before Congress voted, the British suspended their policy of seizures.

The American Nation was in no way ready to fight, and the rapid conquest of Canada that the frontier Congressmen had predicted did not take place. Long afterward Madison told George Bancroft, the historian, that "he knew the unprepared state of the country, but he esteemed it necessary to throw forward the flag of the country, sure that the people would press forward and defend it."



For many months little happened, and men like Richard Rush were only amused at Madison's attempts to organize the armed forces.

"He visited in person—a thing never known before—all the offices of the departments of war and navy," Rush reported two days after war was declared, "stimulating everything in a manner worthy of a little commander-in-chief, with his little round hat and huge cockade."

On land and at sea, American forces took a trouncing, the nadir being reached when the British entered Washington and set fire to the White House and Capitol. But the attack on Baltimore a month later met galling salvos from Fort McHenry. Its guns still loom on the barbettes of the national historic shrine. Its tattered banner, which the hostage Francis Scott Key saw "gallantly streaming" after 25 hours' bombardment, now occupies a place of honor in the Smithsonian Institution's new Museum of History and Technology.

A few notable military and naval victories were climaxed by General Andrew Jackson's epic triumph at New Orleans, thus convincing

Americans that the war had been gloriously successful. The War of 1812, so ill-fought by a Nation so badly divided, resulted in an upsurge of nationalism.

The New England Federalists who had opposed the war—and who had even talked secession—were so thoroughly repudiated that Federalism disappeared as a national political party.

In 1816 Madison signed a series of bills establishing a national program for the American people, including a tariff to protect American "infant industries," chartering of a new Bank of the United States, and strengthening of the regular Army and Navy.

In retirement at his Orange County, Virginia, estate Montpelier—now privately owned—Madison spoke out against the disruptive State rights influences that by the 1830's threatened to shatter the Federal Union. A note entitled "Advice to my Country," opened after his death in 1836, stated in conclusion:

"The advice nearest to my heart and deepest in my convictions is that the Union of the States be cherished and perpetuated."

REPRODUCED BY WILLIAM ALLARD © NATIONAL GEOGRAPHIC SOCIETY





James Monroe

FIFTH PRESIDENT 1817-1825

JAMES MONROE was the last of the Virginia dynasty of Presidents and the last of the great Revolutionary generation to occupy the White House. Lacking the intellectual fire of his predecessors, as Chief Executive he nevertheless demonstrated solid common sense and administrative qualities.

"His understanding was very much underrated," Madison declared; "his judgment was particularly good. . . ."

In so many respects representing the last of the old, Monroe still wore knee britches as young America rushed toward the age of the common man. He was President during the exciting years when the Nation was fast filling in the fertile valleys beyond the Appalachian Mountains and first faced responsibilities throughout the Western Hemisphere.

He could not cope successfully with the sharp quarrel over slavery, but he did bequeath to the United States and its sister republics to the south the basic policy that the Americas were not open to exploitation from outside—the Monroe Doctrine.

As President Monroe stood near the door of the White House on New Year's Day, 1825, at the last of his annual receptions, he made a pleasing impression upon a Virginia lady who shook his hand:

"He is tall and well formed. . . . His manner was quiet and dignified. From the frank, honest expression of his eye. . . . I think he well deserves the encomium passed upon him by the great Jefferson, who said, 'Monroe was so honest that if you turned his soul inside out there would not be a spot on it.'"

Last of Revolutionary War Presidents, James Monroe clung to colonial-style knee britches after most men had taken to long trousers. Contemporaries smiled at his old-fashioned ways but hailed his "Era of Good Feelings." Monroe purchased the Floridas from Spain, neutralized the Canadian border, and signed the Missouri Compromise.

Belle of New York, Elizabeth Kortright Monroe met her husband when he went to the Continental Congress. In this portrait by Benjamin West, she wears turban and velvet dress. Ermine tails spot her scarf.

Born in Westmoreland County, Virginia, in 1758, Monroe attended the College of William and Mary, fought with distinction in the Continental Army—he was wounded at Trenton—and practiced law in Fredericksburg, Virginia. His law office, filled with memorabilia, is now a museum with an adjacent library.

As a youthful politician, he arrayed himself with the anti-Federalists in the Virginia convention to ratify the Constitution, and in 1790 was elected to the United States Senate, where he ardently pursued Jeffersonian policies. As Minister to France in 1794-1796, he displayed strong sympathies for the French cause; later, President Jefferson again sent him to France, where, together with Minister Robert R. Livingston, he helped negotiate the Louisiana Purchase.

Friend and mentor Jefferson designed a house, Oak Hill in Loudoun County, Virginia, where Monroe worked on state papers in a calm atmosphere (page 681).

President Madison appointed him Secretary of State in 1811, and for some months during the War of 1812 he served as Secretary of War as well. His ambition and energy,

COURTESY WPS, GOVERNOR TIGES (BELOW);
PAINTING BY BENJAMIN WEST © W.P.A.



Oak Hill, Monroe's home in Loudoun County, Virginia, owes its design to Jefferson and its execution to White House architect James Hoban. Monroe sometimes rode here from Washington, 35 miles away, to study state papers in peace. Here he pondered the ideas embodied in the Monroe Doctrine. He so neglected private affairs during public service that he had to sell another estate, now called Ash Lawn, near Jefferson's Monticello. After his wife's death in 1830, he lived with his daughter and son-in-law in New York City.

Secret compartment lies under the three books between the small drawers of his Louis XVI desk, which Monroe purchased in 1794 to furnish the United States Legation in Paris. The compartment went undiscovered until 1906, when Laurence Gouverneur Hoes, a descendant then six years of age, damaged the desk. Taken to a cabinetmaker, the board under the books fell out, revealing trays containing letters from Jefferson, Madison, John Marshall, and Lafayette. One recorded Jefferson's now famous words: "How little do my countrymen know what precious blessings they are in possession of, and which no other people on earth enjoy." Treasured at Monroe's law office in Fredericksburg, Virginia, the desk remains just as Monroe knew it, with his inkstand, sander, eyeglasses, and clock.

EXTERIOR VIEW AND INTERIOR BY ERIC FOSTER © A.A.P.



together with the backing of the President, made him the choice of the Republican Congressional caucus for the Presidency in 1816. He won with little opposition from the Federalists and in 1820 was re-elected with only a single electoral vote cast against him.

As President, Monroe put behind him the sectional bias that had marked his earlier career. In appointing new secretaries, he



made unusually strong choices, especially in naming a southerner, John C. Calhoun, as Secretary of War, and a northerner, John Quincy Adams, as Secretary of State. Only the refusal of Henry Clay kept him from adding to the Cabinet an outstanding westerner.

To demonstrate further the national nature of his administration, Monroe undertook at its outset a goodwill tour of the North and

West, going as far as Portland and Detroit. At Boston, the Federalist *Columbian Centinel* hailed his visit there as signaling an "Era of Good Feelings." The phrase, catching the popular fancy, in time became synonymous with Monroe's Presidency.

Unfortunately the "good feelings" did not endure, although Monroe, his popularity undiminished, followed nationalist policies.



Suppressing his distaste for broadly construing the Constitution, he signed several measures to provide Federal funds for internal improvements such as national roads.

But behind the façade of nationalism, ugly sectional cracks began to appear, intensified by a painful economic depression precipitated by the Panic of 1819. The depression undoubtedly increased the dismay of the people of Missouri Territory in 1819 when Congress rejected their application for admission to the Union as a slave state. A New York Representative amended the bill to provide for the gradual elimination of slavery in Missouri, thus precipitating two years of bitter debate in Congress and alerting the Nation to the menacing sectional issue, which Jefferson likened to "a fire bell in the night."

682 Monroe sided with the South, but, true to

his view of the Presidency, made no effort to influence Congress. When Clay resolved the struggle through the Missouri Compromise, pairing Missouri as a slave state with Maine, a free state, and providing that territory north and west of the southern boundary of Missouri should enter the Union as free states, Monroe signed the measure.

Monroe's great contribution as President was in the realm of foreign affairs, where he proclaimed the fundamental policy that bears his name. He enunciated the Monroe Doctrine primarily in response to the threat that the more conservative governments in Europe might try to aid Spain in winning back her former colonies, the newly established Latin American republics.

From the outset American sympathies had been with the revolutionaries to the south,



but Monroe did not begin formally to recognize the sister republics until 1822, and then only after ascertaining that Congress would vote appropriations for diplomatic missions. He and Secretary of State John Quincy Adams wished to avoid trouble with Spain until it had relinquished the Floridas, as Spain did in 1821.

By 1823 Great Britain, with its powerful navy, was also opposed to the reconquest of Latin America and suggested that the United States join in proclaiming "hands off." Both ex-Presidents Jefferson and Madison counseled Monroe to accept the offer, but Secretary Adams advised, "It would be more candid, as well as more dignified, to avow our principles explicitly to Russia and France, than to come in as a cock-boat in the wake of the British man-of-war."

Monroe accepted Adams's advice. In his Annual Message to Congress of December, 1823, he warned not only that Latin America must be left alone but also that Russia must not encroach southward on the Pacific Coast.

"... the American continents, by the free... condition which they have assumed and maintain, are henceforth not to be considered as subjects for future colonization by any European Power," the President stated. This basic tenet became known some thirty years later as the Monroe Doctrine.

Fireworks light the sky as Detroit salutes Monroe in 1817. Hand lifted, the President stands outside a high stockade surrounding the city. GEOGRAPHIC artist Robert W. Nicholson re-created the scene from details in contemporary newspaper accounts, even to the slogans on the pole-borne lamps.

Monroe and his advisers debate the hands-off-America policy that became known as the Monroe Doctrine. Left to right: Secretary of State John Quincy Adams, Secretary of the Treasury William H. Crawford, Attorney General William Wirt, President Monroe (at globe), Secretary of War John C. Calhoun, Secretary of the Navy Samuel I. Southard, and Postmaster General John McLean. Crawford, erroneously shown by the artist, was critically ill during the debate.

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John Quincy Adams.

SIXTH PRESIDENT 1825-1829

JOHN QUINCY ADAMS served his Nation with selfless, intelligent devotion from the age of 14, when he went to Russia as secretary to the United States Minister, until nearly 80, when he was fatally stricken in the House of Representatives. His four years as President were, ironically, less distinguished than his long career in foreign affairs before he went to the White House and the 17 years he spent thereafter in Congress as a defender of civil liberties.

Adams was the only President who was the son of a President, and in many respects his career as well as his temperament and viewpoints paralleled those of his famous father.

Born in Braintree, Massachusetts, in 1767, he witnessed, with his mother, Abigail Adams, the Battle of Bunker Hill from the top of Penn's Hill above the family farm. A stone cairn marks the spot today.

With his father in Europe, he became an accomplished linguist and assiduous diarist, and served as secretary not only at the St. Petersburg Legation but also at the Paris

peace negotiations in 1783—all before he entered Harvard College.

After graduation he became a lawyer. His essays defending Washington's neutrality policy so favorably impressed the first President that he was appointed, aged 26, as Minister to The Hague. As President, John Adams promoted his talented son to the Berlin Legation.

In 1802 John Quincy Adams was elected to the United States Senate, and for several years served simultaneously as Boylston Professor of Rhetoric and Oratory at Harvard. In both positions he encountered hostility because he would not act as an orthodox New England Federalist. In 1808 Massachusetts Federalists forced him out of the Senate, but within the following year the Republican President, James Madison, appointed him as Minister to Russia.

Diplomat Scorned Politics

But Adams would not follow strict Republican positions either. Rather, like his father, he demonstrated a lifelong disdain for fixed party ideology and refused to practice the arts of the politician. For some years this disdain was little handicap as he served on the commission to negotiate an end to the War of 1812, became Minister to Great Britain, and, beginning in 1817, served as Secretary of State under President Monroe. He was one of America's great Secretaries of State, arranging with England for the joint occupation of

Charming Louisa Adams, born in London to an American merchant, married John Quincy Adams when she was 22. After four years in Europe as a diplomat's wife, she saw the United States for the first time.

"Old Man Eloquent," John Quincy Adams alone of Presidents' sons occupied the White House in his own right. Reserved and conscientious, he won his Presidency by vote of the House of Representatives over Andrew Jackson, who gathered a plurality of electoral votes but not a majority. The austere and plain-minded Adams took early morning swims in the Potomac. One day a startled servant had to dash back to the White House to get a carriage for the dripping President, whose boat had swamped.







PAINTING BY SIR BRECKEN FIDELLICH, BRITISH MUSEUM INSTITUTION © W.C.A.

the Oregon Territory, obtaining from Spain the cession of the Floridas, and, with the President, formulating the Monroe Doctrine.

In the political tradition of the early 19th century, Adams as Secretary of State was thought the political heir to the Presidency. But the old ways of choosing a President were giving way in 1824 before the clamor for a popular choice.

Within the one and only party, the Republicans, sectionalism and factionalism were developing, and each section put up, by a variety of means, its own candidates for the Presidency. Adams, the candidate of the North, fell behind Gen. Andrew Jackson in both popular and electoral votes, but received more votes than William H. Crawford and Henry Clay. Since no candidate had a majority of the electoral votes, the election was decided among the top three by the House of Representatives. Clay, who favored a program similar to that of Adams, threw his crucial support in the House to the New Englander.

Upon becoming President, Adams appointed Clay as Secretary of State. Jackson and his angry followers charged that a corrupt bargain had taken place and immediately

began their campaign to wrest the Presidency from Adams in 1828. Against the angry opposition of the Jacksonians, President John Quincy Adams tried to run his administration as though politics did not exist. He not only kept several of his political enemies in the Cabinet, but would even have liked to appoint Jackson as Secretary of War.

Well aware that he would face hostility in Congress, he nevertheless proclaimed in his first Annual Message a spectacular national program. He proposed that the Federal Government bring the sections together with a network of highways and canals, and that it develop and conserve the public domain, using funds from the sale of public lands. In 1828, he turned the first spadeful of the 185-mile C & O Canal—now partly restored by the National Park Service.* Adams also urged the United States to take a lead in the development of the arts and sciences through the establishment of a national university, the financing of scientific expeditions, and the erection of an observatory.

"The spirit of improvement is abroad upon the earth," he reminded Congress. "While

*See "Waterway to Washington," by Jay Johnston, NATIONAL GEOGRAPHIC, March, 1960.

Inconclusive War of 1812 ends at Ghent on Christmas Eve, 1814. For the British, Lord Gambier (left) exchanges a handclasp with John Quincy Adams, chief American commissioner. The treaty, imposingly sealed, virtually restored the status quo at the outbreak of hostilities and left for future settlement all the issues over which the war had been fought.

Fatal Stroke Fells Adams at His Desk in Congress

In some ways Adams was a failure in the White House, but in the Congress he found himself. Told that membership in the House might demean a former President, he replied that no man was degraded by serving the people. A small bronze plate marks the spot where Adams collapsed. By coincidence, it is the "whisper spot," the place in today's Statuary Hall where one can hear a whisper spoken across the room, though it is inaudible close by.



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foreign nations less blessed . . . than ourselves are advancing with gigantic strides in the career of public improvement, were we to slumber . . . would it not . . . doom ourselves to perpetual inferiority?"

Adams, behind his times as a political leader, was ahead of them in the tasks he wished to set for the Government of the United States. Political opponents expressed horror that he should propose measures so far transcending what they considered to be constitutional limitations. The press ridiculed him.

Aggrieved and frustrated, Adams arose every morning at four to pour his hurt feelings into long entries in his diary. As part of his Spartan regimen he sometimes also took early morning swims in the Potomac. Once when his boat sprang a leak and swamped, he lost most of his clothes and had to return to the White House in embarrassment.

The campaign of 1828, in which his Jacksonian opponents charged him with corruption and public plunder, was an ordeal he did not easily bear.

After his defeat, he returned to Massachusetts, expecting to spend the remainder of his

life enjoying his farm and his books. Unexpectedly, in 1830, the Plymouth district elected him to the House of Representatives, and there for the remainder of his life he served as a powerful leader. When an English bequest came to the United States to establish an institution for the "increase and diffusion of knowledge," it was Adams who fought for years against proposed dissipations of the fund until it could be used to found a scientific agency, the Smithsonian Institution.⁹

Above all, he fought against a circumscription of civil liberties that grew out of the heightened controversy over slavery. In 1836 southerners in the House passed a "gag rule" providing that petitions against slavery would be automatically tabled. Adams, taking the view that the rights of his constituents were violated, fought with vigor until finally, in 1844, he obtained repeal of the rule.

In 1848, he collapsed on the floor of the House from a stroke and was carried to the Speaker's room, where two days later he died. He was buried—as were his father, mother, and wife—at First Parish Church in Quincy, a historic landmark. To the very end, "Old Man Eloquent" had fought for what he considered right.

END OF PART I

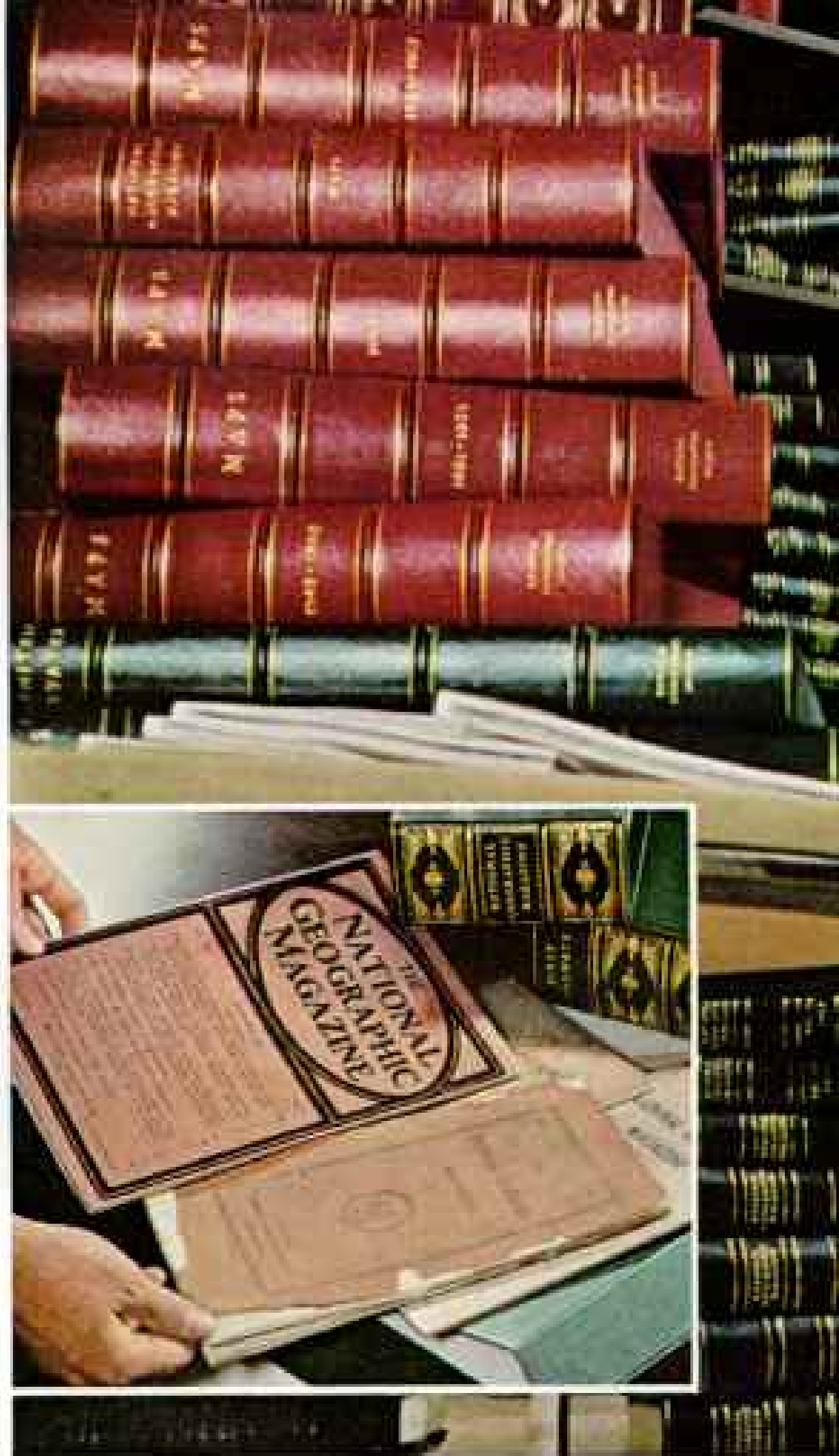
⁹See "The Smithsonian, Magnet on the Mall," by Leonard Carmichael, *GEOGRAPHIC*, June, 1960.

Reprinting Brings Earliest Geographics To Life

By MELVIN M. PAYNE, Sc.D.

Executive Vice President and Secretary
National Geographic Society

NATIONAL GEOGRAPHICS, handsomely bound in fine leathers, surround Executive Vice President Melvin M. Payne, who reads one of the 272 volumes collected by Robert S. Conahay in a 30-year hunt. Complete sets are so rare that the Society is reprinting issues of its first 20 years and making them available at \$2 a copy. Inset: Original covers of October, 1888, the first issue, and January, 1901.



BROWSING PAGES brittle and tinged by time, I recently came upon a brief but intriguing notice in a **NATIONAL GEOGRAPHIC** of more than half a century ago.

"The National Geographic Society," announced the May, 1907, issue, "has five complete sets of the Magazine, beginning with 1888... for sale at \$100 per set, unbound."

How collectors wish the Society could make the same offer today! Volume I alone, containing the four numbers issued in 1888-89, now may command half its weight in gold—\$500 or more—on the rare-book market. A collector seeking all those first 18 volumes, once offered for \$100, may today spend \$3,500—if fortunate enough to find them.

Thus the Society attaches singular importance to its latest publishing program: a completely authentic reprinting of every issue of the magazine during the first 20 years of its existence—179 issues in all.

Technicians have spent almost a year on this painstaking project. They carefully unbound fragile early volumes; then, using the most advanced equipment and techniques,

they photographed them page by page to produce by photo offset striking duplicates of the rare original magazines, covers and all. The reprints will include reproductions of all map supplements and charts—in color if color was used in the original—and all the advertising pages, which appeared in the **GEOGRAPHIC**, beginning in January, 1896.

Reprints of these early years will not deflate the value of collectors' cherished originals; each cover and each supplement will bear the word "REPRINT."

Initially, the Society is reproducing only 1,000 copies of each of these early magazines. Reprints of those published in its first decade, 1888-1897, will be available in mid-November at \$2 a copy for individual issues or \$100 for the set of 59 magazines, unbound. The 120 issues that make up the years 1898-1907 will be ready early next year at the same single-copy price or \$215 for the set.*

*A table of contents for the years 1888-1907 is available for those who wish to order reprints. Send orders and inquiries to National Geographic Society, Department 202, Washington, D. C. 20036.



PHOTOGRAPHS BY ROBERT S. GAYLE, NATIONAL GEOGRAPHIC SOCIETY © N.G.S.

NATIONAL GEOGRAPHIC is a prime reference source, and libraries, schools, colleges, and other educational institutions throughout the world, as well as individual scholars, have felt keenly the scarcity of these now historic numbers.

During its first eight years, before the magazine became a regular monthly visitor, there were but 36 issues, and two of these consisted of a mere 16 pages, compared to today's average of 148, plus advertising.

The first issue went to only 205 members. Indeed, membership did not exceed 1,000 until Gilbert Grosvenor took charge of the little journal on April 1, 1899. Today it totals nearly 4,000,000.

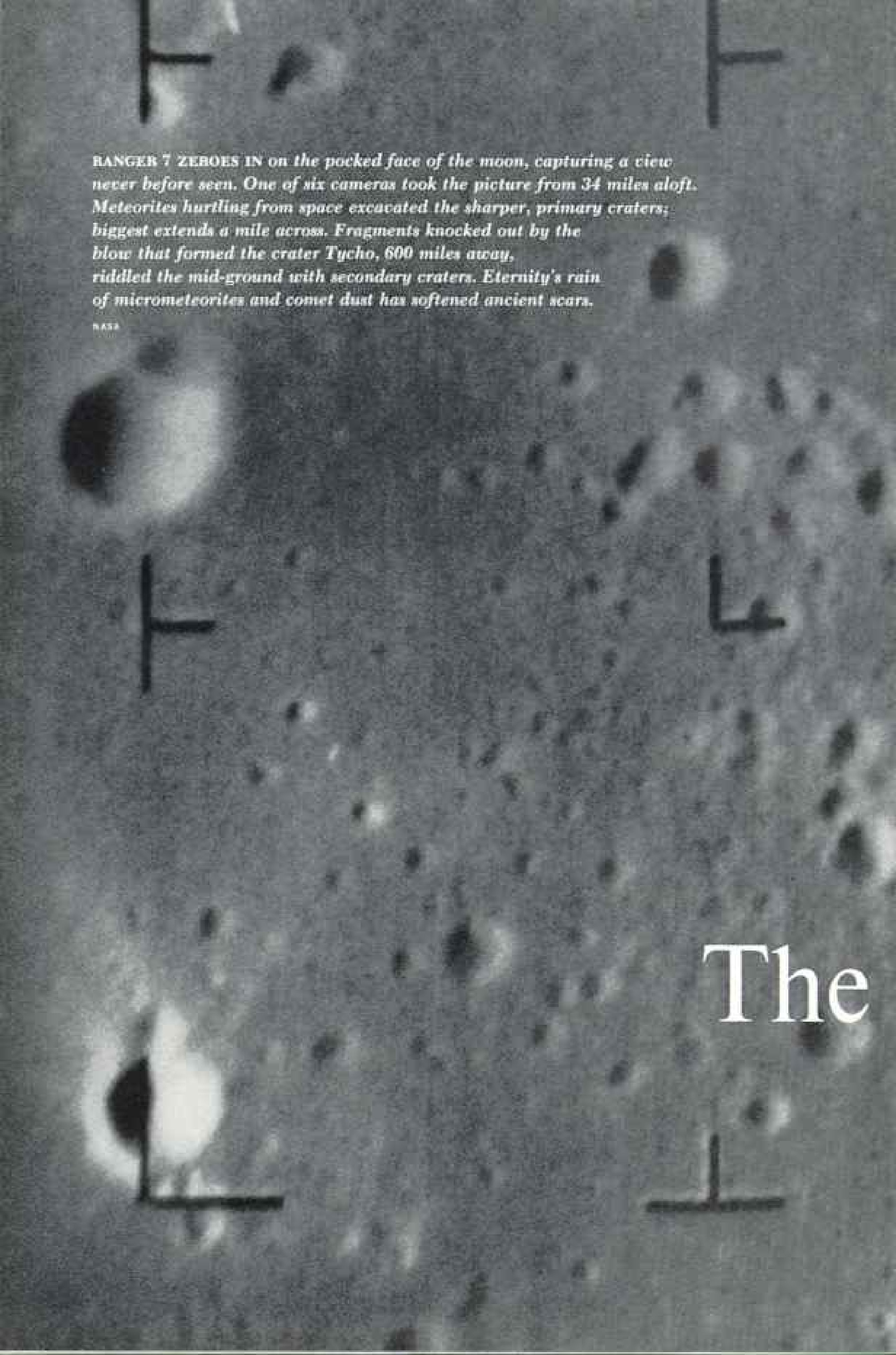
Rare-book dealer Edwin C. Buxbaum of Wilmington, Delaware, specialist in out-of-print GEOGRAPHICS, estimates that only about 150 complete collections exist.

The Society itself owns 10 of them. One includes every supplement, advertisement, brochure, and notice ever published by the Society—even the announcement (with map) of a picnic for members in 1895! A New York

advertising executive, Robert S. Conahay, assembled the set (above) and its associated material. In 1960 the Society purchased the entire collection for \$18,000.

Although lacking the color and beauty of today's GEOGRAPHICS, those early magazines combine in equal measure the qualities of timeliness and timelessness. The very first issue, dated October, 1888, carried an analysis of the blizzard of '88, complete with color charts tracing the birth and death of the storm. In 1906, the magazine explored the cause of the famous San Francisco quake.

Among these early magazines one finds an eyewitness report on the Chinese nationalist movement that exploded into the bloody Boxer Rebellion of 1900. From South Africa comes a firsthand account of the influence of geography on the strategy of the Boer War. William Howard Taft writes on the Philippines: The issues present tsarist Russia in all its moody ferment, Africa in the freshness of discovery, American Indians who have hunted the buffalo. All these articles now are being preserved for posterity. THE END 689



RANGER 7 ZEROES IN on the pocked face of the moon, capturing a view never before seen. One of six cameras took the picture from 34 miles aloft. Meteorites hurtling from space excavated the sharper, primary craters; biggest extends a mile across. Fragments knocked out by the blow that formed the crater Tycho, 600 miles away, riddled the mid-ground with secondary craters. Eternity's rain of micrometeorites and comet dust has softened ancient scars.

NASA

The



Moon Close Up

By EUGENE M. SHOEMAKER
Chief, Astrogeology Branch, U. S. Geological Survey

THE MOON WILL NEVER seem the same. For scientist and romanticist alike, its enigmatic face is altered. It's our fault, and we're delighted. We've taken the first close look at our space mate, and if fantasies have faded, facts have replaced them. And the facts suggest that we can set down a manned spacecraft on the lunar landscape without unreasonable risk.

Earth's Satellite Brought Nearer

Ever since man became man, and so learned to wonder, the moon has seized his emotions and teased his curiosity. Millenniums of myth and mystery brought him no closer to an understanding of the eternal traveler of the night skies than was his low-browed ancestor, watching naked on the African plains.

Then, an instant ago in the time span of the planets, an Italian named Galileo made a telescope and at once saw many wonderful things. In that moment our knowledge of our place in space leapt forward. The moon took form and revealed its features. A period of great astronomical discovery began.

By July 31, 1964, when the spacecraft Ranger 7 hit the moon, we had gone about as far as we could in discerning lunar topographic features with earth-based optics. Our best telescopes had brought us visually to within 400 miles of the moon's surface. But they could do no more. The protective atmosphere that shields us from the blaze and bombardment of the universe also shields its secrets from us; our vision is blurred. No lunar detail less than 800 feet across had been distinguished from our planet.

Still, we had inherited many basic facts about the moon. We knew its diameter: one-quarter that of the earth; its mass: $1\frac{1}{4}$ percent of earth's; its orbital and rotational periods: both $27\frac{1}{3}$ days, keeping the same face always toward us.

And we had learned much that was new, as befits a nation on the verge of space travel. We had measured variations in the brightness of the moon's reflected light. We had charted its features, all the way down to those of one mile or less across. We had worked out the layering of its surface, and so learned the sequence of major events in its history. We had even bounced radar off it to determine its exact orbit.

And yet, the face of the moon raised more questions than it answered. We could only guess at its exact topography and the roughness of its surface—matters of particular in-

terest to an astronaut bound for the moon.

We needed a breakthrough greater than Galileo's glass, of a kind never before achievable. The Jet Propulsion Laboratory of the California Institute of Technology at Pasadena had spent five years and \$200,000,000 trying to deliver just that to the National Aeronautics and Space Administration. Through its Ranger program, JPL sought to provide future manned and unmanned lunar landing projects with vitally needed information about the surface of the moon.*

A series of Ranger spacecraft had been sent out to get it. None had succeeded. But Ranger 6 proved beyond question the excellence of the Ranger design by a flawless if scientifically unproductive flight.

Ranger 6 sent home no photographs; its cameras were knocked out by an accident shortly after launch. But now JPL proposed again, with Ranger 7, to provide man with distant eyes, positioned perfectly in space, through which to see what nature had made invisible to him.

Scientists Compile Moon Portrait

As JPL's research progressed, my organization, the Astrogeology Branch of the United States Geological Survey, focused its instruments and intellects on the moon. We, too, were set up to support NASA's programs.

We mapped the Ranger target areas not only by observation but by applying such astronomical techniques as photometry to geological procedures. With the data obtained, we assisted in the selection of sites for Ranger photographic coverage, hoping through its pictures to discover areas smooth enough for a manned landing.

Ranger 7's target was a promising site. A plainlike region about 400 miles south of the great crater of Copernicus, it appeared to be one of the smoothest in its part of the moon. And at the end of July, 1964, it would be well lighted for Ranger photography.

When Ranger 7 was launched, I was at JPL, closeted with other scientists responsible for choosing impact areas and interpreting pictures. In the control room, Pat Rygh, the space flight operations director, sent the messages that guided the little blue-winged, six-eyed spacecraft into a precise trajectory for a moon landing. It would have to fly through a 10-mile-wide "window" 120 miles

*See, in NATIONAL GEOGRAPHIC, "Exploring Our Neighbor World, the Moon," by Donald H. Menzel, February, 1958, and "Robots to the Moon," by Frank Sirtwell, October, 1962.

Energy-gathering "wings" spread as Ranger 7 undergoes a final inspection at the Jet Propulsion Laboratory of the California Institute of Technology in Pasadena, before shipment to Cape Kennedy in Florida for launching. These panels of solar cells convert sunlight into the electricity needed to power the craft's equipment. Six television cameras in the silvery tower will focus on the moon through the aperture at center. Boxes at the base of the tower contain Ranger's complex electronic system, including a small computer. Topmost section is the omnidirectional antenna, used during launch and while the craft maneuvers in space. A more powerful dish-shaped antenna (here hidden beneath the craft, but seen on page 697) will send back the moon pictures.

Incredibly successful in its stated mission to "acquire and transmit a number of images of the lunar surface," Ranger returned 4,300 pictures in 17 minutes, giving man a view 1,000 times clearer than through any earthbound telescope. The achievement has been hailed as the greatest single technical advance in astronomy since Galileo.

DETAILS OF THE CRAFT, BY JET PROPULSION LABORATORY AND PHOTOGRAPHY BY NATIONAL GEOGRAPHIC PHOTOGRAPHY UNIT, INCORPORATED © N.G.S.



Mighty Atlas Lifts Moon Explorer From Cape Kennedy: July 28, 1964

Shrouded in the nose cone, Ranger rests atop second-stage Agena-B rocket that will place it in earth orbit, then at the precise instant hurl it toward its goal.

Atlas and Centaur rockets will team for forthcoming attempts to "soft-land" on the moon a laboratory craft, Surveyor, carrying stereo TV cameras whose swiveling gaze will be able to see objects as small as marbles.

Two Mariners, scheduled for launching this month to photograph Mars, will ride Atlas-Agena-D. For manned moon excursions, NASA plans to use the immensely more powerful Saturn 5.





STYLING BY THOMAS

Hub of an electronic web that stretches to the moon:

HERE THE CAPTAINS of the strange ship made their decisions and gave their orders; Ranger 7 obeyed without fail. Photographed seven hours before the end of a perfect flight, the control room is calm. Some of the experts who will man the empty positions are sleeping nearby. In more than 20 practice runs, JPL scientists set up so many bizarre accidents and emergencies that Ranger's actual flight, acclaimed a "textbook exercise," seemed dull by comparison.

Electric wall panels above the control consoles carry information fed from supporting technical areas. There are enough boards here to handle two simultaneous missions.

The two men in foreground, blurred by the long exposure, select data for transmission by television

cameras, which hang before them like lamps. During the flight, JPL used 100 TV cameras to relay such information to 200 monitors spaced throughout the center.

Celestial navigator William Kirhofer (upper right), plotting Ranger's approach to the moon, simulates the cameras' bearing 10 minutes before impact. He projects on the target area a small beam that covers the cameras' field of view.

Using this engineering model, developed in cooperation with 26-year-old mathematician Ezio Piaggi, Mr. Kirhofer helped plan the spacecraft's important mid-course maneuver. The action slowed the too-speedy Ranger in order to put it on



B. SMITH, NATIONAL GEOGRAPHIC STAFF, AND J. H. STEPHEN (LOWER RIGHT) © N.A.S.A.

JPL control room

the moon at the desired position and to allow a preset clock to turn on the cameras at the proper distance from the lunar surface.

Tracing the new trajectory on the model, Kirchofer determined the areas that the cameras would scan. Moon model rises above a tilted tabletop scaled to represent distance.

Floodlight held by technician softens the contrast for a television camera, whose picture shows on the monitor above.

Mighty antenna at Goldstone in the California desert tracked Ranger, sent it orders, and received its radio waves that were converted into pictures. Other stations at Woomera, Australia, and Johannesburg, South Africa, watched the craft.



above the earth at 24,470 miles per hour, with an allowable error of only 16 miles per hour.

To the Goldstone tracking station in California's Mojave Desert (page 695) came cryptic signals acknowledging commands and reporting their execution. For more than 68 hours Ranger 7 sped on. Then, 17 minutes before impact, its cameras raised their warbling voices. Images formed in their TV tubes were being translated into electrical impulses and transmitted back for photographic and tape recording.

The voice on the hot line from Goldstone told us, "... 10 seconds ... we're receiving pictures to the end ... impact ... impact!"

Suddenly, silence. Then shouts and handshakes all through JPL hailed America's first successful photographic mission to the moon.

Craft Hits Six Miles From Mark

Afterward Project Manager Harris Schurmeier said, "We did it, and we're going to be able to do it again. Not every time perhaps, but there'll be other flights as perfect as this one.

"We're learning," he added. "With Ranger 6 we missed our predicted target by 18 miles. This time we missed by about six."

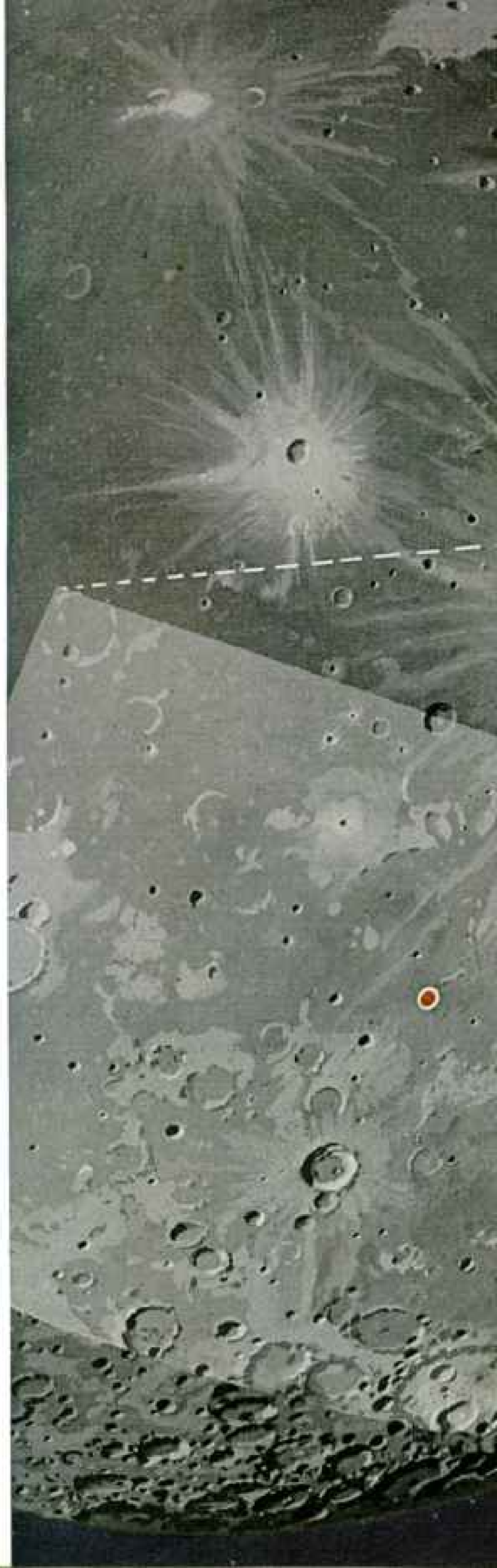
In its final minutes of flight, Ranger 7's cameras transmitted more than 4,300 photographs. The last was recorded at Goldstone just 1.49 seconds after the shutter clicked in the spacecraft. I scanned the photos a few hours later with my colleagues in the Ranger program, Dr. Gerard P. Kuiper (the principal investigator) and Ewen A. Whitaker, both of the University of Arizona, and Raymond L. Heacock, of JPL (page 703).

To us these unlovely rectangles of mottled gray were beautiful. They were nearly unbelievable. No one had ever seen details like these. Resolution in the last photograph taken

Its television eyes focused on a 300,000-square-mile segment of the moon, shown as overlapping rectangles, Ranger 7 flies the angled approach that allows unhindered vision from the camera window. Here 1,300 miles up, solar panels face the sun.

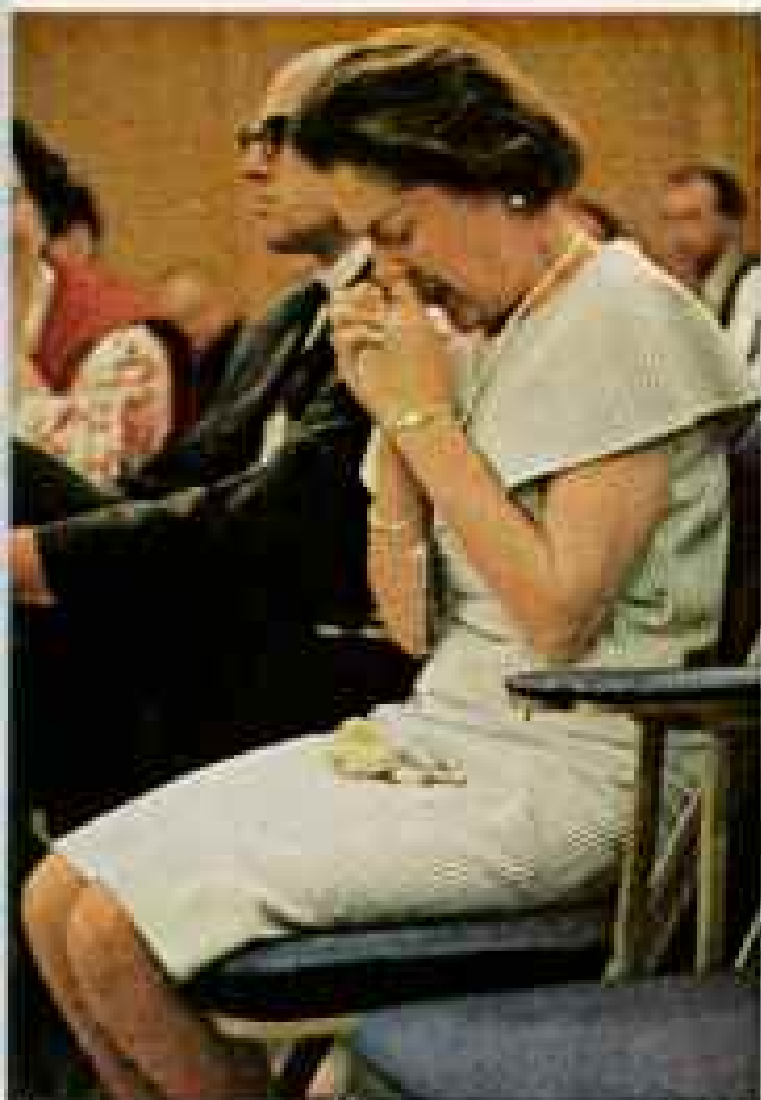
Moon's ravaged face reflects its explosive history. Lighter rays around the crater Copernicus (upper center) contain clusters of secondary craters that reach near to point of impact (red circle). Some of the lighter splotches in the camera view are debris from the cataclysmic collision that created the vast Mare Imbrium, Sea of Rains, which ranges over the horizon at upper right. Most mountains are remnants of crater rims.

PRINTED BY PIERRE MARX. LUNAR SURFACE BASED ON LUNA ORBITER PHOTOGRAPHS, COURTESY OF LUNAR AND PLANETARY LABORATORY OF THE UNIVERSITY OF ARIZONA © N.S.S.





P. M. ...



Tension grips Mrs. Edna Haggard, JPL secretary, as she listens to Ranger reports coming over a loudspeaker.



480 MILES Dark dry "sea" surrounds brighter uplands. The city of Los Angeles could fit within the rim of Labiniezky Crater (lower center).

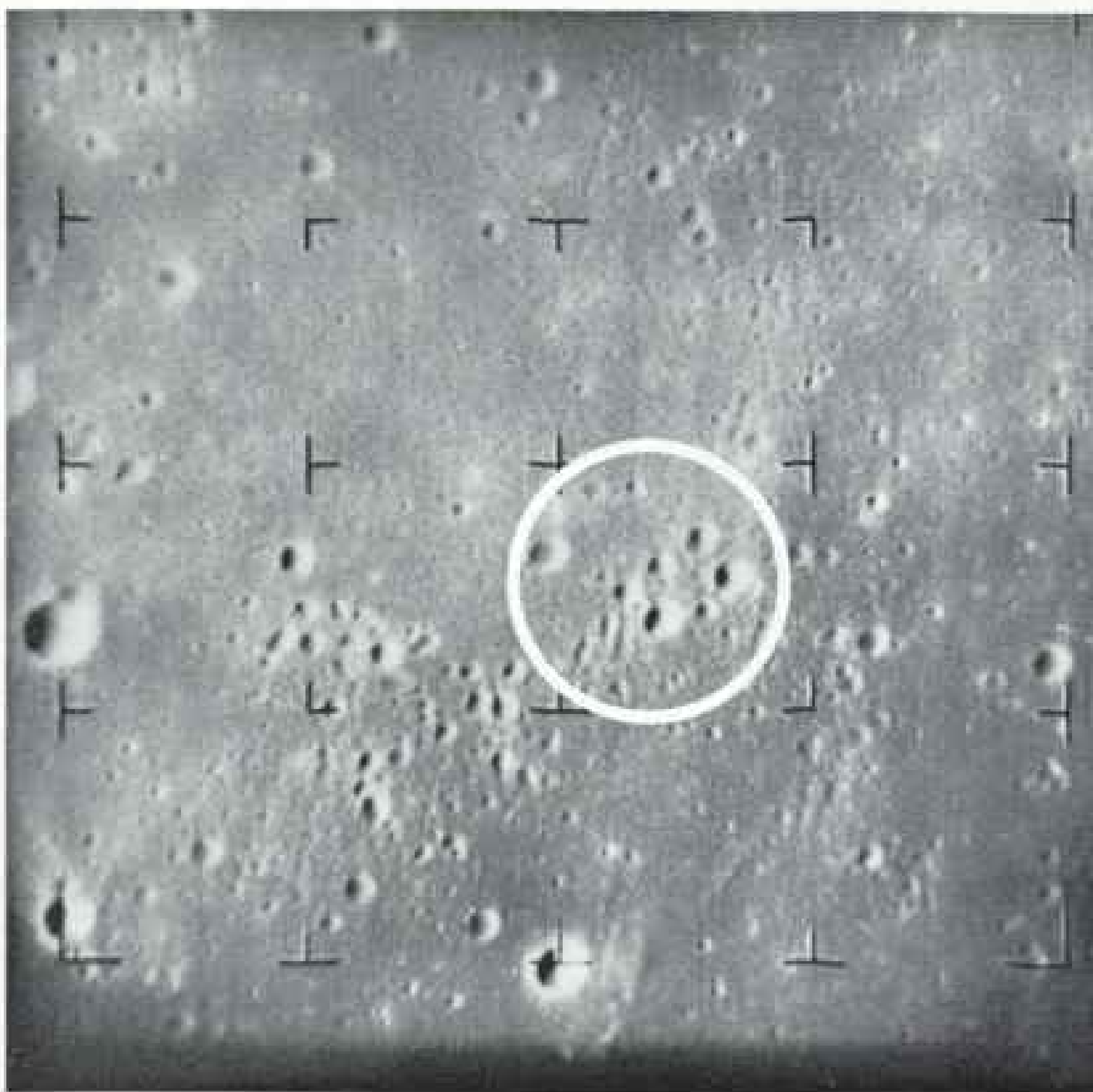
Consider the rain, the con-
sistent relentless down-pour
that causes erosion, change,
transformation.

On the earth the rain is water. Rain feeds rivers which, at their mightiest, can cut such glories as the Grand Canyon. Freezing rain breaks rocks; packed snow and ice form glaciers that can gouge beds for such majestic waters as the Great Lakes.

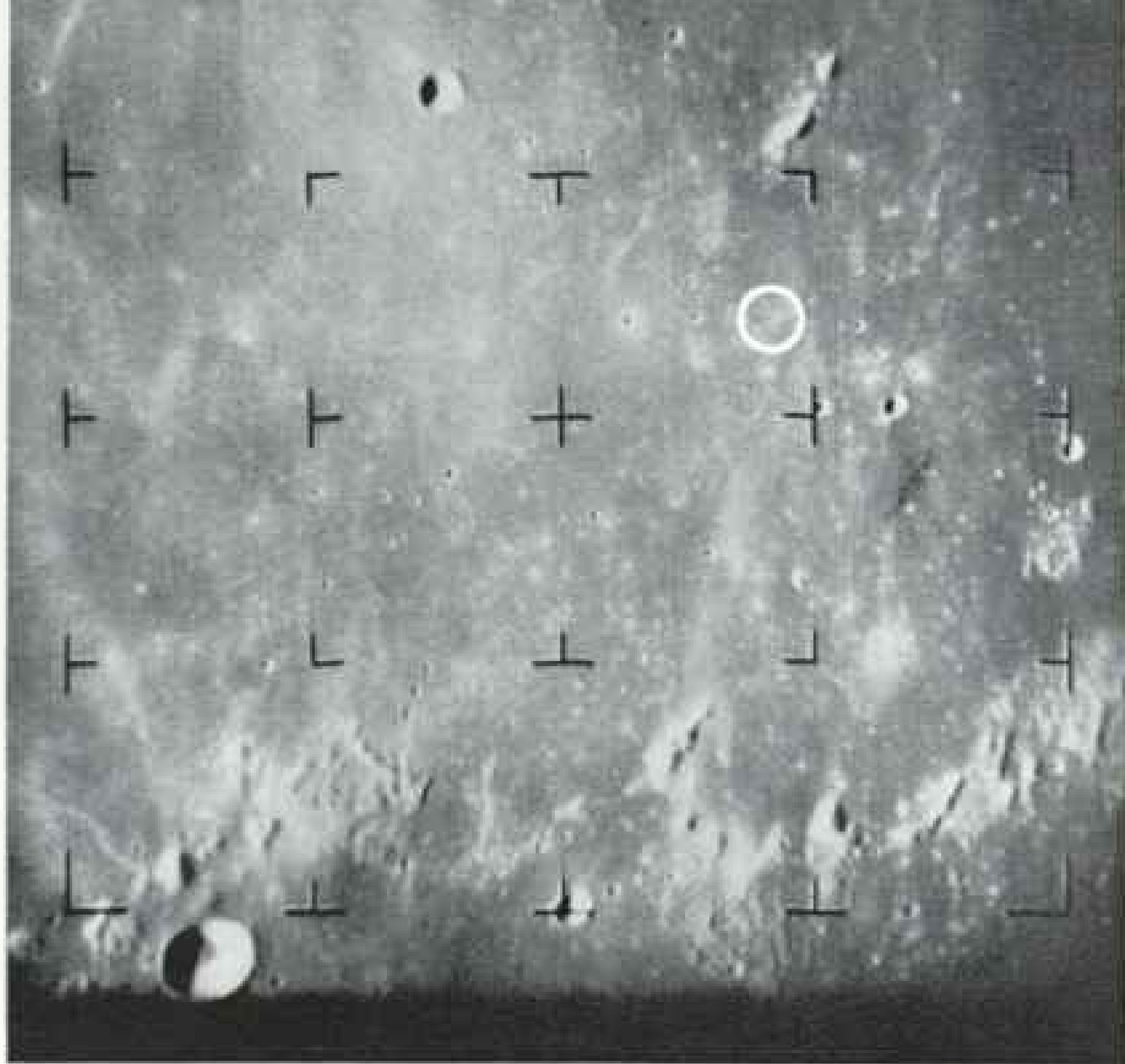
On the moon the rain is hardened matter. Space debris, crashing in at terrific speeds, buffets the tortured surface, cracks and scatters the rocks, and digs holes small as a pinhead or big as Hudson Bay.

Earth's water erosion usually heals the gaping wounds inflicted by attacks from space. But the moon forever reflects the awesome shattering of celestial barrage.

Circles enclose the same area in all pictures.

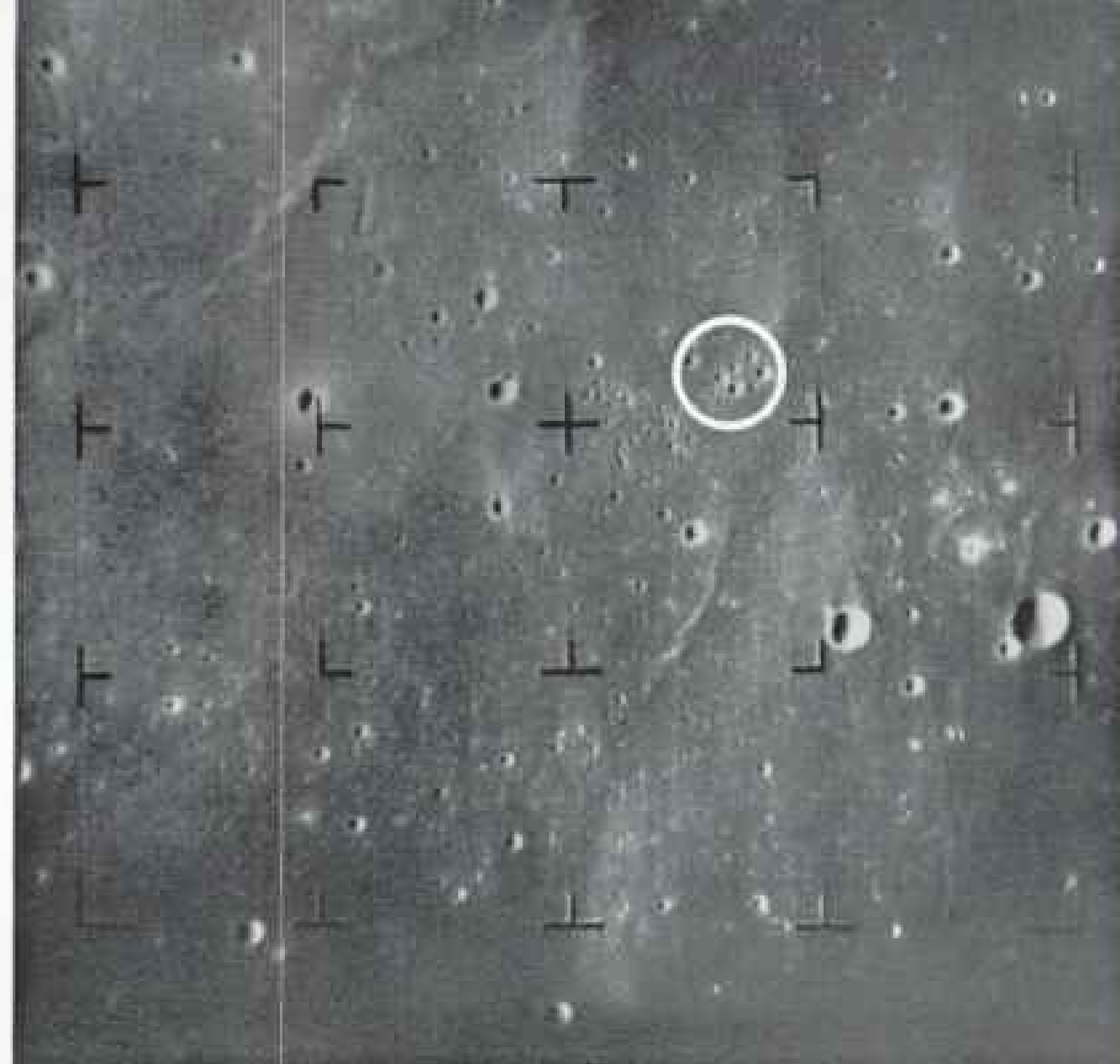


34 MILES Shallow, elongated secondary craters reflect the glancing strike of fragments thrown by impact of meteorites elsewhere on the moon.

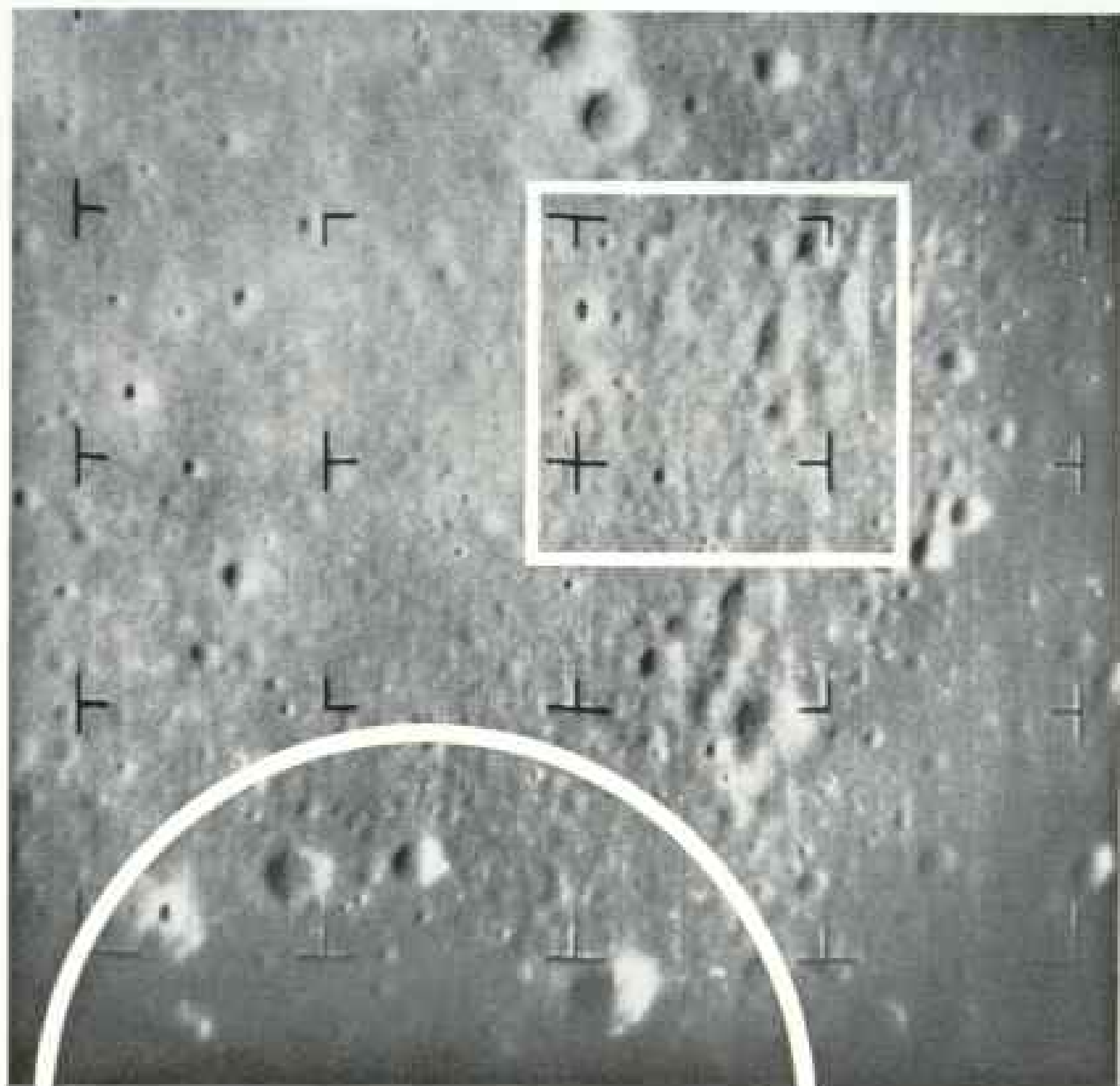


ALL MOON PHOTOGRAPHS FROM NASA

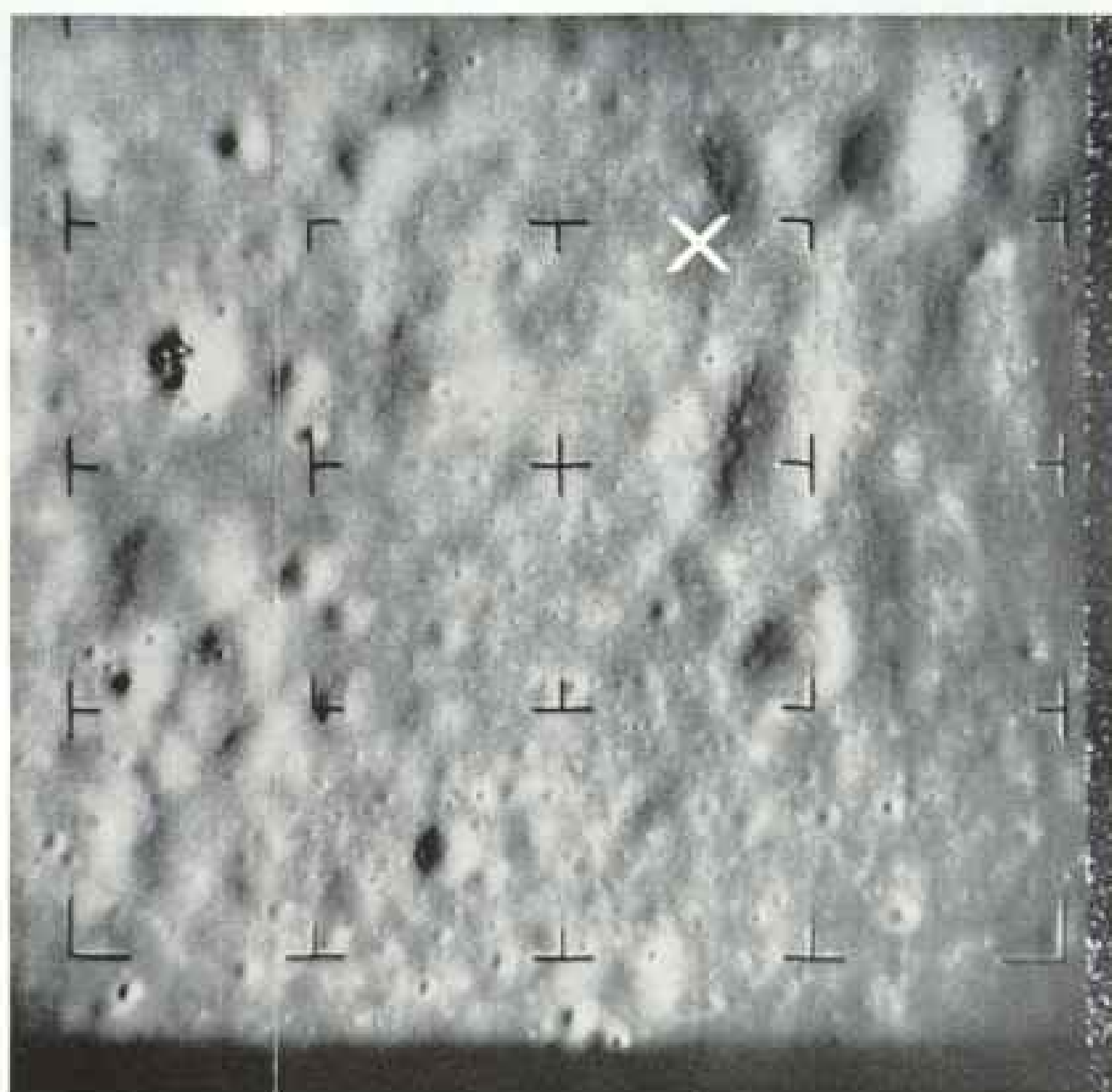
235 MILES Steep-sided, flat-bottomed primary crater (lower left) shows walls firm enough to hold their shape, not formed of soft, shifting moon dust.



85 MILES Peppering of secondary craters looms into view. Cluster pattern indicates that they were dug by missiles loosed when Tycho Crater was created.



11 MILES Abrasion of cosmic rain gives secondaries the appearance of smooth dents. White square includes area of the picture at right.



3 MILES Three square miles are half pitted with craters. Receiver noise at right shows that the picture was not completely recorded at time of impact at "X."

Consider the dust, the soil, stone, sand, water.

On earth such substances compose the planet's skin, which man has learned to live on, change, and often conquer. But what paves the surface of the moon? Do crags and craters make going rough underfoot, or does dust—soft, shifting, and many feet deep—lie in wait to swallow invading man?

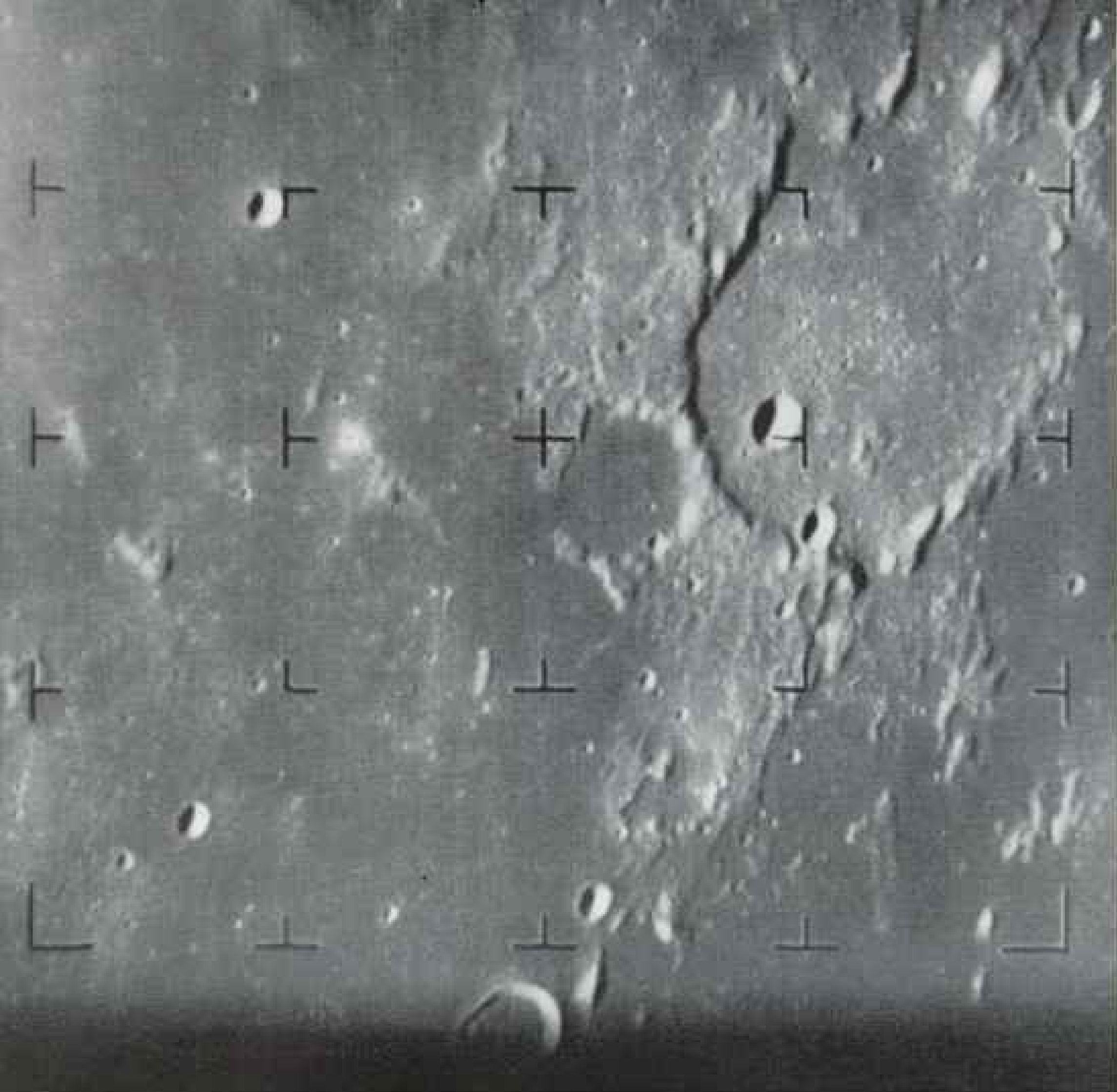
To answer these questions and prepare for man's landing, Ranger 7 made its voyage. These images tell part of the story of what American astronauts will find when they step onto the moon, hopefully by 1970.

In interpreting the pictures, the author deduces that the moon's face is constantly being worn down and shaved away by the ceaseless cosmic rain. But to him the photographs fail to show any evidence of deep dust.

EXHIBITION BY THOMAS H. SMITH © N.S.A.



Joy of success transports Mrs. Haggard, who works for Harris M. Schurmeier, JPL Project Manager of Ranger 7. Cameras are sending pictures, she hears.



Ranger's view of Guericke Crater from 470 miles: Hitherto unseen craters appear in sharp definition. Two of the flying TV cameras scanned 1,150 lines per image, as compared to 525 lines in ordinary TV pictures in the United States.

NASA

was more than a thousand times better than had been achieved with earth-based telescopes.

Like all televised pictures, Ranger's had scan lines, but so much finer and more numerous than those of a standard television screen that they looked like direct photographs. What had been mere specks through the telescopes became clear, crisp shapes. In the closest shot we saw forms no bigger than a small boy.

We had little time and a lot to look at, but all of us noted at once the single greatest fact revealed by Ranger 7's cameras: The moon's surface, seen for the first time at close range, was not radically different from our idea of it.

To scientists, confirmation is as valuable as information. Since Dr. Kuiper

and I have shared responsibility for telling the builders of future moon-landing vehicles what kind of terrain their machines would encounter, this discovery was deeply gratifying.

I headed back to my laboratory in Flagstaff, Arizona, elated and relieved. There was urgent work to be done connected with space projects already under way.

Mapping the geology of the moon was, and is, our main occupation. We are concerned not only with topography, but also with the distribution of different kinds of rock and the effects of forces that shape the surface. To a degree, we map the moon the way the Geological Survey maps the United States.

Several quadrangle maps are finished—each covering an area about the size of



Earth-based telescope picture approximates Ranger's, but atmosphere blurs details. Guericke Crater, whose filled basin and broken rim show its age, is 36 miles across; Arizona's Meteor Crater, one of the best known on earth, is less than a mile wide.

MOUNT WILSON AND PALOMAR OBSERVATORIES

Arizona. The whole equatorial area of the moon will be mapped by the end of this year; this is the region in which our first manned craft will land. In three or four years we'll have mapped the whole visible side—about 50 quadrangles in all.

This geological mapping was the basis of my own pre-Ranger "model"—my personal conception—of what the moon might be like, close up. To explain what the Ranger pictures mean to me, I must first explain my mental picture and how I arrived at it. As it turned out, it wasn't far wrong.

Craters Pock Lunar Plains

There are differences, of course, between my mental picture and the real thing. All of us had tried for years to second-guess the results of Ranger's success. Each of us

was surprised differently, according to his own preconceptions. And there are still differences between thoroughly qualified scientists as to what Ranger 7 taught us about the moon's surface. I give you my own conclusions.

We can set aside the various theories of lunar origin; Ranger's pictures for the most part don't bear on it. It's the surface we care about right now. We want to put a man on it.

Our satellite's main features have been known for centuries: rugged mountains; rocky, plainlike areas called *maria*, or seas (by Galileo, who thought they were); and craters. The moon is so pock-marked that even its craters have craters. Hundreds of thousands of them can be counted from earth. The biggest are hundreds of miles across, and, prior to Ranger 7, we could see smaller ones down to our frustrating limit of visibility.

Craters appear to differ as to their origins. Some are probably caused by volcanic outbursts, some by collapse. Others we can't identify. But the vast majority, I believe, are caused by impacts.

Those impacts not only made craters, they also sent us samples. When a piece of "space junk" smacks into rock at 10 to 20 miles per second, it knocks out a spray of fragments. Some of those knocked from the moon reach escape velocity and end up on earth.

Made of lavalike basalt or siliceous glass, they contain elements also found in the earth's crust. They give us an idea of the makeup of the moon's surface, but only an idea. The same elements are there. But the airless, waterless moon differs markedly from earth. It remains simple and primordial, a picture of our planetary past.

Yet it is a picture we have always seen "through a glass, darkly." I combined observation and deduction and came up with a mental close-up view of a *mare* surface, the likeliest place for a lunar landing.

This landing field must have impact craters, of course. They are everywhere on the moon. These are of two kinds: primary craters, formed by fragments hurtling in from space, and secondary craters formed by chunks of rock thrown out of the primaries.

All but the largest primaries are round, as if hollowed by explosive force; steep-sided, with

raised, clear-cut rims and sometimes outward-reaching rays. Their distribution depends on the geological age of the surface on which they are formed; old surfaces, such as the *maria*, bear more crater scars than geologically younger surfaces.

The secondaries occur in swarms and clusters, concentrated around the primaries which produced them. They are elongated in shape, shallower than primaries of corresponding size, and their walls are more gently sloping. Their rims are irregular, and they have a smoother look.

Meteorites Throw Showers of Rock

So far I was on safe ground in my effort to build a mind's-eye model of the lunar surface. I could actually see through the telescope something of the shape and distribution differences between the primary and secondary craters. Now for some speculation.

Most of the material ejected when a primary is created falls nearby and forms a raised rim. But some of the bigger lumps fly farther. They always plunge into the ground at an angle, and their speed is relatively low—on the order of one mile a second. When they hit, they gouge out secondary craters.

It seemed to me that there was a uniform-size relationship between primary and secondary craters. The biggest secondaries in each swarm knocked out by a primary ap-

The Author: Dr. Eugene M. Shoemaker (left) heads the Nation's most far-reaching group of geologists—those who practice their profession at a range of a quarter of a million miles. They work at the Astrogeology Branch of the U. S. Geological Survey, serving NASA's need for hard facts and educated guesses about the moon. Shoemaker and his colleagues advise the Jet Propulsion Laboratory on the lunar geology their spacecraft will encounter. Here at JPL, Dr. Gerard P. Kuiper, chief investigator (right), Raymond L. Heacock, and Dr. Shoemaker study Ranger 7's revealing photographs.



JET PROPULSION LABORATORY



peared to be about one-sixteenth the primary's size, with the others grading on down out of sight. In a given swarm the smaller secondaries, I reasoned, were far more numerous than the large ones.

Nuclear Blast Bears Out Theory

By great good luck I found solid support for these ideas conveniently located on earth. At the Atomic Energy Commission's Nevada test site, there is a man-made nuclear crater which has the form if not the origin of a modest lunar primary. A swarm of more than 6,000 secondary craters was formed around that crater by the identical mechanics I had

postulated for the lunar secondaries. Like the latter, they were shallow, irregular, and generally rimless. The largest of them was one-sixteenth the primary's size. And as they grew smaller, their numbers increased.

In the case of the moon's huge primaries which have rays extending outward from them, I observed that all the secondaries were clustered within the rays. The ray material was evidently debris tossed out by the secondaries. Such regions would be heavily pitted and poor places for an attempted landing. As one of my colleagues said, "We wouldn't want a spacecraft to put down in all that secondary jazz."



PHOTOGRAPH BY NATIONAL GEOGRAPHIC ARTIST ROBERT C. WALLIS (C) N.G.S.

Like an unexploded bomb, a rock mass 300 feet long nestles in the secondary crater it excavated. An astronaut from his LEM—lunar excursion module—explores the terrain with a Jacob's staff, an instrument equipped with sun compass and cameras. His space suit protects him from extremes of heat and cold and from micrometeorite rain. Vastly smaller than grains of sand, such particles of star dust can penetrate the outer layer of the suit but should cause no injury.

Milky Way and more distant stars appear measurably brighter from the moon than from the atmosphere-veiled earth. Red dot at upper right marks the impact site of Ranger 7.

The rock seen by Ranger from three miles up.

If the ray areas were unpromising, what about the other parts of the *maria*? What might we find there?

Dr. Kuiper and I agreed that the primary craters should not be a problem to "soft-landing" spacecraft. On the average, they seemed to occupy only about one percent of the *maria*. We inferred that even those too small to be seen by telescope would continue in about the same one-percent proportion.

But how about the secondaries? Their frequency would certainly increase more and more with decreasing size. To find out how much more, I began counting and comparing on the best photographs then available.

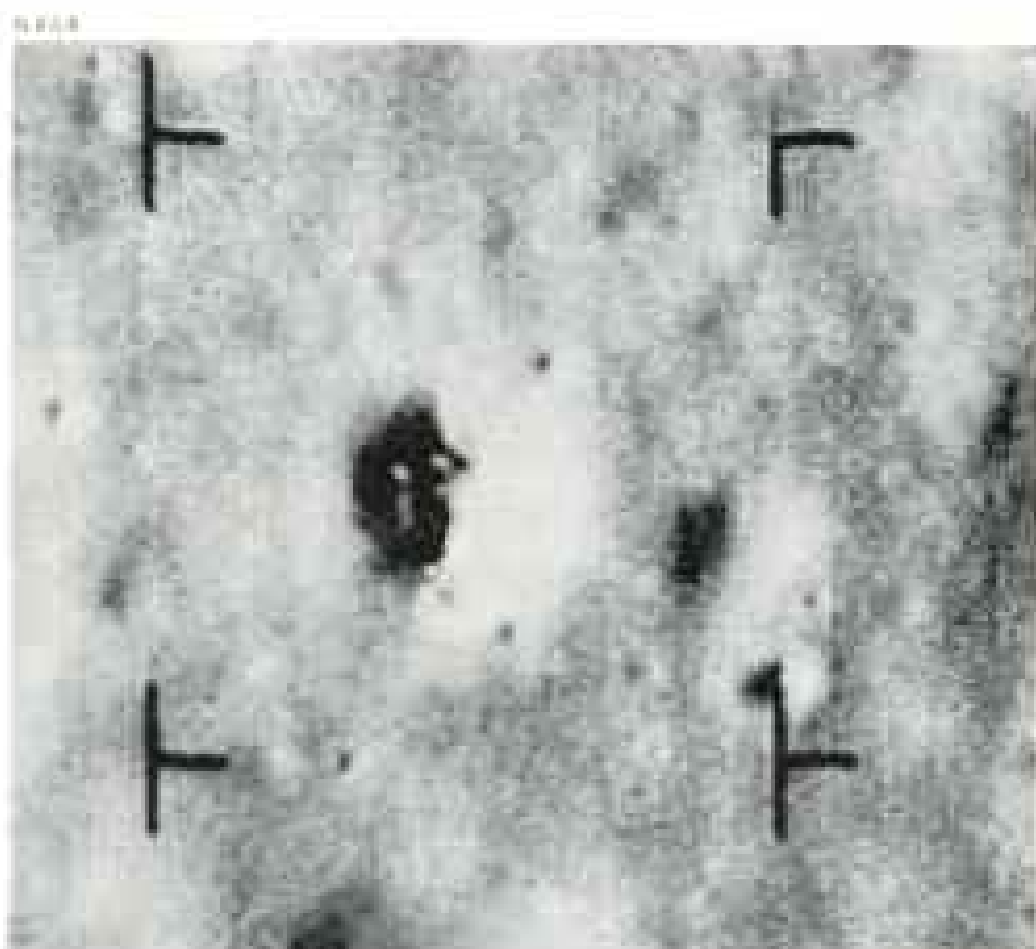
Though photographs reveal a little less than can be seen through the telescope by human eye, good pictures of the *maria* surface show all the primary craters from about 1,200 feet in diameter on up. But they show only a minute percentage of the secondaries. For one thing, most of the primaries seen are too small to produce visible secondaries. For another, even the largest primaries produce far fewer visible than invisible secondaries.

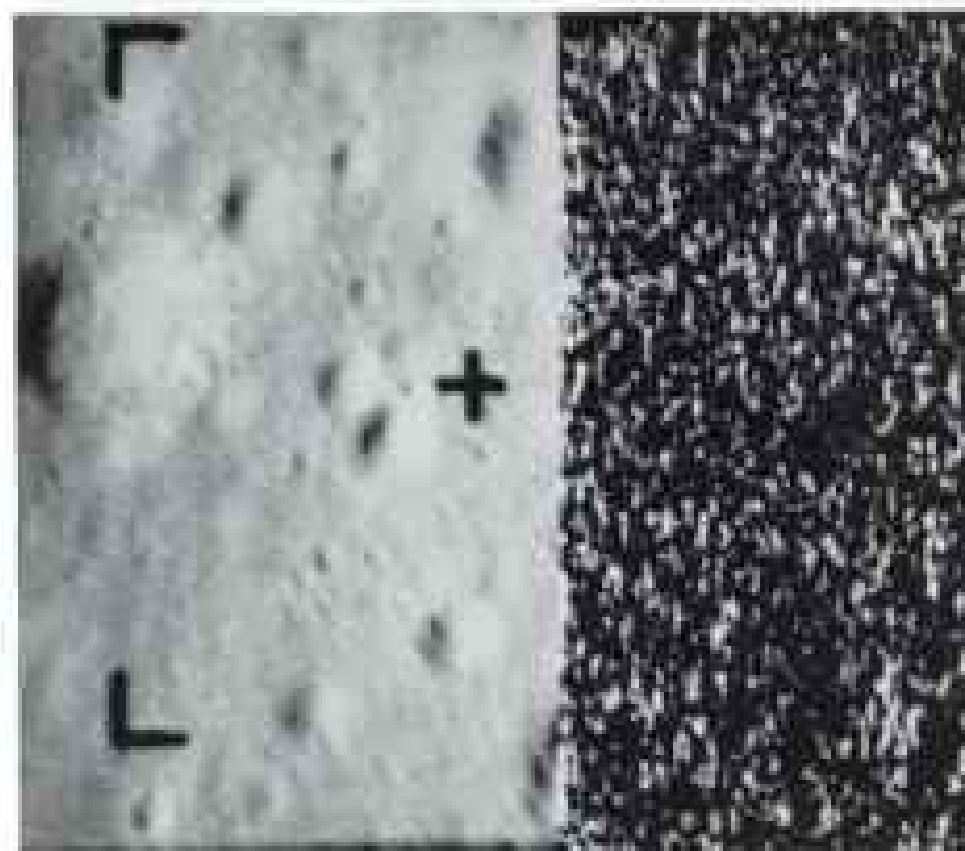
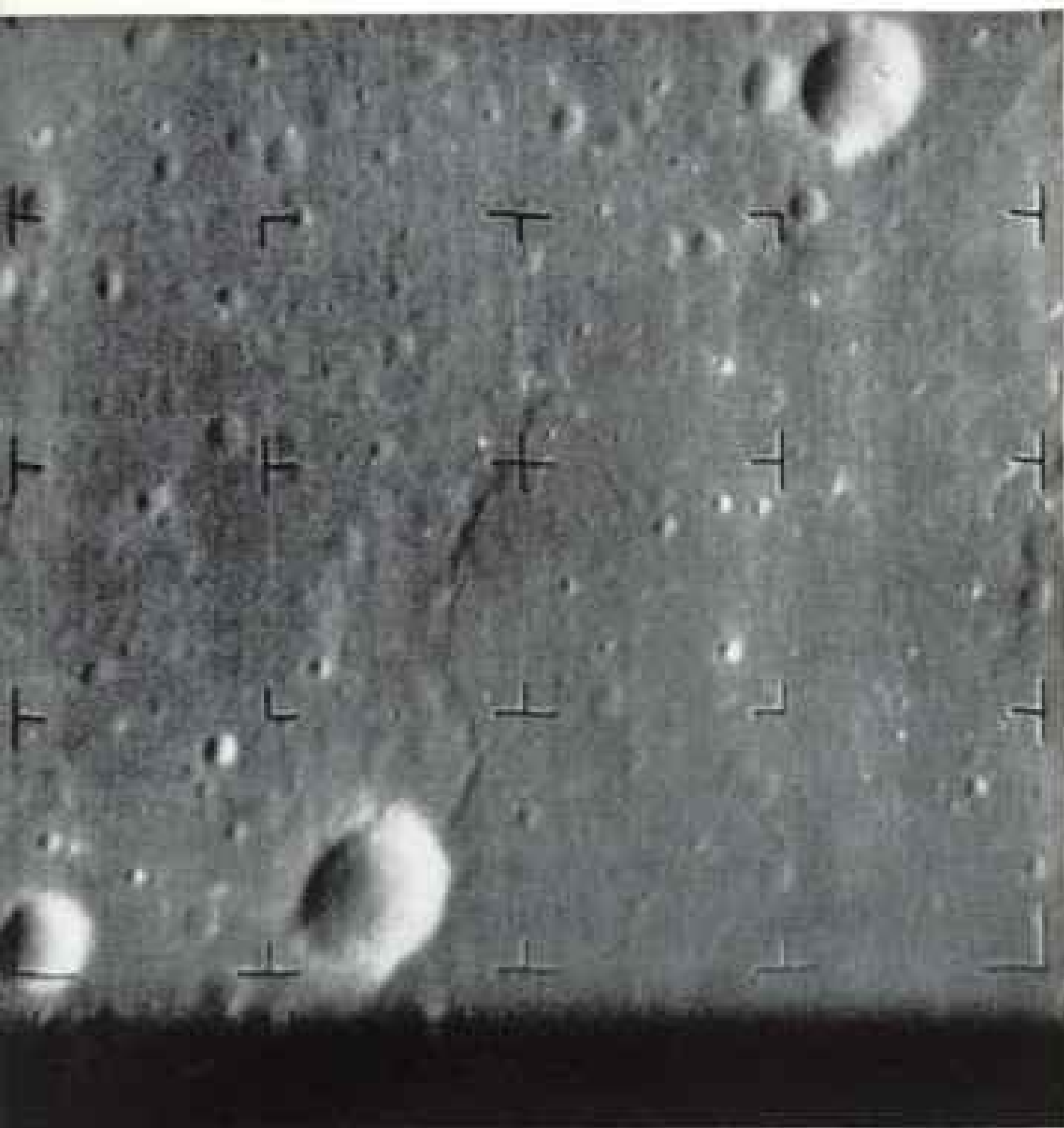
Would Debris Pose a Hazard?

Within the visible range, then, I expected to find a preponderance of primaries. I didn't. My count showed secondaries to be almost equally numerous. Projecting that fact mathematically, I concluded that as the secondaries decreased ten times in size, they would increase nearly ten thousand times in frequency.

A progression such as this presented a disturbing concept: The entire surface of the moon would be completely covered by craters of the 10-foot size. "Secondary jazz" indeed, and rough enough to be difficult, if not downright dangerous!

There would have to be a lot of debris on such a surface, too. Even though primary hits knock some fragments into space, most of the projected pieces fall back on the moon. On a surface covered by 10-foot craters edge to edge, the average depth of loose pieces should be equal to the average depth of such craters: several feet, and a nuisance if not a menace.





Last picture, from about 1,600 feet up, shows a scrap of lunar land 100 by 160 feet, the size of a plot in suburbia. Receiver noise pattern at right signaled Ranger's destruction.

Moon wrinkle at center is a ridge pushed up during internal heating or cooling. Marks transmitted by Ranger on all pictures serve as reference points; straight rows prove images were not distorted.

8411

The surface of this debris layer would naturally have been bashed further by smaller and vastly more numerous pieces of cosmic matter. It would become a thin film of pulverized particles, as light and porous as our infrared measurements tell us it is. Below it would be fragments the size of coarse sand and gravel, and under that, the solid substance of the original *mare*.

Ranger 7 Springs a Surprise

Well, that was my model—my personal prediction, extrapolated far beyond known facts. What would Ranger 7's pictures do to it?

As I followed those extraordinary photographs closer and closer to the moon, it began to look as though my model would check out. Small primaries, never before seen, continued to occupy about one percent of the area, as predicted. They kept their characteristic sharp shape, too, which suggested that they had been formed in rock, as had the large ones of similar appearance.

I saw 300-foot secondaries for the first time; they covered just about as much of the surface as I had imagined they would—roughly half of it.

Then, strangely, the frequency progression changed. I saw smaller and still smaller secondary craters, but instead of blanketing the

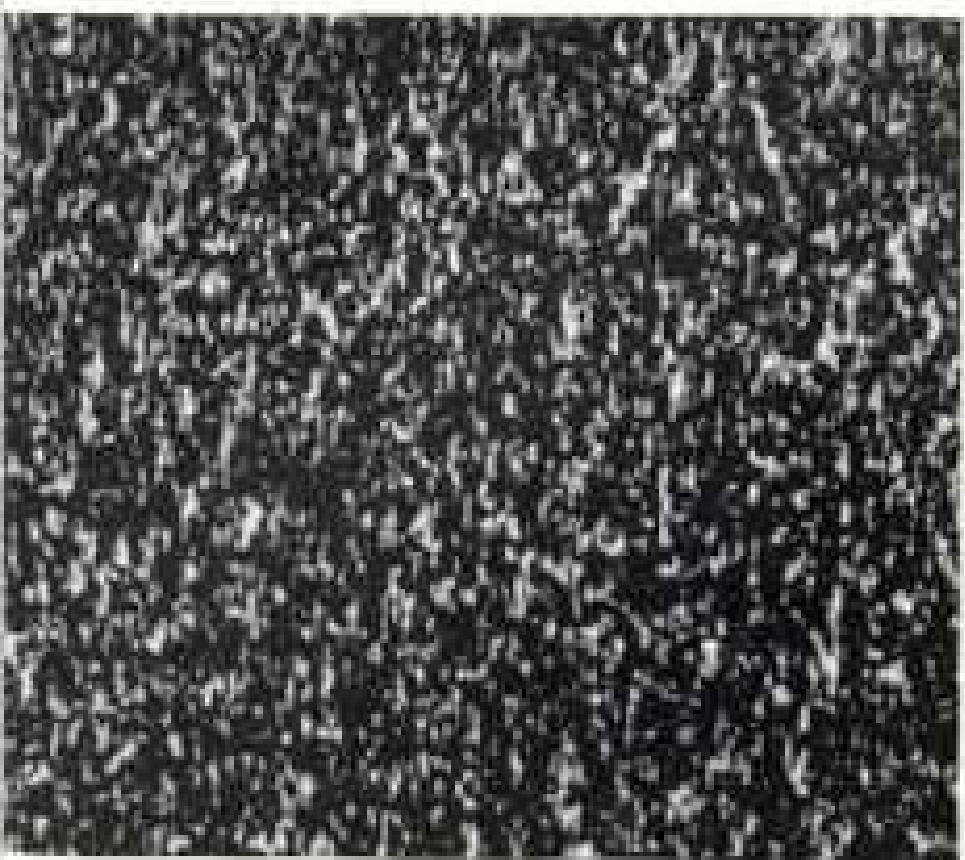
area, they took up less space than the 300-footers. Instead of growing rougher, the surface began to smooth out. At the limit of visibility there were smooth stretches between the craters.

Why? The shapes of those dishpan-size depressions gave me a clue. They were rounded, eroded, ground down.

How? By an intense bombardment of very small and very fast particles from space—far more intense than I had estimated. That, at least, is my best guess. Such particles would include not only meteorites, which form primary craters from dime-size to city-size, but also vast numbers of particles from the tails of comets.

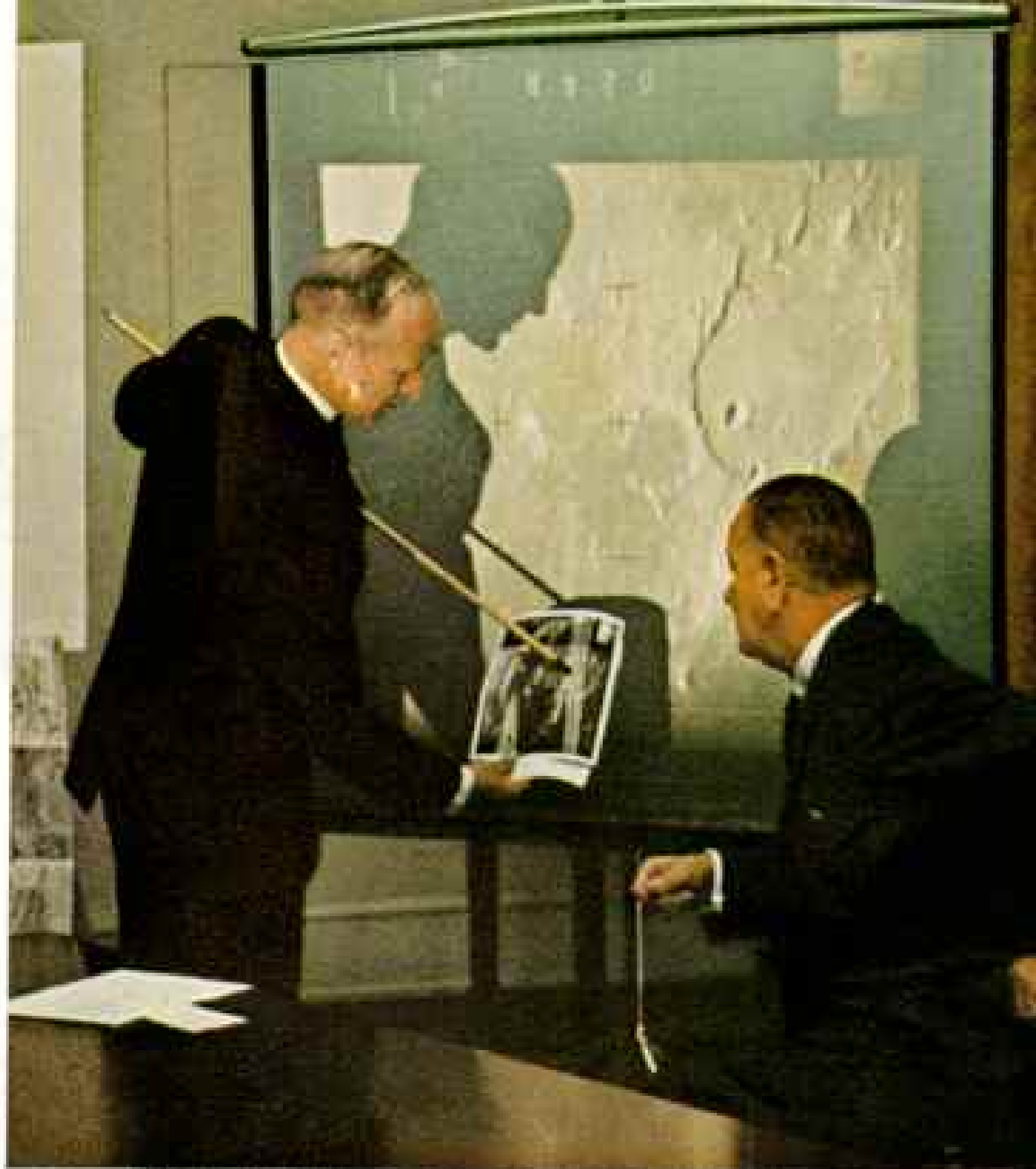
These minute objects do not erode the air-protected earth. But on the moon they would form primary craters down to the size of BB shot. Their velocity is so high that they could knock into space several times their own weight of moon matter. Thus they would not only wear down the lunar surface but would actually remove it, slowly and steadily, and so reduce the mass of the moon. Although they would create new fragments in the process, the layer of fragments would never grow any deeper.

The effects of this erosive process would be barely observable through a telescope. Big



NASA

At the White House, President Lyndon B. Johnson inspects moon pictures shown by Dr. William H. Pickering, director of JPL. A moon crater from the projected photograph shows on the scientist's face. The jubilant Chief Executive assured Dr. Pickering that he and his colleagues had "the gratitude and admiration of all Americans of all faiths, of all parties, of all regions."



EXTRACTS BY NATIONAL GEOGRAPHIC PHOTOGRAPHY GROUP WASHINGTON © N.G.S.

features do not change their appearance much when a few feet or a few tens of feet of their surface are removed fairly evenly. To the eye, a 100-mile crater would remain practically unaltered. But a 100-foot crater so eroded would look like a dent in a dough ball. And so it does (page 700). As for the 3-footers, only the most recent would be visible at all, and they soon would fade.

The total wearing away of the *maria*, according to my interpretation of the Ranger pictures, may be more than fifty feet! That much of the surface has been removed during their 4½-billion-year existence, enough to have wiped out very old craters that once measured as much as 500 feet across.

Probably the 10- and 6- and 2-foot craters I had expected had in fact been made, and in about the numbers I had anticipated. But they had been erased by the enormous rain of minute missiles, which I had not anticipated.

Pictures Minimize Landing Risks

Our new picture is still conjectural. It must remain so in part until we can send a robot or a man to land on the moon and reach out and pat it. The landing is the payoff, and the payoff will be soon.

Meanwhile our corrected model looks more promising than its predecessor. Outside the

rays, where the big secondary craters cluster, the *maria* are smoother than I had dared to hope. There are relatively level or undulating areas large enough for spacecraft landings. The regions roughened by car-size secondaries have been worn down. And although there is certainly a layer of debris, I'd now figure it to average less than a foot thick, to be fairly firm, and to present no problem for spacecraft or astronaut.

As a threat to man, the cosmic downpour responsible for all this leveling and softening looms less large than the other unavoidable hazards of space travel. Most of the particles involved would weigh a millionth of a millionth of a gram. Fast as they are, they stop when they hit. Both suits and spacecraft can be made impervious to the minute bits of matter which are likely to hit them in the course of a visit. As for the sizable chunks that have indeed been chewing up the surface of the moon for billions of years, their arrivals are too infrequent to count.

Beyond all this, we know one new and certain fact about our satellite: 390 miles south of Copernicus there is a raw, sharp-edged crater, about 20 feet wide by 12 deep. A few shreds of metal glint in its bottom. And the moon's mass is greater by the 800-pound weight of Ranger 7. THE END.

Vinland Ruins Prove Vikings Found the New World

By HELGE INGSTAD

DISCOVERY OF SPINNING TOOL CONFIRMS NORSE SETTLEMENT IN NEWFOUNDLAND

JUST AS THIS ARTICLE goes to press, a soapstone spindle whorl has been dug up at L'Anse au Meadow, Newfoundland, indicating Viking settlers there included women.

Unquestionably Norse, the small weight acted as a flywheel, spinning a wooden shaft to twist raw wool into yarn. The implement, of a type common at Norse sites in Greenland, Iceland, and Norway, was fashioned from a fragment of a charred cooking pot.



Here pictured actual size, this spindle whorl thus becomes the earliest-known European household artifact yet found in North America. It was unearthed at the L'Anse au Meadow site during cleanup work under the direc-

tion of Anne Stine Ingstad, the author's wife. She was archeological leader of the excavation that began in 1961. The new find strengthens earlier evidence presented in Mr. Ingstad's memorable article. — THE EDITOR

I FINGERED the worn surface of the stone anvil and hefted in my other hand a few lumps of slag. My feet pressed the earthen floor where a Viking blacksmith had stood to swing his hammer as he forged knives and nails and sword blades.

Here, on the northernmost tip of the Island of Newfoundland, we had discovered the first proven remains of a Norse settlement in the Americas (maps, pages 716 and 727). What I touched and held and saw about me declared beyond doubt that here an unknown sailor-warrior led ashore a brawny crew of Vikings nearly five centuries before Columbus.

Perhaps Leif Ericson himself had beached his ship and lived on this grassy bay shore—the earliest foothold of Europeans that we now know of in America.

The time was late summer, 1963; the place, the remote fishing village of L'Anse au Meadow, or "Bay of the Meadow," Newfoundland.

I could see, ranged about me on a terrace divided by Black Duck Brook, the results of two previous summer seasons of excavation. Now, with major support from the National Geographic Society, we had returned to complete our work.

The sandy surface was scarred with shallow depressions where we had cut away sod from the layered turf foundations of nine ancient structures, the heart of a Norse community that stood here soon after A.D. 1000.

The biggest house site, indicating a longhouse, measured about 70 feet by 55 (page 731). One large room suggested a Viking great hall, like those found in comparable Norse structures in Greenland. Here, around a central hearth, the Vinland voyagers must have gathered to work, eat, sing, and tell tales.

Viking warrior of oak, 1,100 years old, peers from a cart found buried in Norway aboard the famed Oseberg ship (pages 712-13). More than 2,000 miles away in Newfoundland, recent discoveries prove that daring Norse sea rovers were the first Europeans in the New World. Traces of their dwellings, dated by radiocarbon to 500 years before Columbus, have been unearthed with National Geographic Society aid.



A site next to the big one revealed burned and fire-cracked stones, possibly from a steam bath such as has been identified in Greenland's Norse ruins. Beyond it, we unearthed traces of a succession of dwellings, two of them sizable houses about 30 feet long. In some of them were fire hearths and ember pits lined with slate or other stone, small square hollows in which live coals were kept at night to start the next day's fires.

Visible clues to these momentous finds were scanty indeed. Some house sites revealed themselves simply as faint outlines in the turf; others showed not at all at the surface. We scraped in vain for domestic artifacts, such as the spinning weights and the bone and ivory chessmen and other games pieces found widely in Greenland.

Norse Settlers Smelted Iron

The smithy where I stood betrayed itself by a queer hollow in a sandbank close to the brook. Careful digging yielded fragments of worked iron and of the natural, local bog iron. Several hundred pieces of slag looked like the refuse from iron smelting.

This was important evidence in favor of the site being Norse, for neither Eskimos nor Indians in this area knew how to smelt or hot-forge iron. Carbon-14 dating assigned the smithy to Viking days. And it is very unlikely that later Europeans, coming to these shores, would have employed such a primitive smelting technique.

Across Black Duck Brook from the smithy, our tents backed up to the old Norse foundations. Open tent flaps caught the fresh breeze from Sacred Bay. Seaward, beyond the Sacred Islands, my gaze traveled to fortresslike Belle Isle, surely a crucial landmark to Norse seafarers, as to all more recent voyagers. Beyond and far off reared the blue hills of Labrador.

I could almost see a Viking ship coming south—tall prow sweeping up, square sail set to the clean north wind. In imagination I watched the ship nudge a bar and fancied I saw shouting sailors jump into a dinghy and row toward the shore.

As lucky discoverer of the Norse settlement, I could perhaps be forgiven for regarding this scene with a proprietary air. Yet no one realized better than I that the announcement, "Norse Ruins Found in Newfoundland," would be a tribute to all the scientists, scholars, and amateur enthusiasts—many generations of them—who had placed themselves on record that the Icelandic sagas, even though somewhat conflicting, must have had a factual base, and that "Vinland the Good" was a specific place on North American soil.

Long unrewarded, my own search had been a determined



RESEARCHING BY GEORGE F. HOBLEY © N. A. S.

The Author: Educated in law, Helge Ingstad gave up a comfortable career to become a trapper and explorer in the Arctic. From 1926 to 1930 he studied Canada's Caribou-eaters, Indians who feast or starve as herds wax or wane. Later he served as governor of Norway's icy Spitsbergen, studied Arizona's Apache, and lived among the Nunamiut, caribou-hunting inland Eskimos of Alaska.

Mr. Ingstad and his wife have devoted the past decade to seeking Leif Ericson's 1,000-year-old trail from Greenland to Vinland. The Norwegian couple's excavations near the village of L'Anse au Meadow, Newfoundland, have bared the ruins of a Norse settlement abandoned long before Spaniards landed in the West Indies. Here the Ingstads study charts aboard their sailing ship *Halten*.



one. Years of exploration lay behind, years of combing thousands of miles of Atlantic coastline of North America, guided by the old Icelandic sagas. Finally luck was with me, and my theory was confirmed at L'Anse au Meadow, where our third and climactic season of work was now under way.

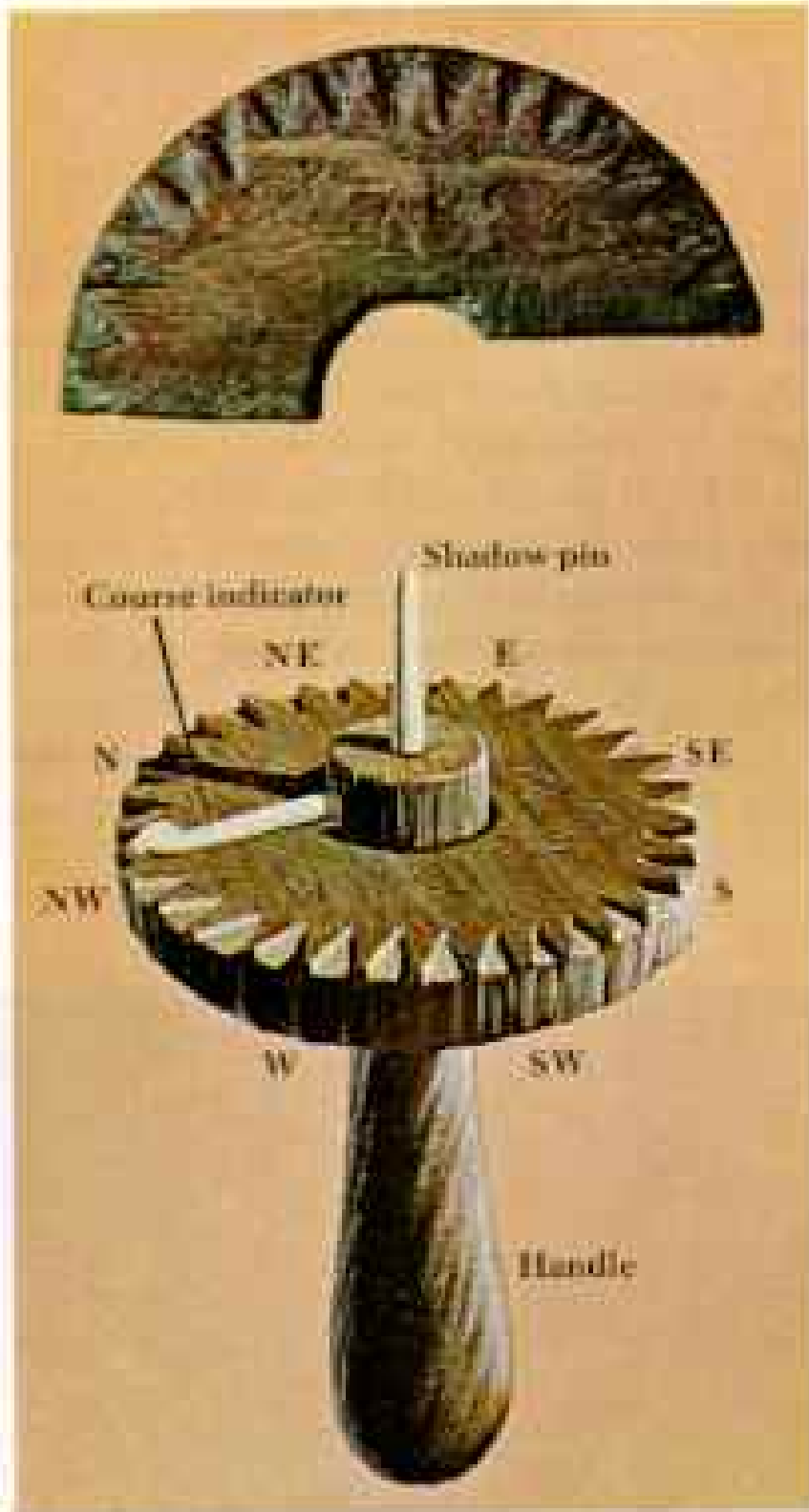
Topping all was the final verdict of radio-carbon analyses from the site: The average date of ten charcoal samples from fire hearths, pits, and the smithy worked out to the neighborhood of A.D. 900. The first Norsemen came about the year 1000, but the wood that they burned in their fires undoubtedly included much long-dead driftwood, which abounds

Woolen sail bellying in the wind, a ship from Greenland approaches Newfoundland. As the strange coast heaves into view, the leader—he could have been Leif Ericson—and his crew prepare to land. Vikings' open vessels proved seaworthy sailers. A duplicate of a 9th-century Viking ship unearthed in Norway crossed the Atlantic in 1893, making up to 11 knots and riding the fiercest seas. With planks lashed to ribs, the flexible hull sometimes twisted six inches out of line but remained watertight.

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PAINTING BY DENISE BARRETT SMITH © N.S.A.





Ship's bearing dial (upper), such as this fragment exhumed in an old Greenland nunnery, may have guided Vikings to America. This reconstruction, based on work by the Danish scholar Carl V. Sølver, shows how the pilot could find due north at noon by means of a sun-cast shadow, thereby checking his course.

in Sacred Bay. Carbon dating starts from the time the tree dies, not from when the wood is burned.

Earlier we had asked ourselves: Could the site be European from centuries long after the Norse? Was this a shore station of whalers or fishermen, Basque, French, English, or others—seafarers who arrived after John Cabot voyaged to these shores in 1497?

No. For one thing, all our carbon dates were much too early. We found nothing from colonial times—not a bit of crockery or glass, not a fishhook or tool.

Our work at L'Anse au Meadow was in the skilled hands of Icelandic, Swedish, and Norwegian archeologists. Important features of the structures excavated by these experts conform to the similar pattern of Norse culture which has been studied for a long time in Greenland, Iceland, and Scandinavia.

Nevertheless, I was not satisfied until we obtained expert authentication also from Canadian and American specialists. Dr. William E. Taylor, Jr., chief archeologist of the National Museum of Canada, Dr. Henry B. Collins of the Smithsonian Institution, and Dr. Junius Bird of the American Museum of Natural History came to see and judge for themselves. After careful study, these scholars were emphatic in stating that the ruins could only be Norse.

Historians have long accepted as fact that the Norsemen reached America. But where did they settle? Where exactly was Vinland the Good?

Speculation has placed it in sites ranging along the whole enormous coastline from Chesapeake Bay in the south to Hudson Bay in the north. But the evidence has heretofore never survived scientific scrutiny.

Vinland was Leif Ericson's name for the land he
(Continued on page 717)



Upthrust prow of a Viking ship defies time in a burial mound at Oseberg farm, Norway. Ninth-century Vikings sent their queen on her last voyage with ship, serving woman, horses, oxen, household goods, sleighs, and cart. Over all they heaped clay and peat that helped preserve the treasure until its excavation, pictured in 1904.

Restored to its original appearance, the Oseberg ship now rests in Viking Ship Hall at Oslo. This vessel of state would have been too frail for the stormy passage across the North Atlantic to Greenland and far-off Vinland.





Battle gear like this once armed warriors plunging into action against New World aborigines (pages 732-3). Shield and battle axes hang in Oslo's University Museum of National Antiquities. The author considers it unlikely that Norsemen would have left any of their precious arms at L'Anse au Meadow; if they did, natives or the area's acid soil long ago would have claimed the weapons.



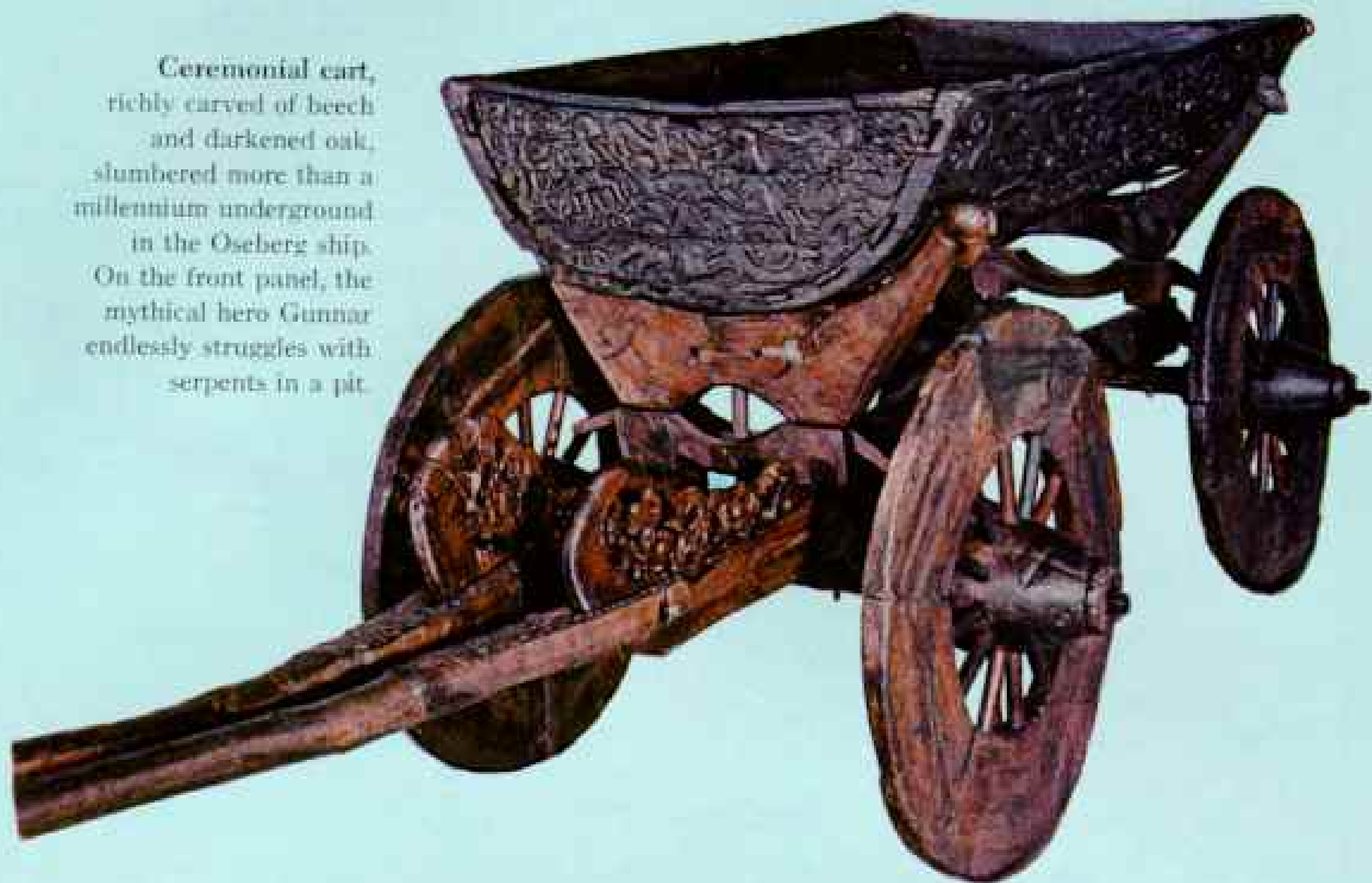
Runes and magic signs proudly record that three Norsemen reached Greenland's remote western isle of Kingittorsuaq about 1300 and erected cairns to commemorate their feat. Denmark's National Museum in Copenhagen displays the four-inch-long stone.

Buddha-like man of enameled brass served as socket for the handle of a wooden bucket found in the Oseberg ship. Plainier pails undoubtedly served Vinland colonists.



Relics of Viking life

Ceremonial cart, richly carved of beech and darkened oak, slumbered more than a millennium underground in the Oseberg ship. On the front panel, the mythical hero Gunnar endlessly struggles with serpents in a pit.



Ninth-century hoard found in Norway, probably Viking plunder, yielded this gold and silver necklace modeled by the author's daughter, Benedicte Ingstad.

REPRODUCTIONS © R. E. S.



Strap end of gold filigree gave the final touch to a Norwegian dandy's spur. Most Vikings preferred less ostentatious riding gear. This relic and the necklace at right rest in Oslo's University Museum.





Vikings from Greenland, say the sagas, landed at Helluland (Baffin Island, the author believes) and Markland (Labrador). Then Leif Ericson and his fellows built houses on Vinland, now shown to be on the Island of Newfoundland. Their warlike forebears, who bathed Europe in blood, colonized Iceland and Greenland as hard-working farmers.

On the famed Stefánsson map (right), surviving only in this 1670 copy, the "Promontory of Vinland" resembles Newfoundland Island's northern tip.

Cruising past icebergs, the former Norwegian rescue ship *Huldan* bears the Ingstads toward their excavation site in Newfoundland.

COLOURING BY INGER RECHBERG © N.G.S.





found on his great voyage west. Although the sagas, partly by allusion to short sailing routes to America, indicate that Vinland was a northern place, most scholars have believed that *vin* referred to wild grapes; thus they have placed Vinland rather far south on the Atlantic coast: near Boston, on Cape Cod, Martha's Vineyard, or Long Island, among many sites.

I saw it differently. I came to share with Swedish philologist Sven Söderberg the conviction that "vin" in Vinland had nothing to do with grapes, but instead was used in the old Norse sense of "grass" or "grazing lands."

From this and other reasoning, I advanced in my book *Landet Under Leidarstjernen* the theory that Vinland must most logically be looked for in northern Newfoundland.*

A few searchers had made a similar deduction, for instance the Newfoundlander W. A. Munn and later the Finnish scholar-explorer Prof. Väinö Tanner. They suggested Pistolet Bay as a likely area (map, page 727). Investigations were made there by A. H. Mallery, Jørgen Meldgaard, and others, but no traces of the Norse were found.

I also strongly felt that Sigurd Stefánsson's

famous Icelandic map of the late 1500's reflected sound tradition. On this chart a long projection from the American mainland is labeled *Promontorium Winlandiae*, the Promontory of Vinland (above). It bears remarkable resemblance to Newfoundland Island.

Furthermore, I read the sagas rather literally as to courses, landmarks, and sailing times. I believed that information about the sea and ships would be likely to survive uncorrupted in traditions of a seafaring people.

When the Norsemen, traveling without compasses, coasted south along Labrador pushed by the strong Labrador Current, they would almost inevitably sight and hold their course toward northernmost Newfoundland. They could hardly avoid a landfall there.

In 1953 my wife and I had cruised in a small motorboat along the west coast of Greenland. At Sandnes, near the present-day capital, Godthåb, we saw where Danish archeologists had excavated a farm thought to be that of Thorfinn Karlsefni, who was

*An English translation of this book, *Land Under the Polar Star*, will be published soon by St. Martin's Press, New York, and Jonathan Cape, Ltd., London.

first to attempt a permanent colony in North America. One find was a quartzite arrowhead, a projectile point of a style and a material foreign to Greenland but familiar in Newfoundland and Labrador. It was thus perhaps a souvenir from the New World.

The house site on Karlsefni's farm also yielded a lump of anthracite coal. Greenland has bituminous coal, but no anthracite; nor is hard coal found in Iceland or Norway. Did Karlsefni collect this coal in America on the long southward voyage the sagas say he made? Later, near Newport, Rhode Island, I saw anthracite in the only outcrop of this coal on North America's east coast. Is this deposit the source of the lump of coal found nearly 1,000 years later on Greenland's west coast?

Vikings Start on "Westward Way"

The Viking era began around A.D. 800, when adventurous men, erupting from homeland restraints, terrorized foreign lands. Swedes dominated the Baltic region and vast territories in Russia. Danes landed in England, then went on to France, Spain, and North Africa.

Norwegian Vikings also invaded the British Isles and Ireland, and went south far into the Mediterranean. But one route of conquest the men from Norway had almost to themselves: *Vestervegen*, the "westward way" across the northern sea (map, page 716).

Seafaring was in the Norse blood. The Vikings had developed a unique ship, a swift and graceful vessel that hissed through the wave tops, square sail bellying stiff in the ocean wind (painting, page 711). "The soul of the Vikings lay in the long-ship." The words of Winston Churchill ring so true.

In vessels larger and sturdier than the ceremonial ship unearthed at Oseberg (page 713), Viking sea rovers sailed farther and farther west, to the Shetlands, Orkneys, the Faeroe Islands, and eventually to Iceland.

Then Eric the Red entered the scene. Born in Norway of a distinguished family, Eric was implicated in killings. He sailed to Iceland and took up farming, but never put down the sword. Caught in a bloody fight, Eric found himself outlawed by the Thorsnes Thing, the local Viking court. In 982 he fitted out a ship and fled from Iceland, after telling friends he would look for the land that an earlier voyager had sighted farther west.

Eric reached an ice-rimmed coast and explored it for three years. Returning to Iceland, he reported finding a good land. He named it Greenland, hoping to lure settlers.

In the summer of 986 Eric led a great expedition from Iceland. Twenty-five ships carried men and women; cattle, horses, and sheep; food, weapons, and tools.

(Continued on page 723)



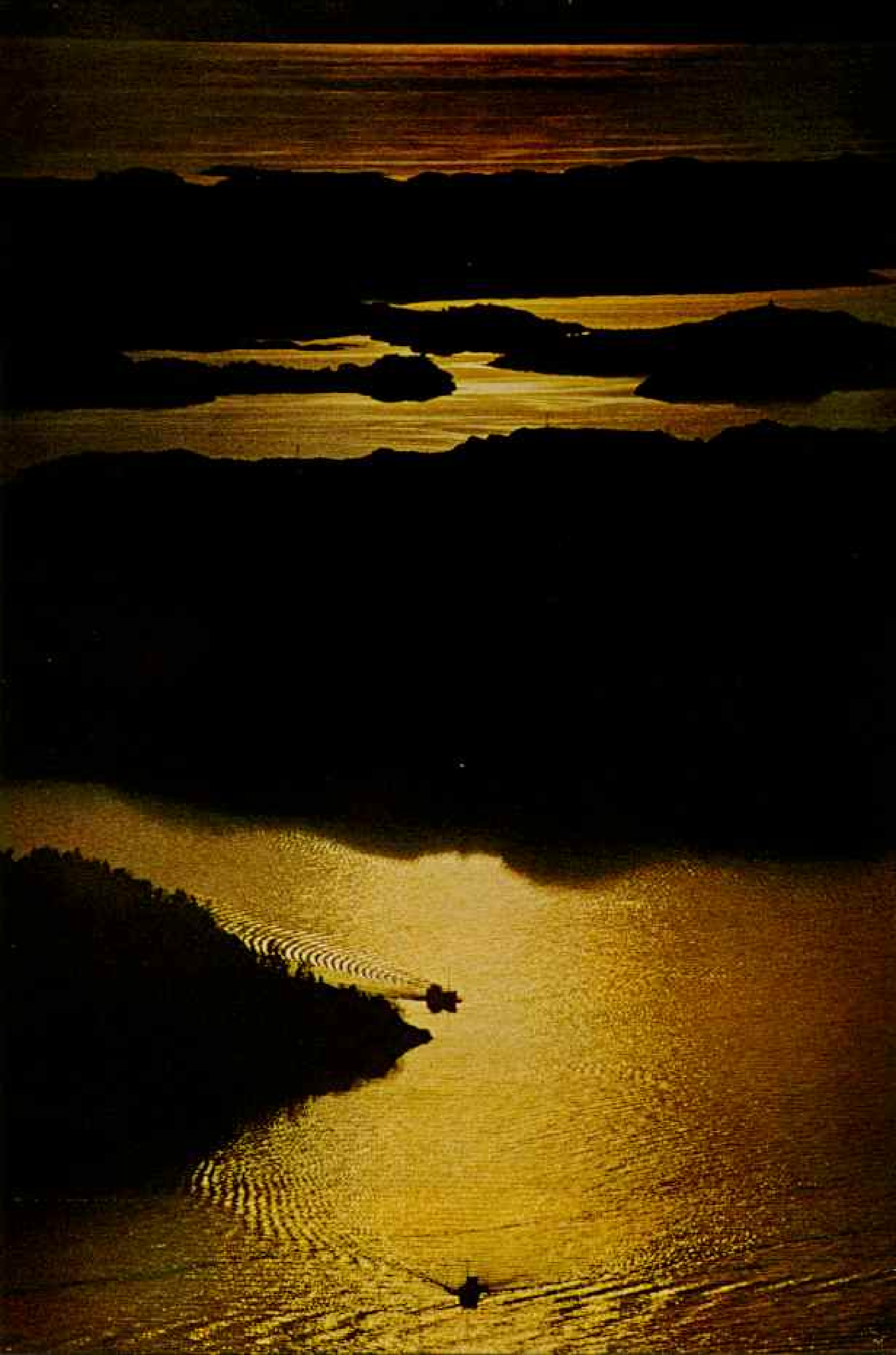
ILLUSTRATION BY LUDWIG A. WIDLEY © S.A.S.



High-prowed ships decorate a Norse carving.

"Here goes *Sea Durer*," reads an inscription on the back of the stick, now in Bergen's Historical Museum. These 13th-century animal-headed Norse craft show little change from those that sailed to Vinland 200 years earlier.

Through sunset seas, fishing boats enter the harbor at Bergen, whence Vikings sailed forth.





PHOTOGRAPH BY MATS WEDD, LENSE, JN.

Blue water and green grass drew the Norse to Greenland in 986. Here at Gardar, now Igaliko, the assembly met, and from the next fjord Leif Ericson sailed for Vinland. Eventually four thou-

sand Norsemen farmed Greenland's narrow but fertile coastal strips. Ships stopped calling for the island's few commodities in the 1400's, and no one from the outside world reported seeing a Norse



(REUTERS) AND JÜRGEN WELCHMANN © NATIONAL GEOGRAPHIC SOCIETY

Greenlander alive again. When Norwegians arrived in 1721, none but Eskimos greeted them. The Norse settlers had vanished.



Staunch walls of old Hvalsey Church saw the last recorded bit of Norse history in Greenland. Here on September 16, 1408, stranded Icelanders witnessed a wedding and attested it on their return home. With their report, Norsemen in Greenland disappear in one of history's greatest mysteries. What happened to the thousands of colonists? No one really knows.

Greenland girls in bead-embroidered holiday dress visit the farm of Eric the Red at Brattahlíð.





Smoke rises from a Nascapi Indian camp on tree-fringed Sango Brook, Labrador. Southern parts of this coast jibe with saga accounts of Markland—"flat and covered with forest."

Trudging the brooding beach that runs for 30 miles near Cape Porcupine, Labrador,





Fourteen of the 25 vessels fought through to Greenland; the rest were lost or had to turn back. In the fjords of Greenland's southwest coast, the newcomers went ashore and built homes of stone and turf.

Ships from the new colony kept up a regular traffic across the sea, carrying furs, skins, walrus tusks, and other goods to the warehouses of Bergen in Norway. At their peak the Greenland settlements—there were two main ones—counted about 300 farms, 16 churches, two monasteries, a bishopric, and a population of perhaps 4,000. Eric was a pagan; his wife and son Leif, Christian. The new faith gained gradual ascendancy.

The settlements apparently thrived for about 500 years. But during the 15th century, communications with Norway seem to have broken down. When a Norwegian ship reached Greenland in 1721,



Nascapi chief relates tales of his people's past. The author sought vainly among Canadian Indian tribes for legends of brushes with the Vikings.

Helge Ingstad visions the stretch as Furdustrandir, the "Marvelstrands" of his Viking forebears.



not a Norse soul could be found. Only ruins remained of the once-flourishing churches, monasteries, and farms.

What happened to these people remains a great mystery. Were they killed by Eskimos? Wiped out by disease or malnutrition? Theories are many. I believe the Norse must have packed up and left, and some of the refugees may have emigrated to America.

When Eric the Red colonized Greenland, North America became a neighbor region. Only Davis Strait lay between, at its narrowest just 200 nautical miles across.

To cross to the New World was surely not difficult for sailors who navigated regularly between Norway and Greenland, more than

724 1,500 miles apart. Some ships *must* have

sailed or strayed near the American coast.

Icelandic sagas that tell about the Vinland voyages presumably were written in the 13th and 14th centuries. Before that, the stories had been passed down orally from generation to generation.

First we hear about Bjarni Herjulfsson. He sailed from Iceland soon after 986, seeking to join his father in Greenland. Driven far southwest by bad weather, he sighted unfamiliar coasts, low lying and forest covered. Farther along, he saw still another land, also flat and forest clad. Sailing on—it must have been northward—he found a third land, this one covered with mountains and glaciers. Without landing anywhere, he turned back out to sea and finally reached Greenland.

Norse adventurers cut logs for their great hall at L'Anse au Meadow. Others lay turf walls and



But the wild wind of mystery came singing stronger and stronger out of the west. Heeding its call, Leif Ericson planned an expedition. He would take advantage of Bjarni's findings, and even bought Bjarni's ship. A saga describes Leif as "big and strong, of striking appearance, shrewd, and in every respect a temperate, fair-dealing man."

"Leif the Lucky" Reaches New World

Ericson plotted his course to reach first the far-north land Bjarni had seen last. That barren place, probably Baffin Island, he named Helluland (Land of Flat Stones).

"Leif the Lucky" sailed on southward and found low forested land and white sand beaches. This he called Markland (Wood-

land). It was probably Labrador. Onward he sailed for two days and nights and finally arrived at a third place—it may have been L'Anse au Meadow—which tempted the seafarers with fine grazing grounds, salmon, and timber. The sagas tell us that Leif built "large houses" there and that he "gave the land a name in accordance with the good things they found in it, calling it Vinland." He remained a year, returning then to Greenland.

Now came the turn of Leif's brother Thorvald. He reached Leif's settlement in Vinland and stayed there. He was apparently the first European to meet with the American natives, the "Skrælings." They fought, and Thorvald was killed by an arrow.

Thorvald's last remark, when mortally

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gouge a smithy in the distant stream bank. Their ship anchors as close to shore as she can.

PAINTING BY NATIONAL GEOGRAPHIC ARTIST JESSE MARSH © N. G. S.





wounded, is a classic of nonchalant courage. Drawing out the fatal arrow, he said: "There is fat round my belly! We have won a fine and fruitful country, but will hardly be allowed to enjoy it."

Thorfinn Karlsefni was ambitious to set up a permanent colony in the new country. From Greenland he mounted a grand expedition—three ships and about 160 passengers, including women. He also brought livestock. He stayed in Vinland three years, finding the Skraelings so numerous and warlike that the settlers concluded there would never be peace. The natives' boats were "so many that the bay appeared sown with coals."

So Karlsefni returned to Greenland. His

wife, the beautiful Gudrid, brought back a small boy named Snorri, the first European born in America.

The last known Vinland voyage had the first woman leader: Freydis, Leif's half sister, who ruthlessly asserted her authority by murdering all the other women of the party with her own ax. A fierce female, a true Valkyrie!

Search Begins in Rhode Island

To intercept the trail of the Vinland voyagers in North America, I planned a systematic search of the Atlantic coast by boat and plane.

My basic contention was that Vinland itself, the Vikings' first land base, would logically be found in northern Newfoundland, in



Northern tip of Newfoundland Island, with meadows and forests, cheered Vikings from barren Greenland. The area corresponds, in the author's opinion, with Vinland, which Leif Eriksen named for "good things they found in it."

Barnlike structures near L'Anse au Meadow protect newly exposed Viking ruins from the weather. Expedition tents stand beside Black Duck Brook.

America's abundant berries lead some scholars to consider them the "grapes" of the sagas. The author holds to another view: that Vinland means not Winland but Grassland. This Newfoundland child chooses the ripest gooseberry.



a place where they first came upon inviting conditions—good grazing, fish and game, and timber for construction of homes and boats.

But I never doubted that Norse voyagers might also have made long cruises southward along the east coast of present-day Canada and the United States.

I started in Rhode Island. With the sagas as my guide, I continued the search northward—Massachusetts, Nova Scotia, Newfoundland. In St. Anthony, Newfoundland, I met Dr. Gordon W. Thomas, head of the remarkable Grenfell Mission, which offers medical help to settlers, Eskimos, and Indians in northern Newfoundland and Labrador.

Dr. Thomas invited me to join the hospital

ship *Albert T. Gould* on visits to coastal fishing settlements. One day, after many disappointments, I asked yet another fisherman my routine question. He scratched the back of his head and said, "Well, not so long ago George Decker over at L'Anse au Meadow was talking about some ruins there."

We were off at once to L'Anse au Meadow, near the tip of Newfoundland Island. Here a few houses huddled at the sea edge.

The village had only 11 families, all fishermen, people who speak English with a characteristic accent. No road reached the place.

George Decker, a domineering man, but with warm, humorous eyes, was there to greet us. I asked about ruins, and Decker said:



PHOTOGRAPHS BY LARRY KRISTOF © R.S.S.

Rusty nodules of bog iron form in abundance beneath the sod near the excavations. Smithy pit contains slag from iron smelted probably with charcoal in Norse style.

Fence at L'Anse au Meadow encloses a large pit, possibly used for cooking. Norwegian and American archeologists explore a test trench.

Fire hearth of flat stones, chimneyless like those in Greenland's Viking ruins, is examined by the author.



"Yes, there is something like that over at Black Duck Brook."

"Has anybody been digging there?"

"No stranger has seen them, and here at Lancy Meadow nobody tramps around without me knowing it," said Decker firmly.

A few minutes' walk to the southwest brought us to Black Duck Brook, splashing through scrub willow and grass down to the shore. Cattle and sheep grazed on some of the most northerly good pastureland on Canada's Atlantic coast. An inviting place, peaceful and untouched.

Along an old marine terrace about 12 feet above sea level, I detected a few overgrown outlines in the ground. They suggested remains of walls of very old dwellings.

We hiked inland and found that the stream flowed from a lake. On our way back, we climbed a small hill west of the sites, and there I discovered the ruins of three very old

rock cairns. The height commanded a fine view over the green land, with Black Duck Brook snaking through it to spill into a shallow bay, where now at low tide the bottom was exposed quite far out (page 726). A cape reached to the north, and islands were scattered on the blue sea.

It struck me how much of this scene dovetailed with the account of Leif Ericson's arrival in the New World, as narrated in the saga called the Flatey Book:

"They returned to the ship forthwith, and sailed away upon the main with northeast winds, and were out two days before they sighted land. They sailed toward this land, and came to an island which lay to the northward off the land.

"There they went ashore and looked about them, the weather being fine, and they observed that there was dew upon the grass, and it so happened that they touched the dew



with their hands, and touched their hands to their mouths, and it seemed . . . that they had never before tasted anything so sweet as this.

"They went aboard their ship again and sailed into a certain sound, which lay between the island and a cape, which jugged out from the land on the north, and they stood in, westering past the cape.

"At ebb tide there were broad reaches of shallow water there, and they ran their ship aground there, and it was a long distance from the ship to the ocean; yet were they so anxious to go ashore that they could not wait until the tide should rise under their ship, but hastened to the land, where a certain river flows out from a lake."

But a coincidence of landmarks and a few hints of ancient structures were not enough. Only excavation would give firm proof of an ancient Norse settlement.

In 1961 I launched an expedition. My wife,

Anne Stine Ingstad, M.A., came along as archeological leader. Dr. Odd Martens, Paul Sørnes, Erling Brunborg, and my daughter Benedicte rounded out the party. A boat of our own, the former rescue ship *Halten*, was shipped from Norway to Montreal.

Down the St. Lawrence we sailed to Newfoundland. At L'Anse au Meadow, a welcoming committee of George Decker and a troop of smiling children stood on the beach.

Fire Pits Resemble Greenland Ruins

And so our excavations began, first at one of the smaller foundation sites. As we scraped slowly with our trowels, we were struck by the complete absence of stone tools or chippings of flint. These are common finds at Eskimo and Indian sites.

Then Anne Stine discovered a little fireplace lined with slate, a cooking pit, and finally traces of a hearth.

"What will you give me if I find something we know from the Norse farms in Greenland?"

"The ring you wanted in Montreal," I answered without hesitation.

Anne Stine went on digging, and soon we saw a small sunken place at the outer edge of the hearth. It measured about 6½ by 10 inches and was neatly lined with slate on sides and bottom (opposite). This had to be an ember pit. Here a few hot coals were kept alive at night, covered with ashes, ready to start the breakfast fire next morning.

Similar ember pits have been excavated at several Greenland farms, including Brattahlíð, the homestead of Eric the Red.

Anne Stine had won her ring.

Labrador Landmarks Match Saga

Leaving the work at L'Anse au Meadow going confidently on, I sailed northward in *Halten* with a couple of companions to play Vikings ourselves, tracing out the route of the Vinland voyagers along the coast of Labrador.

The Saga of Thorfinn Karlsefni says: "They sailed south along the land for a long while till they came to a cape. The land lay to starboard; there were long beaches and sands there. They rowed ashore and found there on the cape the keel from a ship, so called the place Kjalarnes. The beaches they called Furdustrandir [Marvelstrands] because it was such a long business sailing past them..."

At Cape Porcupine, south of Hamilton Inlet, the much-indented coast abruptly straightens into a wide beach about 30 miles long. Woods reach down to soft white sands, where black bears wade at sunset to feast on drifts of small fish called capelin. The ridged backbone of Cape Porcupine looks like the keel of a ship.

I became convinced that Professor Tanner and W. A. Munn were right: This beach must be Furdustrandir and the point Kjalarnes, the landmarks of the Vinland voyagers.

After backtracking the Viking route much farther north in Labrador, we returned south to L'Anse au Meadow. My wife met the small boat as it grated against the shore.

"How is the work going?" I asked.

"Well, we have not found Leif Ericson's slippers yet," said Anne Stine. But there was a rather smug smile on her face.

"Come on. Speak up!" I begged her.

"You have to see for yourself," she replied.

On the terrace lay partly uncovered the outline of a large house which I would never have guessed existed. Exposed foundation walls showed that they were made of layers of turf. Anne Stine told how the light, when

the sun was low, had hit the site just right to pick out the faint outline of a corner.

In the fall of 1961, when we finished our first season, we had discovered traces of seven structures and some curious pits. We had unearthed a few very rusty nails, lumps of slag, and other finds quite unlike those known from settlements of Indians, Eskimos, or people from colonial times.

The good-hearted L'Anse au Meadow people proved wonderfully hospitable and helpful. George Decker was a tireless source of old stories and songs. Sometimes a hunter passed by, carrying a big muzzle-loading gun and powderhorn, a brace of ducks slung over his shoulder.

In 1962 and 1963 I organized new expeditions, principally financed by Norwegian scientific foundations and individual donors in my country. But I also got valuable support from the Government of Newfoundland, the Department of Northern Affairs and National Resources of Canada, the Royal Canadian Air Force and Navy, and from an American, Dr. Terris Moore, through the Arctic Institute of North America.

For its major contribution to my last expedition, I am indebted to the National Geographic Society, not only for its financial help, but also because the Society gave the expedition valuable scientific and practical aid.*

The last two seasons' work filled in many gaps in our knowledge. Anne Stine found that the big house measured 70 by 55 feet. It had five or six rooms, with several fireplaces and a floor of hard-packed sand and clay.

In most of the buildings, lower walls consisted of turf, for the obvious reason that no suitable stone is available nearby. Wood probably served for the upper walls and roof.

Across the stream from our first dig, we found hollows obviously man-made. "There we will find the smithy," Anne Stine said.

Several of the house sites had yielded lumps of iron slag, some quite large. Looking about in peaty areas, we discovered rich deposits of bog iron. Turning over turf with a spade, we would find it caked on the bottom with clusters of these iron nodules, some as small as marbles, others as big as hens' eggs (page 728).

*An international group of scientists and specialists participated in one or more of the L'Anse au Meadow expeditions. From Norway, besides my wife and myself, there were Kari Henningsmoen, Paul Sornes, Dr. Odd Martens, Erling Brunborg, Hans Hvide Bang, Nicolay Eckhoff, and Benedicte Ingstad. From Iceland: Dr. Kristján Eldjárn, Professor Thórhallur Vilmundarson, Gísli Gestsson. From Sweden: Rolf Petré. From Canada: Dr. William Taylor and Dr. Ian Whitaker. From U.S.A.: Charles Barris and Jan Winston of the University of Illinois, in addition to Dr. Collins and Dr. Bird.



Stripping of the sod and careful excavation reveal a house site measuring 70 by 55 feet. The excavator works in a long fireplace that lies in the middle of the central hall, in typical Norse fashion. White buildings of L'Anse au Meadow stand out on the horizon.

PHOTOGRAPHS BY ERLING BRUNNØRE (TOP), EIRIK KRISTJAN (RIGHT), AND HANS HØYER (B&W, B.C.)



Our Icelandic scientists, led by Dr. Kristján Eldjárn, excavated the streamside hollows. One day we found them kneeling, picking up lumps of slag as if they were gold.

Deeper and deeper they dug, down to a solid black-spotted layer. They came upon a fairly big stone with a flat surface, partly broken; also traces of a fireplace. Here they found a bonanza: hundreds of pieces of slag. The finds formed a pile weighing about 30 pounds, besides small bits of iron and some natural bog-iron ore. Everything pointed to the conclusion that the stone was an anvil, and that we had found the old smithy.



Time-gnawed nail awaits lab tests.

Slate-lined ember pit, less than one foot across, kept coals glowing through the night for the next day's fire. Leif Ericson's boyhood farm in Greenland yielded just such a pit.

To run a smithy required charcoal. Close by, in another pit, the Icelanders found a thick layer of charred wood.

Material in the blacksmith's fireplace gave two radiocarbon readings, one A.D. 860, plus or minus 90 years, and the other A.D. 1060, plus or minus 70 years.

We could not expect to find many artifacts. In this environment conditions for preservation are poor, for the topsoil is highly acid. Even bones usually decay unless charred in fire. In addition, natives over hundreds of years here, as in Greenland, would have picked up any obvious souvenirs.

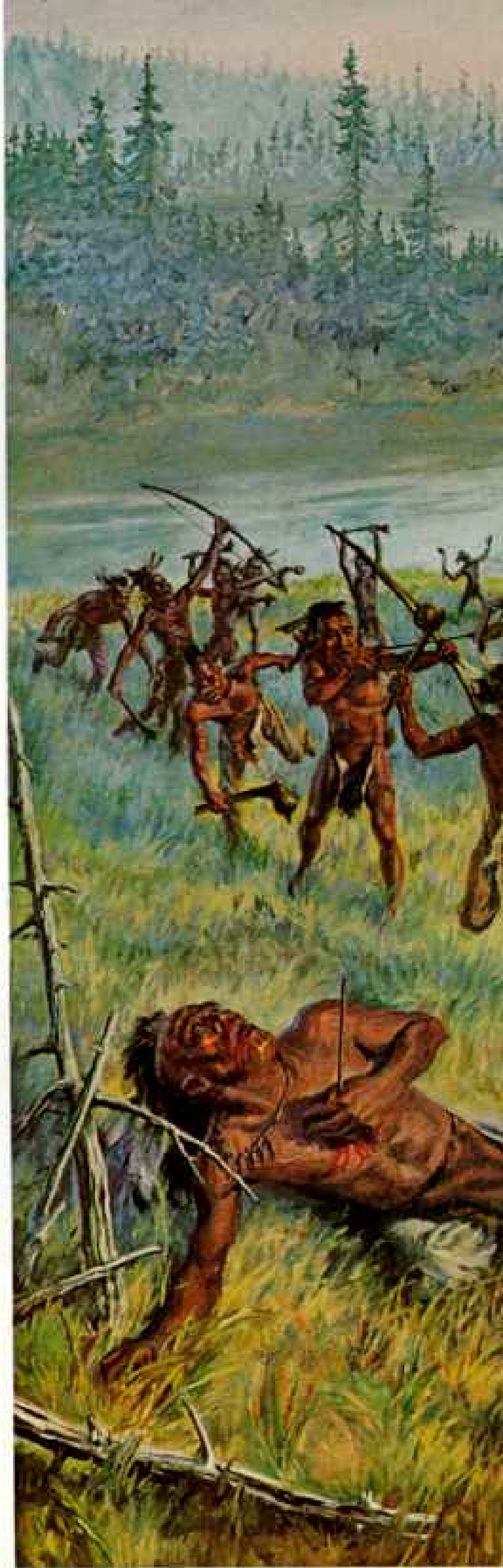


Carved of walrus tusk, a high-collared Dorset Eskimo found in northern Greenland stands 2.4 inches high. Scholars debate whether the natives met by the Vinland Vikings were Eskimos or Indians; at the time, both lived on Newfoundland Island. Dorset Eskimos had migrated to Greenland as well.

Sagas tell how natives, whom the Norse called Skraelings, panicked at the bellow of a European bull. Later a fleet of canoeemen returned in full war array. Their ferocity appalled the Norse colonists.

JEROME KILGORE © V.C.P.

Fourteenth-century vellum page, written by an Icelandic scribe, tells how Vikings encountered the Skraelings. Faring south, the Norsemen met "a great number of skin canoes" paddled by "dark men" who "had big eyes and were broad in the cheeks." Copenhagen treasures the old Hauksbók with this page of the Saga of Eric the Red.



Painted Indians attack Viking settlers venturing on a long journey south of their main settlement. War clubs and stone-tipped arrows



ILLUSTRATION BY NATIONAL GEOGRAPHIC ARTIST PETER BIANCHI © N.G.S.

clash with wooden shields and iron swords. Says the Saga of Eric the Red, "The Skraelings were all yelling aloud"—first Indian war whoops known to

history. Norsemen won the battle but lost the war. Faced with "constant fear and strife," they withdrew to Greenland.

As excavations continued in the area, we did find some relics of Indians and Eskimos. The sagas tell that the Norse traded with the natives as well as fighting them. Later Indians and Eskimos must also have camped many times in this inviting site by the brook.

We hope to know more about the climate of the days of Norse settlement when our pollen analyst, Kari Henningsmoen, has worked over her material. Present-day grazing is good for cattle, horses, and sheep. George Decker told me that one fisherman used to keep cows outside much of the winter. This checks with the Saga of Leif Ericson: "The nature of the land was so choice, it seemed to them that none of the cattle would require fodder for the winter...."

Simple Sailing Directions Led to Vinland

There is grim logic in the disappearance of Norse New World settlements. "In colonizing, as in campaigning," says American historian John Fiske, "distance from one's base is sometimes the supreme circumstance." The chain of communication between Vinland and Norway gradually disintegrated.

Yet, while it lasted, the traffic to America was considerable. We know that at least four expeditions reached Vinland. Leif would not sell his dwellings there to Thorfinn Karlsefni, only lend them. Obviously he was thinking of their permanent value.

The route to Newfoundland was evidently considered straightforward. The sagas give few details. The natural features that showed the way must have been considered unmistakable—as indeed they are. Apparently Leif Ericson could sit in his hall in Greenland and, in the concise way of speech that is reflected in the sagas, tell one of the sea captains by what landmarks, and on what schedule, he would reach Vinland.

Icelandic annals inform us that Bishop Eric left Greenland for a trip to Vinland in 1121. Was the bishop going to a Norse community still existing there? The same annals tell us that in 1347 a ship came from Markland to Iceland. Markland (Labrador) apparently was a familiar name at that time, perhaps like California to a New Yorker.

From a study of old documents of the mid-14th century, the learned Icelandic Bishop Gisle Oddsson wrote in 1637 that the Norse inhabitants of Greenland had "turned to the people of America" (*ad Americae populos se converterunt*).

These Norsemen in the New World were in a much more dangerous situation than Columbus and his companions. Columbus had

firearms. The Norse had to fight with hand weapons against an enemy superior in numbers. Their disappearance repeats the Greenland mystery.

One summer day last year a plane droned over L'Anse au Meadow and landed in the bay. A fisherman rowed two visitors ashore. I welcomed the well-known American archeologists Henry Collins of the Smithsonian Institution and Junius Bird of the American Museum of Natural History. Dr. Collins, an expert on primitive cultures of Arctic America, had come to evaluate our findings for the National Geographic Society.

I waited eagerly to hear what our guests would have to say. But I asked no questions.

Henry Collins's first declaration was prompt, brief, and precise: "These sites are definitely not Eskimo or Indian."

One day Dr. Bird and I were sitting on the hillside digging with our trowels like moles. We weren't finding anything, but suddenly Dr. Bird stopped work, looked out over the site, and said, "You've got it, all right."

All that he had seen, plus his knowledge of the carbon dates, led Dr. Bird to sum up in this way his satisfaction that the site was Norse. Dr. Collins strongly supported him.

After three years of digging, the field work is done. At my suggestion, the Government of Newfoundland has built shelters to protect the most important foundations.

Viking Ghosts Stalk L'Anse au Meadow

On our last day I walk around all the excavations. They speak to me, intimately now, about a brave and simple people. I look at the smithy with the broken anvil, the great hall with the hearth and ember pit, and all the other mementos of these people of the past.

L'Anse au Meadow is rippling gold in the sunset. Northward, Belle Isle looms like a fairy castle. Farther off, day dims along the Labrador shore, where the Vinland voyagers came coasting south almost 1,000 years ago.

I easily visualize the scene. I can see the smoke rising from the smithy and hear the rhythmic sound of hammering. Groups sit around fires in the houses, talking about the new and amazing land they have come to.

Think of the courage of those Norsemen, setting out to sea in open boats, wives on some voyages, compasses on none; driven by lust for adventure, and by the need to find good new land where families could settle and live.

Thus it was that young sailors stood once under a square sail gazing wonderingly across the water where a strange coastline rose from the sea—the New World.

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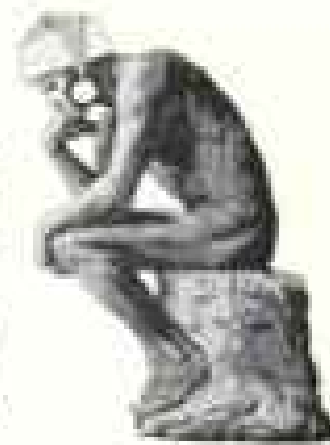
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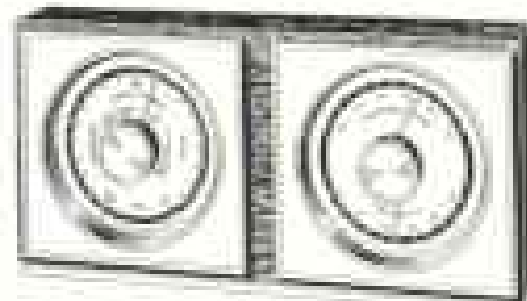
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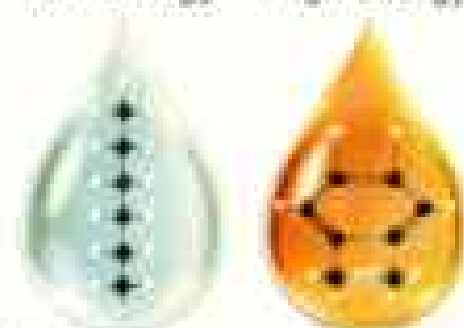
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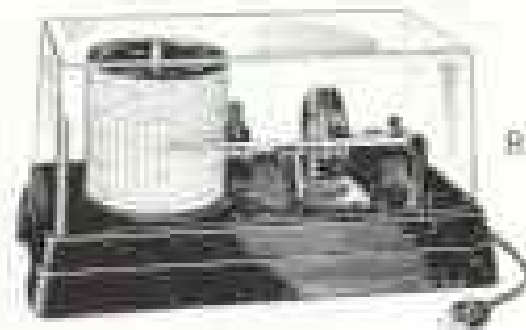
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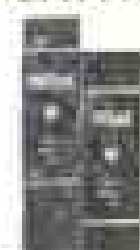
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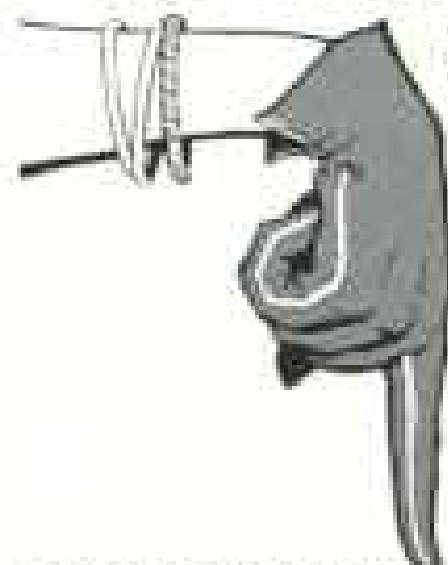
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- WORLD'S GREATEST CONVENTION FACILITY

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Are you ready for it?

You are if you can appreciate the brilliance of an f2.8 lens. You are if you want magazines that do more than just hold slides... like Airequipt Metal Magazines that protect slides in metal frames... Vari-Mount Magazines that take slides in different mounts... and new Airequipt Circular Magazines that show 100 slides continuously. You're ready for the Avventura if you want a projector with a startling beauty of its own. A projector with every conceivable feature... from fully automatic remote control to a retractable lens cover. You're ready for the Airequipt Avventura if you must have the ultimate in slide viewing, handling and protection.

AIREQUIPT
AVVENTURA



Here are some of the ways we handle your telephone calls today



A buried coaxial cable may carry as many as 9300 phone conversations at one time.

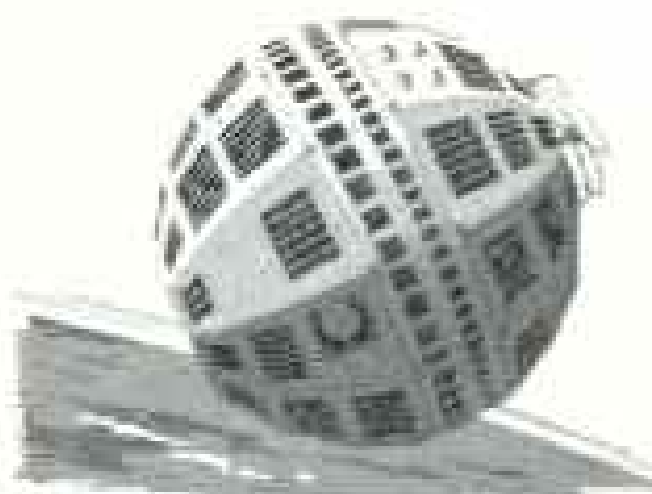


Radio relay systems can handle more than 17,000 simultaneous phone conversations.



Submarine cables whisk your words underseas as clearly as when you talk across town.

These developments will speed your telephone conversations tomorrow



A worldwide system, pioneered by Telstar® satellites, may speed your calls via space.



Electronic Switching will connect you faster, provide many useful new phone services.



Directly-dialed Collect and Person calls will speed to completion with Operator aid.

And all are planned to meet an expanding nation's need for service

As the population grows and households multiply and business machines devour greater mountains of data, the Bell System must constantly find and develop new com-

munications techniques to stay ahead of new demands. We're working hard to do that today. And we can promise you finer, faster, more versatile services tomorrow.



BELL SYSTEM

American Telephone & Telegraph Co. and Associated Companies



**Handcrafted Quality is the hidden difference
that makes Zenith the most dependable Color TV!**



Handcrafted things are built better to last longer. That's why Handcrafted Zenith Color TV gives you finer performance, greater operating dependability and fewer service problems year after year.



In the Zenith Color chassis there are no printed circuits, no production short-cuts. Every connection is carefully hand-wired with the same exacting care that makes Zenith America's largest selling TV, and your best Color TV buy.

Zenith's new Super Gold Video Guard 82 Channel Tuning System—with 125 gold contacts for longer TV life—pulls in sharp, clear color pictures, even in far-out suburban and difficult TV reception areas. Tunes all channels, VHF or UHF.

Zenith's patented Color Demodulator—the "Elec-

tronic Brain" of color TV—creates glorious, true-to-life colors.

Zenith's automatic Color Level Control *keeps* the colors at a constant level, even when you switch from channel to channel. You don't have to jump up and down every few minutes to keep the colors right.

You can *even* tune VHF channels from your easy chair—without cords, wires or batteries—with Zenith Space Command® remote control. Remote tuning for up to 12 UHF channels can be added at slight additional cost.

See the difference Zenith quality makes. See the complete line of new 1965 Zenith Color TV's—in a wide variety of fine-furniture models and prices (one just right for you) at your Zenith dealer's now. *At Zenith—the quality goes in before the name goes on.*

ZENITH

1965 **ZENITH COLOR TV**
THE HANDCRAFTED COLOR TV



How to say "Merry Christmas" to a client accustomed to the very finest

(Desk set by Sheaffer)

You've never sent your personal stock soaring so easily! Any client would be impressed with the striking new gift case, a Sheaffer exclusive. But that's only the beginning. The set itself combines a richly styled base to complement the most luxurious setting and famous Sheaffer



pens with cartridge filling action, superbly crafted with 14K gold points, kept writing-moist in exclusive airtight sockets. When no other gift seems important enough for an important client, make your choice Sheaffer, the most-given desk set in America.



Choose from a wide variety of Sheaffer Desk Sets at your dealer's or write for free catalog: W. A. Sheaffer Pen Company, Department NG-11, Fort Madison, Iowa. (Set shown, in magnificent Brazilian marble, with name plate, \$60.00.)