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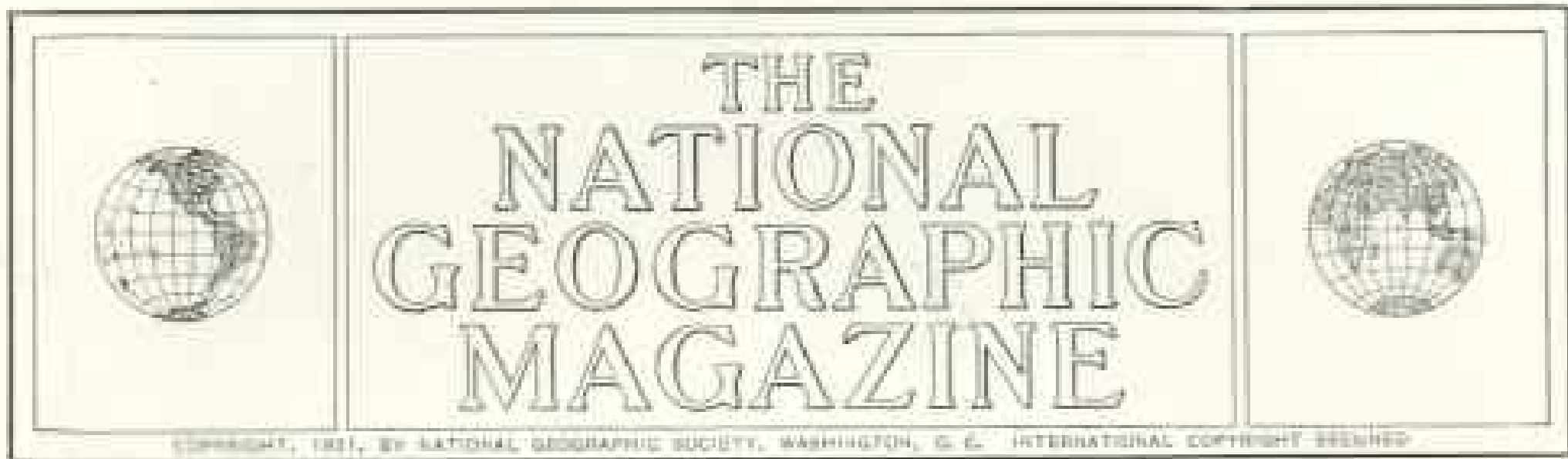
With 28 Illustrations

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## WASHINGTON THROUGH THE YEARS

### On Rolling Wooded Hills and Colonial Tobacco Fields, Where George Washington Dreamed Our Nation's Great Capital, His Gorgeous Vision Comes True

*It has been both an interesting and a difficult task to present the composite picture of the National City of mellow yesterday and majestic to-day within 100 pages, when to mirror all of Washington's countless facets would overflow a volume of a thousand pages. Months of careful research and investigation in the separating of fact and fancy underlie this effort, in which we have had the fullest coöperation of several Government branches, and especially the Army Air Corps.*

*That the great plan for the Nation's Capital should have been begun by our first engineer President and is being brought to completion by the second engineer President is evidence of the deathless respect for and belief in the wisdom of the founders of the Nation that characterize the citizens of the United States and their Chief Executives.*

BY GILBERT GROSVENOR, LL. D., LITT. D.

*President National Geographic Society*

**C**OULD the Father of his Country have been in the aircraft from which sky pictures were made for this article, he would have seen how the capital he founded is growing up. Now, after 142 years, the architectural ideal conceived by that romantic Frenchman, Pierre Charles L'Enfant, is coming true.

Long, wide, tree-fringed avenues sweep the rolling Potomac hills, and stately palaces of marble and granite rise, just as Jefferson, Washington, and the French artist planned them on paper, when they dreamed of this capital that should some day be. And many Presidents, from Washington and Jefferson to Taft, Coolidge, and Hoover, have added stones to its enduring structure.

Yet, because of its youth, the history of Washington has not been the history of

America, as the French say Paris history is the story of France. Florida had more than two centuries of Spanish annals when the site of Washington still formed the tobacco fields of English planters, who packed the leaf in hogsheads and trundled them down "rolling roads" to ships waiting at Potomac landings; California was a happy land of missions and Spanish cattle kings; New York was a busy city, and Boston and Philadelphia old in culture when Washington was laid out.

#### WHEN WASHINGTON WAS A VILLAGE

With no fixed abode, the war-time Continental Congress met in eight different cities. Even after Cornwallis yielded at Yorktown, the new government moved about, like a poor relation. George Washington never dwelt in the White House.



Photograph by Capt. Albert W. Stevens

WITH ITS MASSIVE DOME, ITS STATELY COLUMNS, AND NOBLE DIGNITY, THE CAPITOL TAKES ITS PLACE AMONG THE WORLD'S GREAT ARCHITECTURAL WORKS

Its walls shelter three powerful branches of the Federal Government. In the left, or north, wing meets the Senate; in the south wing, the House of Representatives; between, almost under the vast dome, sits that august body, the Supreme Court of the United States. Soon, however, it will have its own temple of justice, near the Library of Congress. This is the western façade of the Capitol. At the extreme left is the Senate Office Building.



Photograph by Capt. Albert W. Stevens

WASHINGTON'S GREAT UNION STATION, DESIGNED BY BURNHAM, FAMOUS AMERICAN ARCHITECT

The large brick structure at the extreme left is the Government Printing Office. To the immediate left of Union Station is the City Post Office. Back of the station are train sheds and yards.



Photograph by Clifton Adams

RADIATING FROM WASHINGTON-HOOVER AIRPORT, SKYLINES LINK THE CAPITAL WITH MANY OTHER AMERICAN CITIES

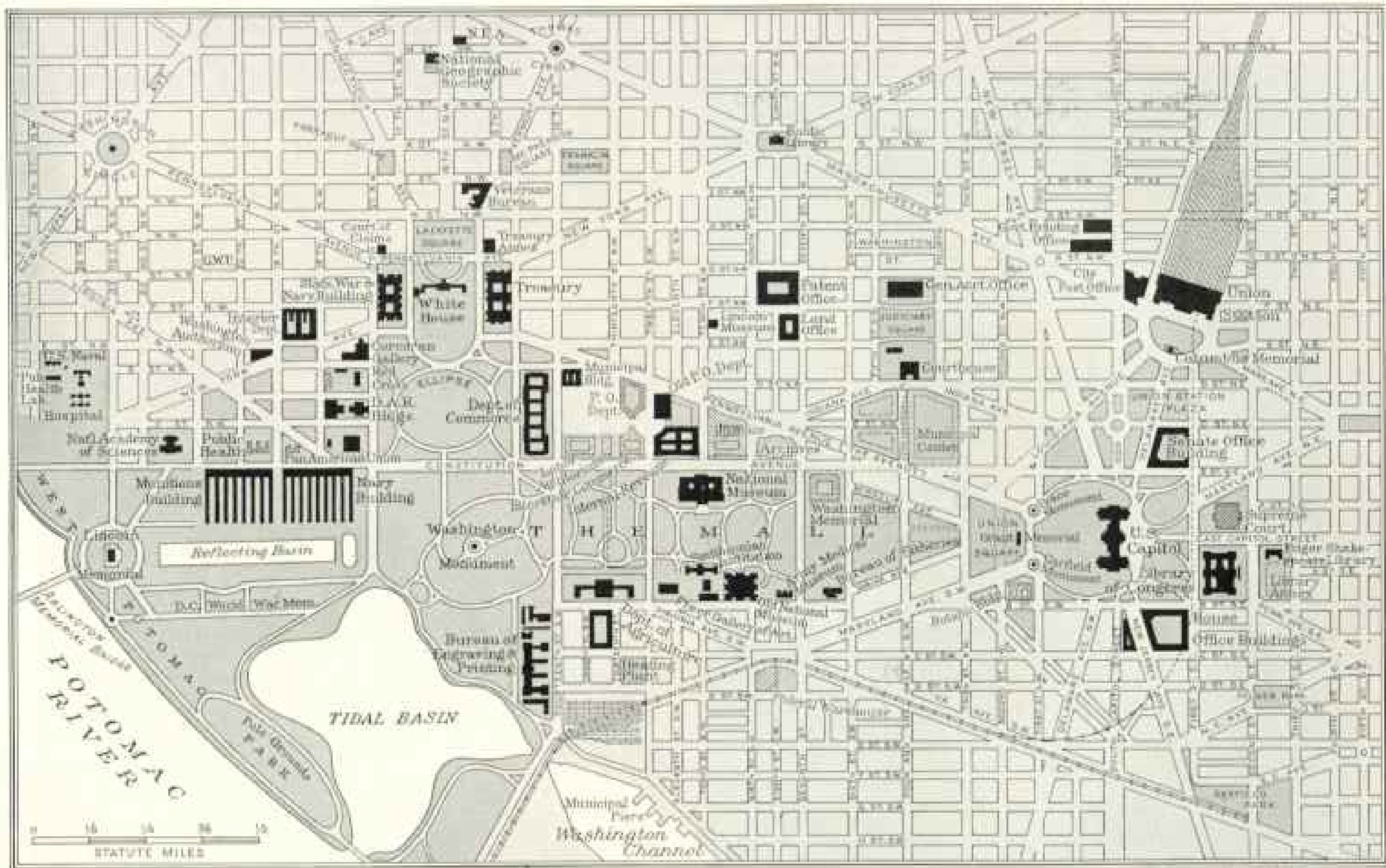
Passenger planes fly from Washington to Chicago now in about four hours. Between Washington and New York an hourly shuttle service is maintained during daylight. Other passenger lines touch here and the mail planes, of course, come and go by day and night (see, also, text, page 554).



Photograph by Capt. Albert W. Stevens

THE WHITE HOUSE AND ITS ENVIRONS AS SEEN FROM AN AIRCRAFT ABOVE LAFAYETTE SQUARE

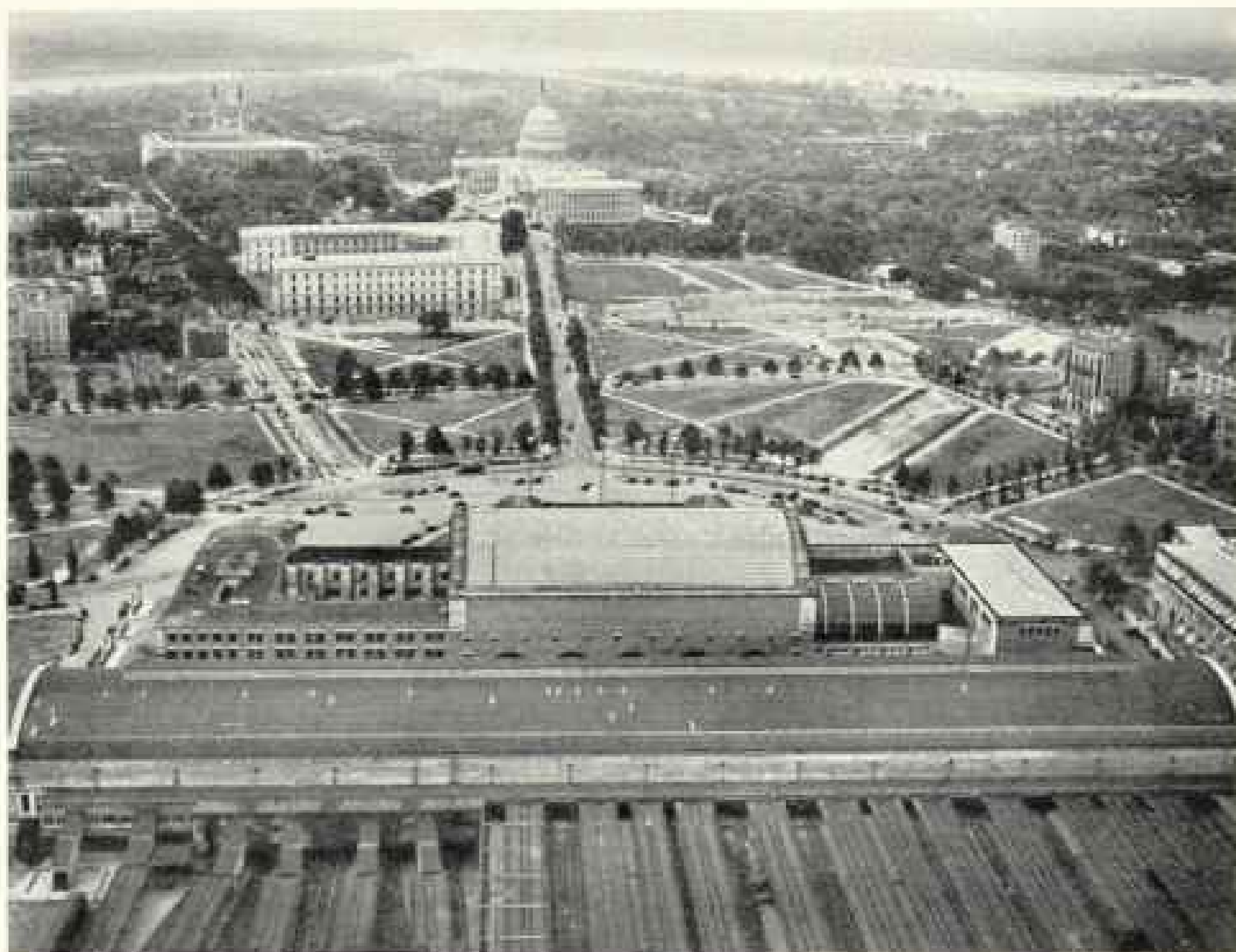
In the foreground is "Number 1600 Pennsylvania Avenue" (the White House); lower left, the Treasury; upper left, the new Commerce Building, with the Department of Agriculture just beyond. Back of the White House, the Ellipse, Monument, and the Potomac; State, War, and Navy Building at lower right. James Hoban, its architect, is supposed to have modeled the White House partly after the Viceregal Lodge of the Duke of Leinster at Dublin.



Drawn by A. H. Bunstead.

#### THE HEART OF WASHINGTON, SHOWING THE LOCATION OF GOVERNMENT BUILDINGS AND NEW DEVELOPMENTS.

Government departments and bureaus and scientific institutions are shown in black, with additions and new buildings actually under construction shown in hachure. Dedicated building sites and streets actually surveyed are shown within dotted lines. Among the major edifices for which sites have not yet been definitely chosen are the War and Navy Buildings (the State Department is soon to occupy the entire present "State, War, and Navy Building") and the new National Gallery of Art (see text, pages 541 and 611).



Photograph by Capt. Albert W. Stevens

#### A GLIMPSE OF THE CAPITOL FROM ABOVE THE CLASSIC UNION STATION

The railways using this station include the B. & O., the C. & O., the Pennsylvania, the R. F. & P., and the Southern. Trains from the Seaboard Air Line, the Atlantic Coast Line, and the Norfolk and Western come in over the tracks of the other roads. About 285 passenger trains a day use the station, and the total number of passengers has been estimated at 10,950,000 a year (see, also, text, page 602).

He died before it was completed. President John Adams, its first official occupant, moved here in 1800 from Philadelphia, overland.

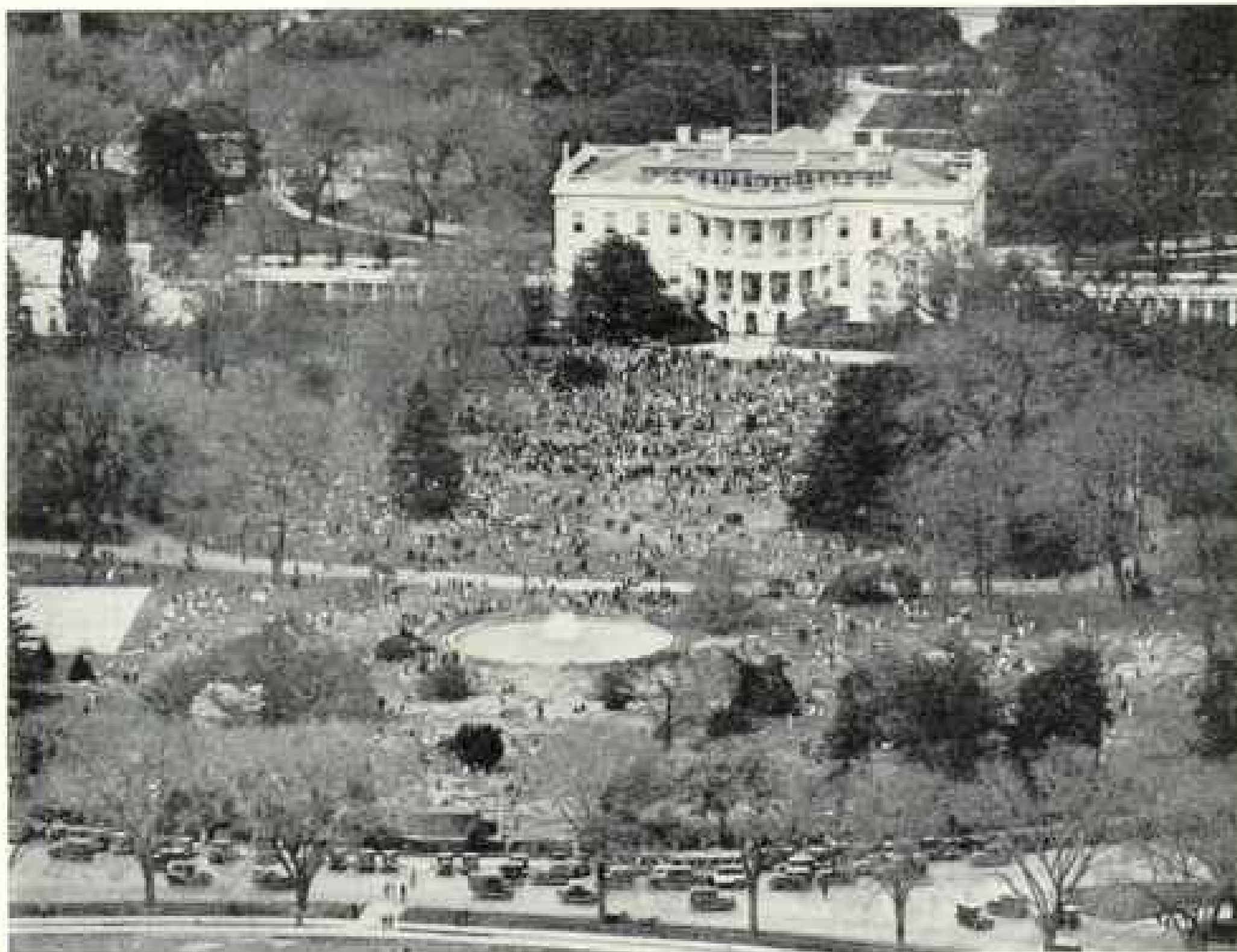
Other officials, with the furniture and meager archives, came by sloop, and still others trickled in by stagecoach and hired conveyances. The whole Federal force of clerks then numbered 136—compared with scores of thousands who toil here now.

Here was a village when Adams came. The party escorting Mrs. Adams got lost in the woods on the way over from Baltimore, and she used the unfinished East Room of the White House as a laundry! Carpenters, masons, skilled workers of all kinds were few. Even hardware for building the new capital, like hinges, bolts, and "lanthorns," had to be imported from England.

Many other American cities grew far faster. Decades after John Adams the Capital's streets were still unpaved, and so badly drained that during Potomac freshets, as late as the '90's, water often backed into Pennsylvania Avenue, so that skiffs had to be used to reach the old depot at Sixth Street, where Garfield was shot. It is even recorded that a cab horse actually drowned during one such flood. Many early officials paid their calls on horseback, and sometimes the omnibus from Georgetown to Capitol Hill took three hours for the round trip of about three miles.

#### A CITY FAITHFUL TO A PLAN

Yet, from L'Enfant to Hoover, usually by design and seldom by chance, the city grew through the years with fidelity to its original plans. Maps of then and now prove this.



Photograph by Hugh Miller

#### THE EASTER EGG-ROLLING AT THE WHITE HOUSE

For more than 50 years the south gardens of the White House have been thrown open on Easter Monday to Washington children, who gather here to "roll eggs." Usually the President and his wife appear briefly to greet them.

We stand to-day in the dome of the Capitol and look down the grassy Mall, flanked by shining new edifices, across the splendid Memorial Bridge to Arlington, and we sense its perfect art. Here is in the making an architectural triumph of the ages. Here will be the substance of all that builders ever dreamed, from Greece, Rome, Babylon, and Luxor to the Taj Mahal, Versailles, and Potsdam. And from the day Washington laid the Capitol's cornerstone with his silver trowel, the growth of the United States is intertwined with the growth of this Capital.

The vast Louisiana Purchase was added to the Union under Jefferson. Then Lewis and Clark, exploring the new West, brought back maps and news of its resources—and a captive bear. They found many improvements in the new capital, after years in the wilderness; and yet Thomas Moore, the Irish poet, visiting here in 1804, left his thoughts of early-day

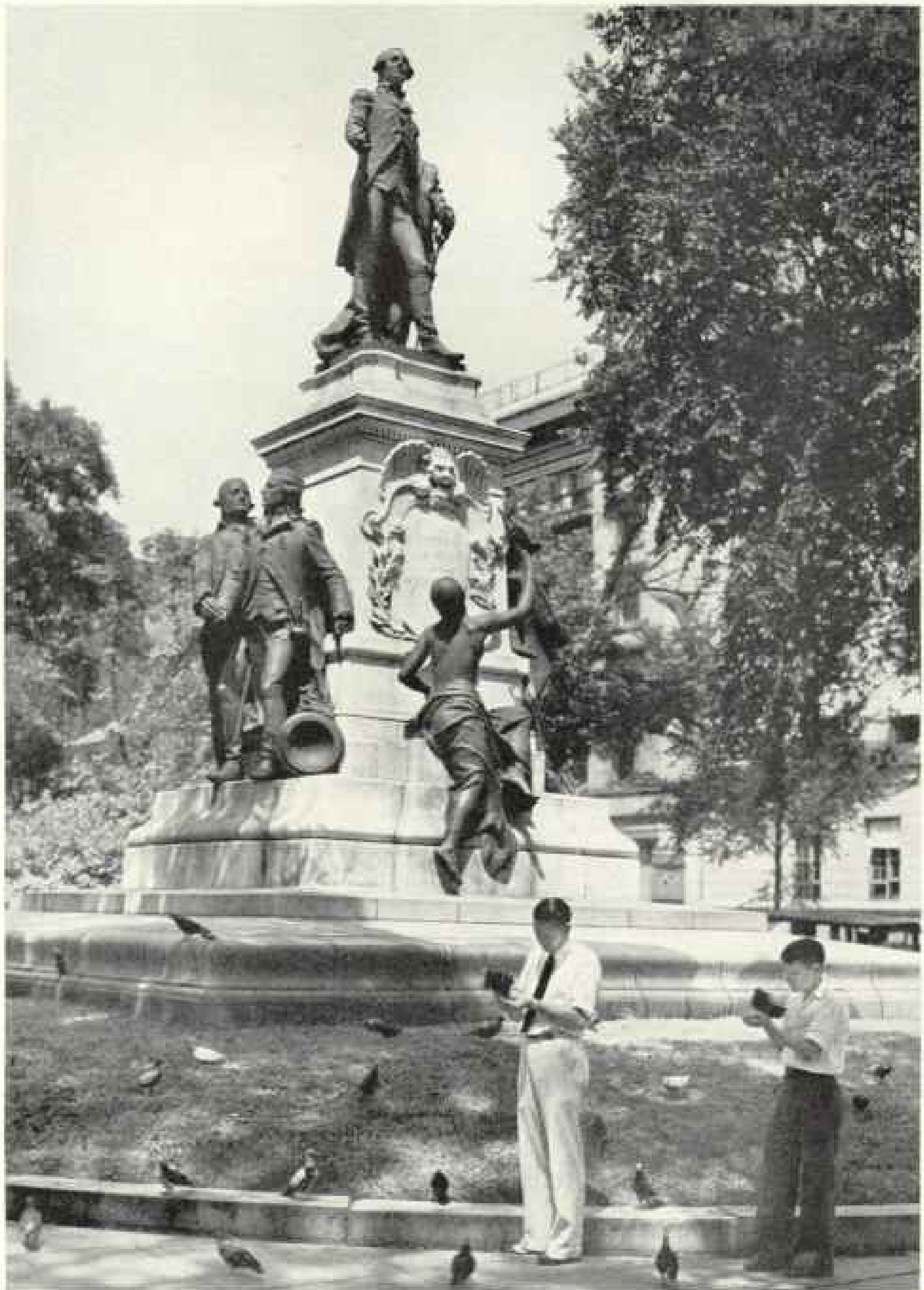
Washington in most uncomplimentary lines:

In fancy now, beneath the twilight gloom,  
Come, let me lead thee o'er this "second Rome,"  
Where tribunes rule, where dusky Davi bow,  
And what was Goose Creek once is Tiber  
now:—

This embryo capital, where Fancy sees  
Squares in morasses, obelisks in trees;  
Which second-sighted sees, ev'n now, adorn  
With shrines unbuilt and heroes yet unborn.

Crude the Capital was. But already its power was felt overseas. The new American Navy went to punish piracy in the Mediterranean. And the Tunisian envoy, Sedi Cellanelli, came in turban and Moorish robes to make a treaty. At a White House reception he met a party of Osage chiefs, also in tribal feathers and finery. Thus a new capital lured men from far places. To-day 56 foreign countries post their diplomats here. Many of their embassies and legations are landmarks of grace and beauty.





Photograph by Otten E. Loudon

LAFAYETTE'S NAME IS ETERNALLY INSCRIBED IN THE ANNALS OF AMERICA

This dignified monument to the gallant French soldier who gave his services to George Washington during the Revolution stands in the square that bears his name, opposite the White House. On the other three corners of the square are statues of Kosciuszko, Rochambeau, and Von Steuben, all foreigners whose memory is revered because of the assistance which they lent the struggling colonists: In the center of the square is the equestrian statue of Gen. Andrew Jackson.



Photograph by Capt. Albert W. Stevens

THIS MAGNIFICENT MARBLE GROUP INCLUDES THE HOMES OF THE PAN AMERICAN UNION, THE D. A. R., AND THE AMERICAN RED CROSS.

Just below center is the charming Aztec Garden, behind the main building of the Pan American Union. Adjoining the Pan American Union is Memorial Continental Hall, national headquarters of the Daughters of the American Revolution, and (large structure with checker-board roof) the new Constitution Hall, containing the auditorium and library. In the upper left corner, facing Seventeenth Street, is the headquarters building of the American Red Cross.

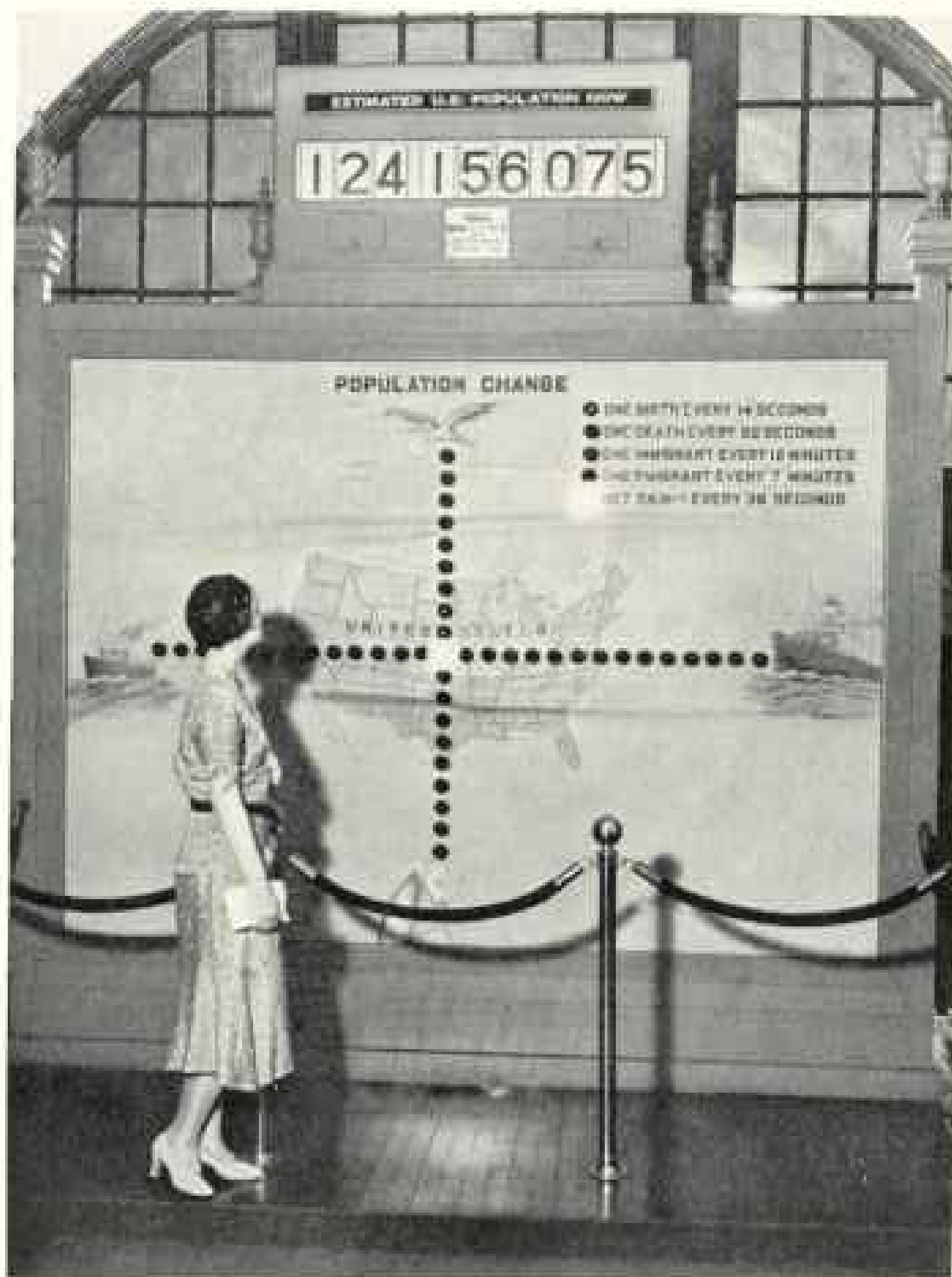
When Madison took office, in 1809, he brought to the White House that Dolly Madison who remains one of the most fascinating characters in all the romance of that historic mansion.

#### A BRITISH ARMY INVADED THE CAPITAL

Madison found a pioneer town without lights or police, although sidewalks in broken stretches appeared on Pennsylvania Avenue. From springs in the hills north of town, people were beginning to pipe water. Two public schools were opened, the number of merchants was increasing, a glass factory existed, and "rope walks" were doing business by 1812, when war with England broke.

Napoleon was ravaging Europe then. So it was not until after Waterloo, when British veterans were available, that Admiral Cockburn sailed up Chesapeake Bay to leave his mark in ashes upon the Capitol and White House.

In frantic haste the small company of Federal clerks packed their records. Into linen bags the State Department crammed its sacred archives—and fled. A sixteen-year-old boy, it is written, had charge of moving the Post Office. Mrs. Madison, the last to quit the White House, removed a portrait of George Washington, gave her pet macaw to a friend, sent the White House key to the Russian Minister, and joined the exodus. Nearly everybody in



Photograph by Clifton Adams

THE CENSUS BUREAU SIGNALS, UP TO THE MINUTE, THE NATION'S POPULATION

Like a giant score-board which flashes the plays at a baseball park, this clocklike device was set up just after the total count of the 1930 census was reached. Theoretically, 124,156,073 was the population at the instant the cameraman pressed the trigger.



Photograph by Orren R. Loudon

THIS ZERO MILESTONE STANDS ON THE EDGE OF THE ELLIPSE, SOUTH OF THE WHITE HOUSE

In 1920 Congress authorized the Secretary of War to erect this monument as a point from which all distances from Washington should be measured. Its exact position is latitude  $38^{\circ} 53' 42.322''$  north and longitude  $77^{\circ} 02' 12.492''$  west. Elevation, 28.65 feet above sea level.



© Underwood and Underwood

ROYALTY OF OLD NIPPON BENEATH JAPANESE CHERRY  
BLOSSOMS ABOUT THE TIDAL BASIN

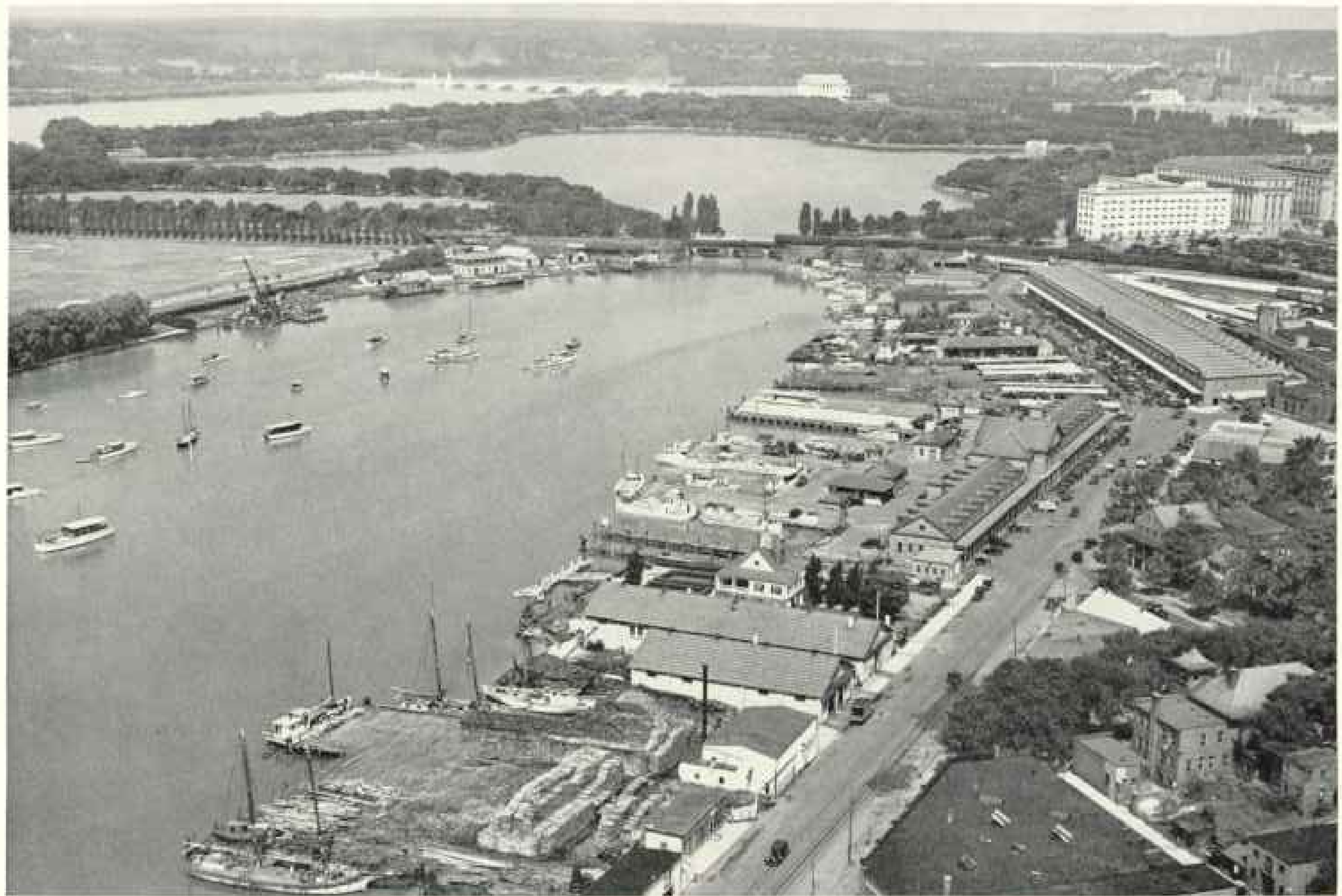
Second and third from the right, the Japanese Ambassador and Madame Debuchi; fifth and sixth, respectively, Prince and Princess Takamatsu, on the occasion of their American visit in April, 1931.



Photograph by Orrin R. Loudon

A TREE SURGEON TREATS ONE OF THE OLD TREES IN  
LAFAYETTE SQUARE

This historic plaza before the White House was in turn a swamp, a cow pasture, and an apple orchard. For a time it was also known as the "Park of the Presidents." The Kosciuszko statue in the background.



Photograph by Capt. Albert W. Stevens

THE WATER-FRONT MARKET, WHERE SMALL POTOMAC BOATS FROM THE LOWER RIVER UNLOAD FISH, CRABS, FRUITS, FIREWOOD, AND VEGETABLES

In the left background the new Arlington Memorial Bridge, reaching across the Potomac from Lincoln Memorial. In the middle distance the Tidal Basin, surrounded by Japanese cherry trees. In upper right, United States Bureau of Engraving and Printing. Along the water front, wholesale and retail markets, with private yachts and power boats at anchor. The historic Potomac stretches its ever-widening tidal flow from Chain Bridge, above Georgetown, 116 miles to Chesapeake Bay.



Photograph by Capt. Albert W. Stevens

#### WASHINGTON'S TOURIST CAMP FOR THOSE WHO TAKE THE OPEN ROAD

Since 1921 thousands of travelers have made good use of the model tourist camp in East Potomac Park. Here are permanent tents for rent, with hot and cold water, shower baths, a gasoline filling station, a laundry, and a commissariat where provisions may be obtained at cost. Equipped with playgrounds for children, well-laid-out streets, sanitary sewerage, the camp is a city in miniature. It is screened by trees from Potomac Park Driveway, which surrounds it.

the Capital decamped. To thwart the invaders, American sailors burned the newly finished navy yard.

Admiral Cockburn rode down Pennsylvania Avenue on a white mare, with a colt galloping behind; and in Baltimore Francis Scott Key—detained by the British during the bombardment of Fort Mchenry—wrote "The Star-Spangled Banner."

To rebuild the Capital here or move to a safe place: that was the question facing Madison's administration, when he ventured back from his hut in the Virginia woods. But panic passed; Congress, housed in the Patent Office, voted to reconstruct the ruined city.

Though burned out by the British, the *National Intelligencer* was again cried upon the streets. On February 6, 1815, its scare-head told of the "Almost Incredible Victory" of Jackson over Pakenham in New Orleans—a month before!

Peace, now, by the Treaty of Ghent. And the Government advertising in Baltimore and Philadelphia for bricklayers and carpenters at \$2 a day, to rush work on the new buildings.

#### EARLY LIFE IN WASHINGTON

It is significant that during this and other building-fever periods, despite haste, confusion, and discord as to where and how various new buildings should be erected, the stately lines and circles as designed by L'Enfant were seldom much violated.

Looking across Lafayette Square, then known as President Square, Dolly Madison saw the beginning of St. John's Episcopal Church. It was the first building to rise opposite the White House, and, as Helen Nicolay writes in "Our Capital on the Potomac," has counted more Presidents among its regular attendants, opened the door of matrimony to more society girls, and closed the tomb over more distinguished men than any other in Washington. A painting, reproduced in P. L. Phillips's "The Beginnings of Washington," shows this church surrounded by grazing cattle, the yet half-repaired White House in the background, and people in old-fashioned dress walking along dirt roads.

We find mention of the Spanish Minister of those days, in his gilded coach, bumping over the rough streets, and of the

President and other officials going about their errands on horseback.

John Quincy Adams, invited to dinner in Georgetown, described his adventures on Pennsylvania Avenue:

#### WHEN STREETS WERE MUD AND RUTS

"The weather having been foul, the roads were bad. Our carriage in coming for us in the evening was overset, the harness broken, and the boy Philip took a sprain in the side, so that we were obliged to take him home in the carriage. We got home with difficulty, being twice on the point of oversetting; and at the Treasury Office corner we were both obliged to get out of the carriage in the mud. I called out the guard of the Treasury Office and borrowed a lantern, with which we came home. We immediately sent for the surgeon nearest at hand, who came and bled Philip. It was a mercy we all got home with whole bones."

Yet even in those days, when elegance rubbed elbows with squalor, and slave huts stood in the shadows of new Government structures, Washington had already cast that indisputable charm over visitors which makes it to-day a permanent exposition city for the whole of America. "In spite of its inconvenience and its desolate aspect, it was, I think, the most agreeable town to reside in," wrote Sir Augustus Foster, attaché of the British Legation in 1804-6.

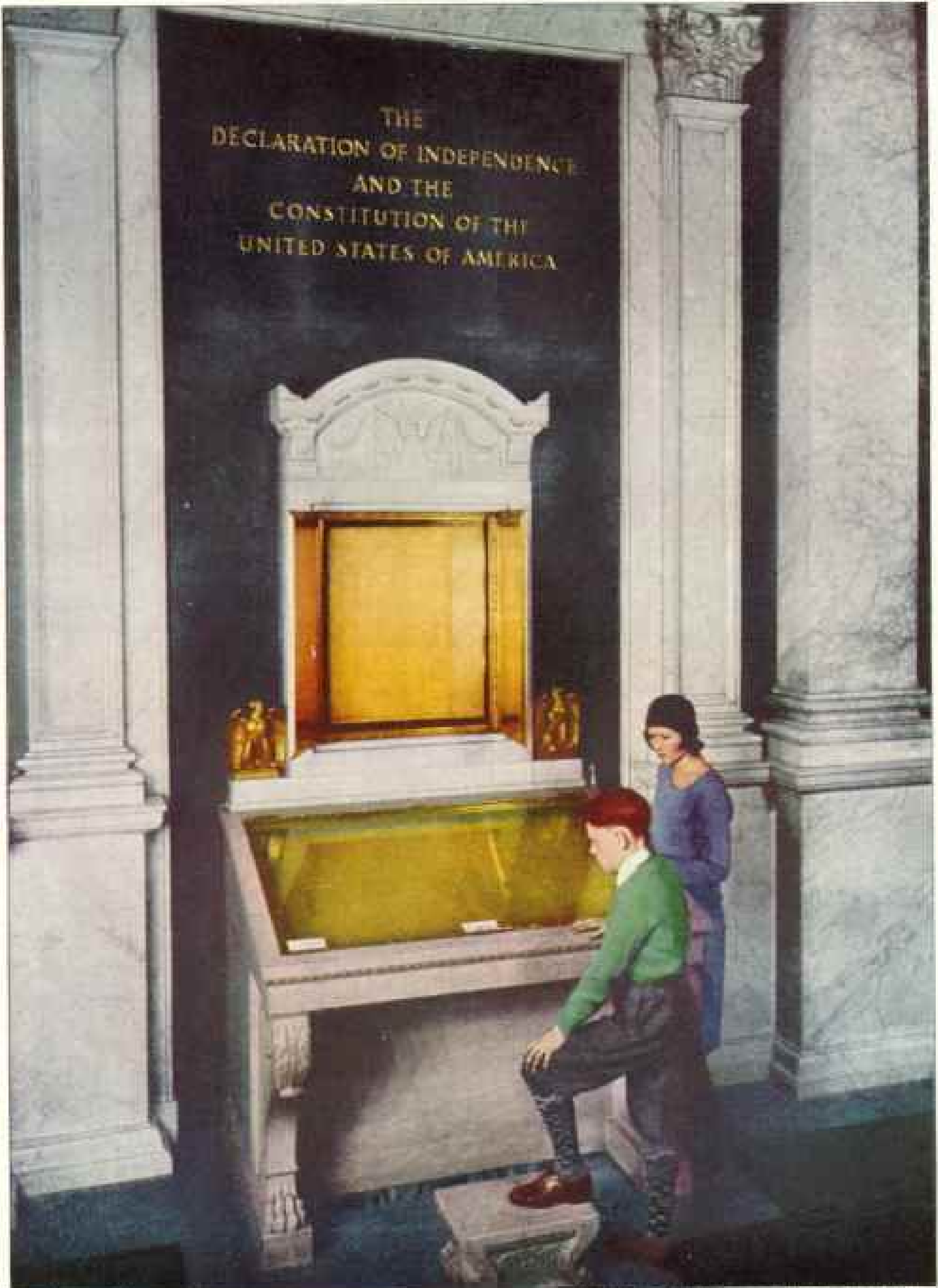
James Monroe, taking his oath in the open air, found Congress still sitting in the old Brick Capitol, built after the main building was burned; but his term saw the White House restored and the Capitol re-occupied.

Florida territory came under the Stars and Stripes through the conquests of Andrew Jackson. Lafayette came to lay the cornerstone of the Bunker Hill Monument and make his famous tour of the States.

On the streets, then, men whose names are still conspicuous in history—John Marshall, Jackson, Van Buren, Adams, Clay, Calhoun, and Webster—were familiar figures. Commodore Decatur was killed in a duel, and a plague of cholera swept the unsanitary town.

In Andrew Jackson's term the Treasury burned. Architects disagreed as to where a new building should stand. The story goes that Jackson, appealed to as umpire, stalked from the White House early one

OUR COLORFUL CITY OF MAGNIFICENT DISTANCES



© National Geographic Society

Natural Color Photograph by Charles Martin

PRICELESS NATIONAL DOCUMENTS ARE KEPT IN THE LIBRARY OF CONGRESS

In 1921 a Presidential order transferred the originals of the Declaration of Independence and the Constitution of the United States from the State Department to the Library of Congress. There, shielded from the light by amber glass, the venerable documents are examined by thousands of patriotic visitors.

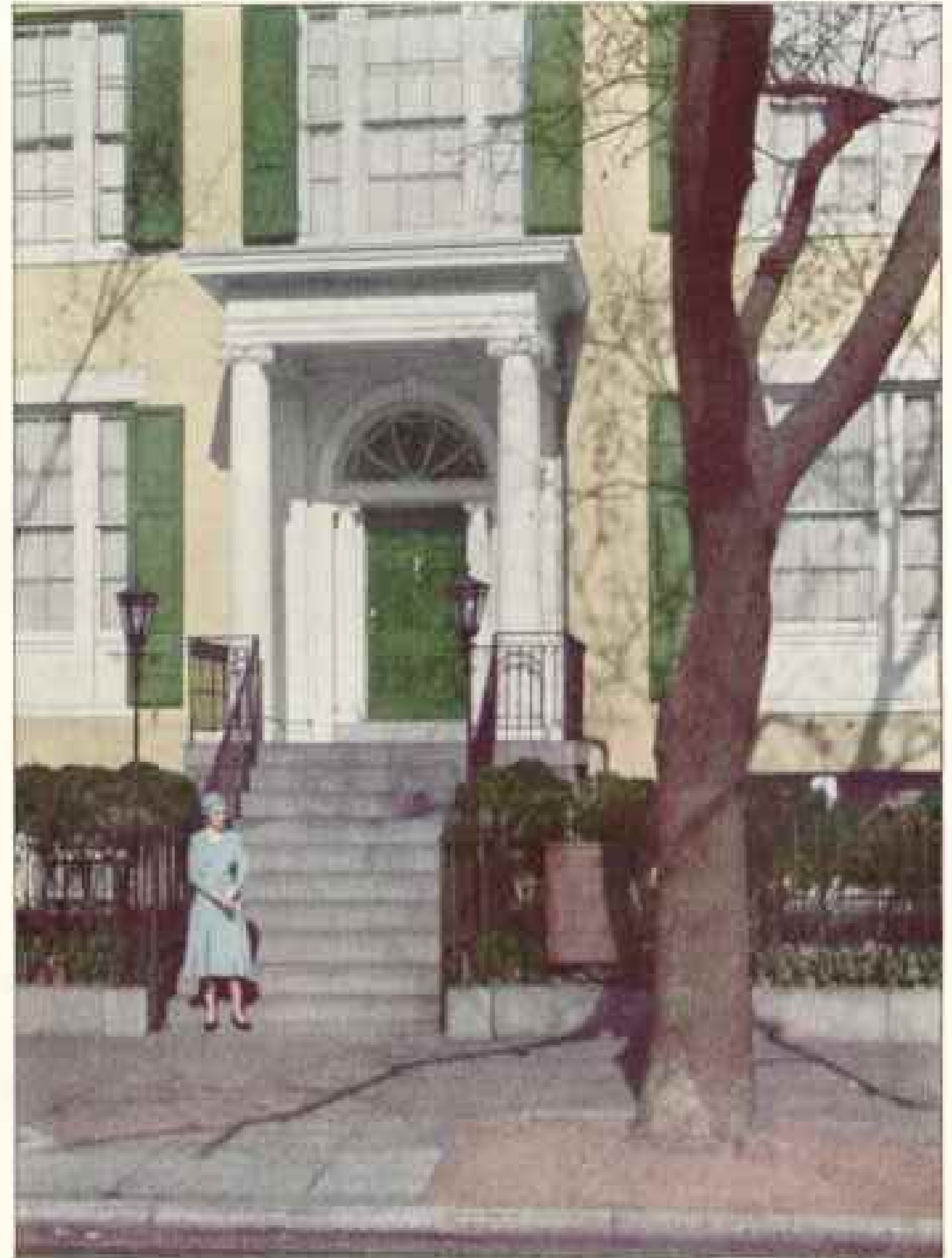




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FEATHERED FOLK FROM THE ENDS OF THE EARTH LIVE HERE

The bird house in the National Zoological Park attracts throngs of visitors. Among its most interesting exhibits are birds of paradise, talking mynas, and a shoebill stork from the upper reaches of the White Nile.



Natural Color Photographs by Clifton Adams

A PENNSYLVANIA AVENUE MANSION STEEPED IN HISTORY

The old Blair home, opposite the State, War and Navy Building, has long been a rendezvous for Washington officialdom. Here, at the beginning of the Civil War, Robert E. Lee was offered command of the Union Armies.



© National Geographic Society

Natural Color Photograph by Jacob Goyer

EIGHTEENTH CENTURY TREASURES IN THE LOUIS XVI SALON OF THE CORCORAN GALLERY OF ART.

One of the show places of a new wing of the gallery presented to the Nation by the late Senator W. A. Clark, of Montana. Furniture, interior decorations, ceiling, and mirrors, were all brought from France and installed as a salon in the donor's palatial New York residence. After his death, they were transferred to their present location. His art collection comprised one of the finest in America.



© National Geographic Society

Natural Color Photograph by Jacob Gayer

THE RICH HUES OF MYRIAD FANSIES BRIGHTEN LAFAYETTE SQUARE



© National Geographic Society

Natural Color Photograph by Charles Martin

THEODORE ROOSEVELT SECURED THESE LIONS FOR THE NATIONAL MUSEUM

The Smithsonian Expedition of 1908, which the late statesman-soldier-explorer led to Africa, brought back a fine collection of animals, among them the lion group from British East Africa. The Museum has more than a quarter of a million animal skins, skulls, and skeletons, but only a small fraction of them can be displayed.

OUR COLORFUL CITY OF MAGNIFICENT DISTANCES



© National Geographic Society

Natural Color Photograph by Clifton Adams

CHERRY BLOSSOMS FRAME A DISTANT VIEW OF THE LINCOLN MEMORIAL



© National Geographic Society

Natural Color Photograph by Charles Martin

HARTBEEST MOUNTED IN A NATURAL SETTING

One stands on a white ant hill doing sentry duty for the group. These members of the antelope family prove interesting quarry for the sportsman. They are by no means slow, and being extremely wary are hard to approach. They were collected for the National Museum by Colonel Roosevelt's Expedition.



© National Geographic Society      Natural Color Photograph by Charles Martin  
A WATERLILY POND IN KENILWORTH, D. C.



Photograph Courtesy Mrs. Frank B. Noyes  
A GARDEN UNDER GLASS IN THE NATIONAL CAPITAL



© National Geographic Society

Natural Color Photograph by Maynard Owen Williams

IN COMMEMORATION OF THE INVENTOR OF THE "MONITOR"

John Ericsson's craft was instrumental in revolutionizing naval warfare. His memorial, erected jointly by the United States Government and private contributions from Americans of Scandinavian descent, was dedicated May 29, 1926. For sentimental and historical reasons it was placed near the Lincoln Memorial, which is visible through the trees at the right.



© National Geographic Society

Natural Color Photograph by Orren B. Loudon

LOOKING TOWARD THE CAPITOL AND MONUMENT FROM A TERRACE OF  
THE LIBRARY OF CONGRESS



© National Geographic Society

Natural Color Photograph by Jacob Gayer

"KECHIL" PROVES A CENTER OF ATTRACTION FOR JUVENILE WASHINGTONIANS

The little Sumatran elephant is popular, but has never taken that place in the public affection held by old Dunk, who, for more than a quarter of a century, reigned supreme in the National Zoological Park. His memory is perpetuated by a tablet erected by the children of the Capital City.

morning, testily poked his cane into the ground, and arbitrarily marked the exact spot where the new building should rise. "Old Hickory" may never have heard of the L'Enfant plan. Anyway, the Treasury building stands to-day on the spot he chose. It violates the city plan, obstructs the view between the White House and Capitol, and puts a kink in Pennsylvania Avenue.

From Jackson, in brief, to the building boom of Grant's administration the architectural aspect of Washington improved but little; yet, gradually, the city grew in size and importance as the stage of events interesting not only to our Nation, but often to the whole world.

#### THE CITY GREW WITH THE NATION

War with Mexico added an empire to our West. The railway was laid from Washington to Baltimore. Gas light came and better water works. And inventors swarmed the Capital like flies. Morse built his first telegraph line. But men would not believe the first dispatch was *bono fide*; they waited till a messenger could go from Baltimore to Washington and return to confirm it!

With the telegraph came news correspondents to serve those papers which were now springing up in growing cities everywhere. It was news when Daniel Webster, at a Jenny Lind concert, rose when that Swedish Nightingale sang "Hail Columbia" in the old Music Hall, and sang the chorus with her—or tried to sing it.

It had been news when John Randolph fought his bloodless duel with Henry Clay. So it was when that pioneer woman journalist, Ann Royall, failing in every other way to get an interview with John Quincy Adams, followed him to the Potomac when he went to swim and sat on his clothes. And he, up to his neck in water, shouted back the answers to her questions—that was Washington news.

So it was news when Millard Fillmore laid the cornerstone of the enlarged Capitol, with some aged men among the spectators who had seen Washington lay the first stone in 1793; and it was news when Fillmore installed the first bathtub in the White House—especially since Boston for years had on its books a law against taking baths at all except on medical advice. And then, as it would be now, it was news when the school children, led by the Marine Band,

marched to the White House to receive their prizes from the President's hand.

Thackeray, visiting Washington in 1853, styled it "Wiesbadenish, with politics and gaiety straggling all over it."

#### "UNCLE TOM'S CABIN" FIRST PUBLISHED HERE

But dark shadows were falling. Slave labor built much of Washington; slave legends and debates over slavery glut its early annals. By Buchanan's time, even many free blacks owned slaves. And then *The National Era*, a periodical of the time, began to publish "Uncle Tom's Cabin," by Harriet Beecher Stowe.

Lincoln "belongs to the Ages now." He raised temples not made with hands. But a reverent Nation built a temple to him, a memorial greater than exists to any one man anywhere else. No mere word structure can tell its beauty. Dedicating this incomparable edifice in 1922, William Howard Taft described it as the "culmination of the highest art of which America is capable." To-day, artists and architects come from the ends of the earth to see it.

Rumbling army wagons and milling horses pounded Washington's streets into ruts and mudholes in Civil War days. War-time railway tracks were thrown across Pennsylvania Avenue. But even while Confederate cavalry threatened the city, Lincoln kept construction work going; and Nathaniel Hawthorne, visiting here, observed that decorators calmly continued their work in the Capitol.

Grant's administration brought sweeping changes. The end of the Civil War had left the city strewn with all the litter of departing armies.

#### THE CITY BECOMES A POPULAR PLACE OF RESIDENCE

It is written that streets were so bad that hand-drawn fire engines, answering a call in bad weather, used to run on the sidewalks. Andrew Johnson was the post-war President; but it was not till Grant came that Pennsylvania Avenue was first paved, miles of other streets graded and leveled, and thousands of shade trees planted; also, Grant signed a bill for the new State Department structure.

America was expanding fast now. At Promontory Point, Utah, on May 10, 1869, spikes of silver and gold were driven





Photograph by Capt. Albert W. Stevens

ARLINGTON MANSION, OLD HOME OF GEN. ROBERT E. LEE, WITH THE TOMB OF L'ENFANT, TO THE LEFT OF THE FLAGPOLE

To this estate Col. Robert E. Lee returned to write, on April 20, 1861, his resignation from the United States Army, after that historic last visit with his military superiors. Shortly afterward, he went to Richmond, and later became Commander-in-chief of the Confederate forces. When the Civil War began, Union troops camped at Arlington. To-day the estate forms a great national cemetery. L'Enfant, designer of the Federal City, died on Riggs Farm in Maryland, June 14, 1825, and was reinterred at Arlington, April 28, 1909.

on the Union Pacific and Central Pacific railways, giving the Nation its first coast-to-coast passenger and freight service. Washington rapidly gained in population and importance. Men of science, retired Army and Navy officials, the wealthy, and those with social or scholarly ambitions flocked here in ever-growing numbers.

About the streets and around the circles on L'Enfant's map, sumptuous residences began to rise. Some were beautiful, some were frightful, and scores were the nonde-

script red-brick-row houses so familiar to the last generation of Washington tourists. Hayes, Garfield, Arthur, Cleveland, Harrison—they crossed the stage. One dedicated the Washington Monument, one was assassinated, one married in the White House, and another gave a dinner for Christine Nilsson, at which she sang, spontaneously, when the Marine Band played an air she liked.

In 1898 the *Maine* was sunk in Havana harbor, and we faced the Spanish-Amer-

ican War. Dewey sank Montojo's fleet in Manila Bay, and Pennsylvania Avenue echoed with "There'll Be a Hot Time in the Old Town To-night" and other war songs.

Again now, as after other wars, came plans for making Washington better.

#### THE PLAN OF 1901

The 1893 World's Fair, or "Columbian Exposition," at Chicago had profoundly influenced American architecture. Its White City, that group of fairy palaces on the shores of Lake Michigan, brought a new era in civic improvements throughout the Union. No such group of artists and architects as that then gathered in Chicago had been assembled since the days of Michelangelo and Da Vinci.

From this famous group came Daniel H. Burnham, Charles F. McKim, Augustus Saint-Gaudens, the sculptor, and Frederick Law Olmsted to aid Washington with its Centennial in 1900. To help decorate the Library of Congress came also such painters as Edwin H. Blashfield, Kenyon Cox, and George W. Maynard, and the sculptors Frederick MacMonnies, Theodore Bauer, and Olin Warner.

#### PERMANENT STRUCTURES BEGIN TO LINE THE MALL

At this time the Senate undertook to restore the 1792 plan of L'Enfant and adapt it to the entire city. This movement became known as the Plan of 1901, and was actively promoted by President Roosevelt,



Photograph by Orren H. Louden

#### THE LAST WASHINGTON RESIDENCE OF WILLIAM HOWARD TAFT

As Governor General of the Philippines, Secretary of War, President of the United States, and, at last, Chief Justice of the United States, Mr. Taft's was a long life of distinguished public service. At 1603 K Street Northwest Mr. Taft was notified of his nomination for the Presidency; as Chief Justice he resided at 2215 Wyoming Avenue.

Elihu Root, William Howard Taft, and Charles Moore, now Chairman of the Commission of Fine Arts.

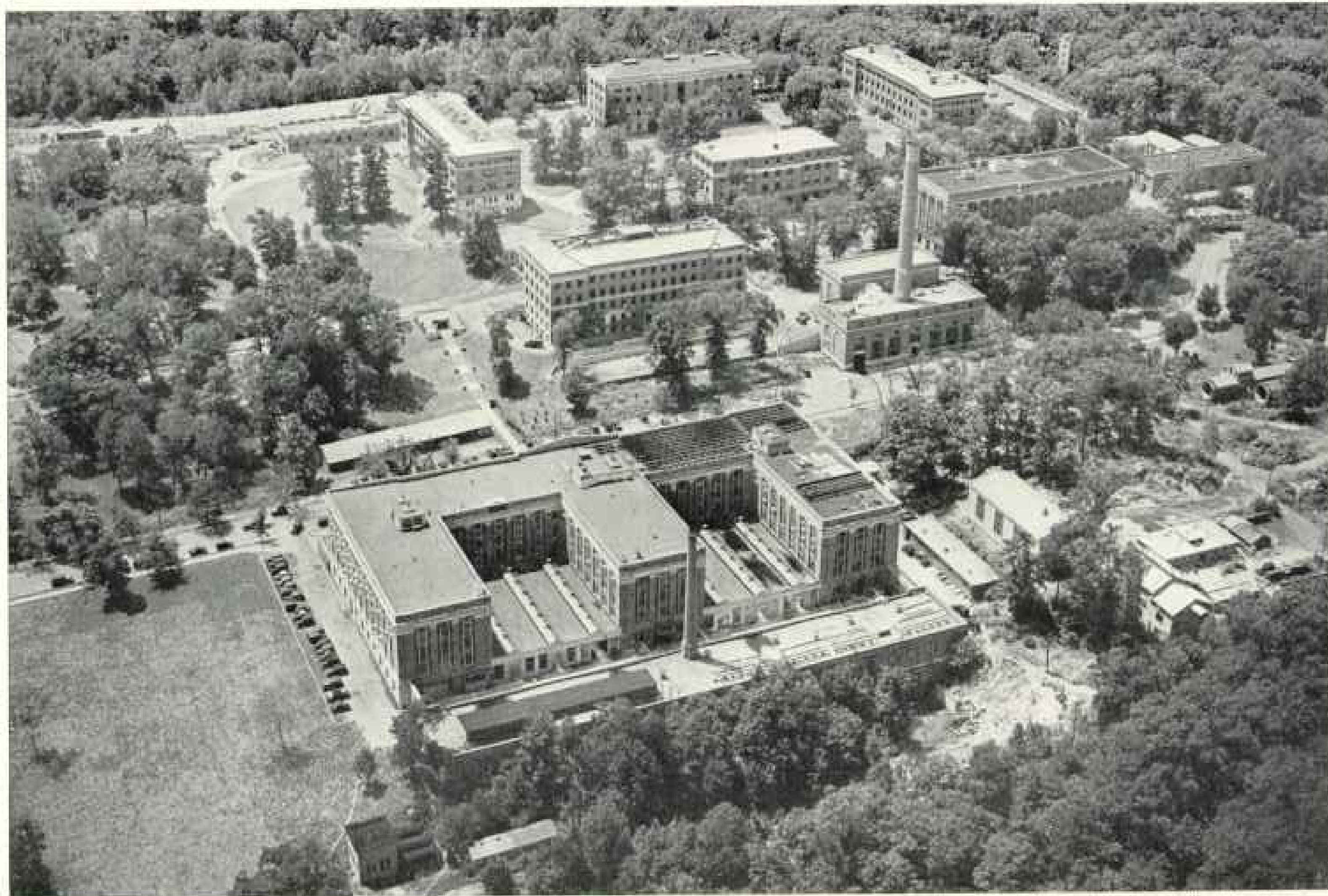
True to this plan, though against much opposition at the time, the new Department of Agriculture Building was located on the Mall. Since then the National Museum and the Freer Gallery have been located in accordance with the Mall scheme; the National Gallery of Art will be likewise so built. For this new National Gallery of Art an unnamed donor will contribute from ten to fifteen millions of dollars.



Photograph by Capt. Albert W. Stevens

#### THE GREAT CONCRETE-STEEL WILLIAM HOWARD TAFT BRIDGE OF ARCHES

High above tree-shaded Rock Creek, it spans a tongue of Rock Creek Park, whose main body, including the National Zoological Park, lies to the left. Under this bridge, to connect Rock Creek Park and Potomac Park, along the river, a winding scenic highway is being completed. Originally known as the Connecticut Avenue Bridge, the structure was recently renamed for the former President and Chief Justice of the United States, who until a short time before his death took daily strolls across it from his residence near by (see page 541).



Photograph by Capt. Albert W. Stevens

IN THE BUREAU OF STANDARDS, SCIENTIFIC RESEARCH PROMOTES THE NATION'S WELFARE

Here more than 500 scientists and technicians not only seek to establish and maintain standards for measuring length, mass, capacity, time, electricity, optics, heat, and other things in physics and chemistry, but they also study melting points, densities, wave-lengths, etc., and problems in atomic physics, X-rays, radioactivity, and aerodynamics. They test scientific instruments and devise new ones. Here is, in brief, the consulting, research, and testing laboratory in physics, chemistry, technology, and many branches of engineering, for the Government (see, also, text, pages 569 and 577).



WITH THIS NEW STRUCTURE THE NATIONAL GEOGRAPHIC SOCIETY ENLARGES ITS HOME IN WASHINGTON, D. C.

Thirty years ago historic Hubbard Hall, at the right, sufficed to house all The Society's activities. Now, with a million and a quarter members drawn from every civilized community in the world, more space is required. This new edifice, designed by Arthur B. Heaton and approved by the Commission of Fine Arts, accommodates the executive and editorial offices of The Society, a scientific museum, an incomparable collection of geographic manuscripts, photographs, and a library of current geography and rare books of travel and exploration. Thousands of members annually visiting Washington are welcomed at their Society's headquarters. A commodious annex in another section of the city provides offices for the clerical staff, numbering five hundred.



© Theodor Hurydenak

JAPANESE CHERRY BLOSSOMS IN BLOOM AROUND THE TIDAL BASIN

A gift from the Municipal Council of Tokyo, many hundreds of these trees line the banks of the Tidal Basin and the Potomac Park Driveway, made largely of land reclaimed from the Potomac River by dredging and filling (see, also, text, page 590, and Color Plate V).



Photograph by Clifton Adams

#### THE CAPITOL OF AMERICA'S PUBLIC SCHOOLS

The National Education Association building, neighbor of the National Geographic Society headquarters on Sixteenth Street, is the "big red school house" of the country's educators. Through its *Journal*, its great national conventions, and the reports of its researches and surveys, it makes available latest educational findings to its countrywide membership, ranging from big-city superintendents to the teachers of one-room rural schools.

Another achievement brought about through the Plan of 1901 was the removal of Pennsylvania Railroad tracks from the Mall and the construction of the giant Union Station. Mr. Burnham designed the Station, with its series of arches, as a great portal to the National Capital. Its central arch suggests the Arch of Constantine. The waiting room was designed in magnitude like the baths of Caracalla, in Rome.

Along Sixteenth and Seventeenth streets, in late years, have risen many palatial buildings of monumental type, semi-public in character, such as the Scottish Rite Temple, the National Geographic Society group, the National Education Association offices, the Corcoran Gallery of Art, the American Red Cross buildings, Memorial Continental Hall and Constitution Hall of the Daughters of the American Revolution, and the Pan American Union. And on old B Street, now renamed Constitution Avenue, stands the building of the National Academy of Sciences, which,

with certain others to be erected, including a Public Health Service edifice and the American Pharmaceutical Association Building, will serve as a frame for the Lincoln Memorial. Like it, they are also of the monumental classical type and reveal the work of distinguished architects.

#### FIDELITY TO THE PLANS OF L'ENFANT

The Plan of 1901 was exhibited in numerous designs and drawings, including two large models, each 9 by 15 feet, of the old and new Washington. Thousands of persons came to see them, when shown at the Corcoran Gallery of Art. This plan, based on that of L'Enfant, has been the basis of development for the past 30 years.

To carry out faithfully the Plan of 1901, Congress later created the Commission of Fine Arts. In the 21 years of its life many of the country's greatest artists have served on this Commission.

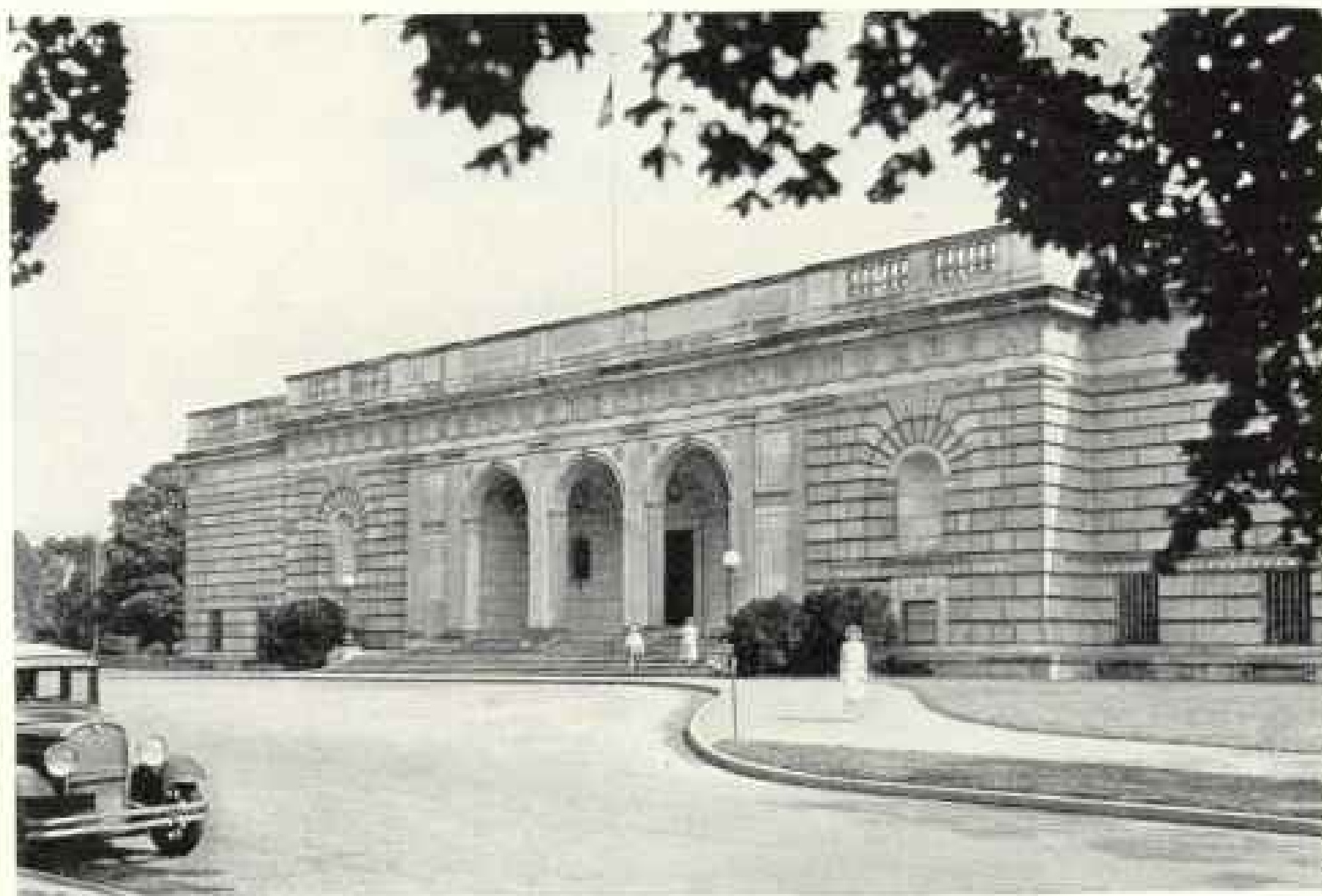
After the World War, Washington began growing once more. And Congress aided, this time by establishing the National



Photograph by Clifton Adams

A SUMMER-DAY CROWD WAITING TO ASCEND THE WASHINGTON MONUMENT

A new elevator, installed in 1926, can accommodate 30 persons a trip and make 12 round trips an hour. Many vigorous enthusiasts, however, still climb the steps. With nearly 1,000,000 visitors a year, here is one of earth's most popular free attractions.



Photograph by Edwin L. Wisner

CHARLES LANG FREER'S GIFT TO THE NATION

Housed in a dignified edifice adjacent to the Smithsonian Institution, the Freer Gallery is the year-round Mecca of artists and art lovers. Its exhibits include rare oriental collections and the famous James McNeill Whistler Peacock Room.





Photograph by Clifton Adams

HERE, WHERE THE LAND OFFICE NOW STANDS, THE WORLD'S FIRST TELEGRAPH OFFICE WAS OPENED 86 YEARS AGO

"Samuel F. B. Morse, artist and inventor, opened and operated on this site, under the direction of the Post Office Department, the first public telegraph office in the United States, April 1, 1845. 'What hath God wrought!'" So reads the bronze tablet. The date 1844, on the wooden marker below, refers to the year when the line was first opened, privately, and "worked as a curiosity."

Capital Park and Planning Commission. It contemplates an even greater city, involving a metropolitan area 40 miles in diameter, wherein the study of buildings, landscapes, and highway approaches is carried on.

Work now planned or under way is to cost about \$400,000,000. The entire south side of Pennsylvania Avenue from the Capitol to the White House will be lined with monumental structures. To-day, Union Station Plaza is being parked and beautified; the United States Supreme

Court Building, the new House Office Building, a new United States Botanical Garden, and the Municipal Center are being built, and the Mall Plan will be carried out.

The Arlington Memorial Bridge will be dedicated in 1932, as also the Mount Vernon Memorial Highway, which leads down the Potomac to the old home of the first President. The George Washington Memorial Parkway is designed to extend along the Potomac from Mount Vernon north to Great Falls, and thus preserve the natural scenery of that historic river. Arlington Mansion, the home of Robert E. Lee, is being restored and the tomb of the Unknown Soldier completed.

WASHINGTON, LIKE  
PARIS, IS BEING  
REBUILT

L'Enfant, the Frenchman, planned Washington as a city of wide streets, radiating avenues, certain focal points, and many great buildings—yet none more than six or eight stories high. To

an interesting degree, modern Washington resembles Paris. That city, as revamped by Napoleon III, was planned by Baron Haussmann. They literally tore away miles of the old buildings to create the Paris of to-day. You see the same thing going on here now, as hundreds of old buildings are destroyed and the debris carted away from the center of the Nation's Capital.

The rebuilding of Paris had such a great effect on France that the Institut des

Beaux Arts was established, which has drawn to Paris thousands of young architects, sculptors, painters, and others interested in the fine arts, from all parts of the world.

Washington of the future should become a great art center. Even now there are more monuments here than in any other city of the country—enough iron men on iron horses, it has been said, to form a regiment, remindful of the Sieges Allee in Berlin.

#### OUR GROWING NATION REQUIRES MORE OFFICE SPACE

To the people, these enduring structures reveal the power and dignity of their Nation. Also, as President Hoover said, this effort is "more than merely the making of a beautiful city. By its dignity and architectural inspiration we stimulate pride in our country, we encourage the elevation of thought which comes from great architecture. . . . It is on this national stage that the great drama of our political life has been played. Here were fought the political battles that tested the foundations of our Government. We face similar problems in our time, and here centuries hence some other Americans will face the great problems of their time. For our tasks and their tasks there is need of a daily inspiration of surroundings that suggest not only the traditions of the past but the greatness of the future."

While the new city sets an example in good taste and city planning for the Nation, it is, in the end, the function of its



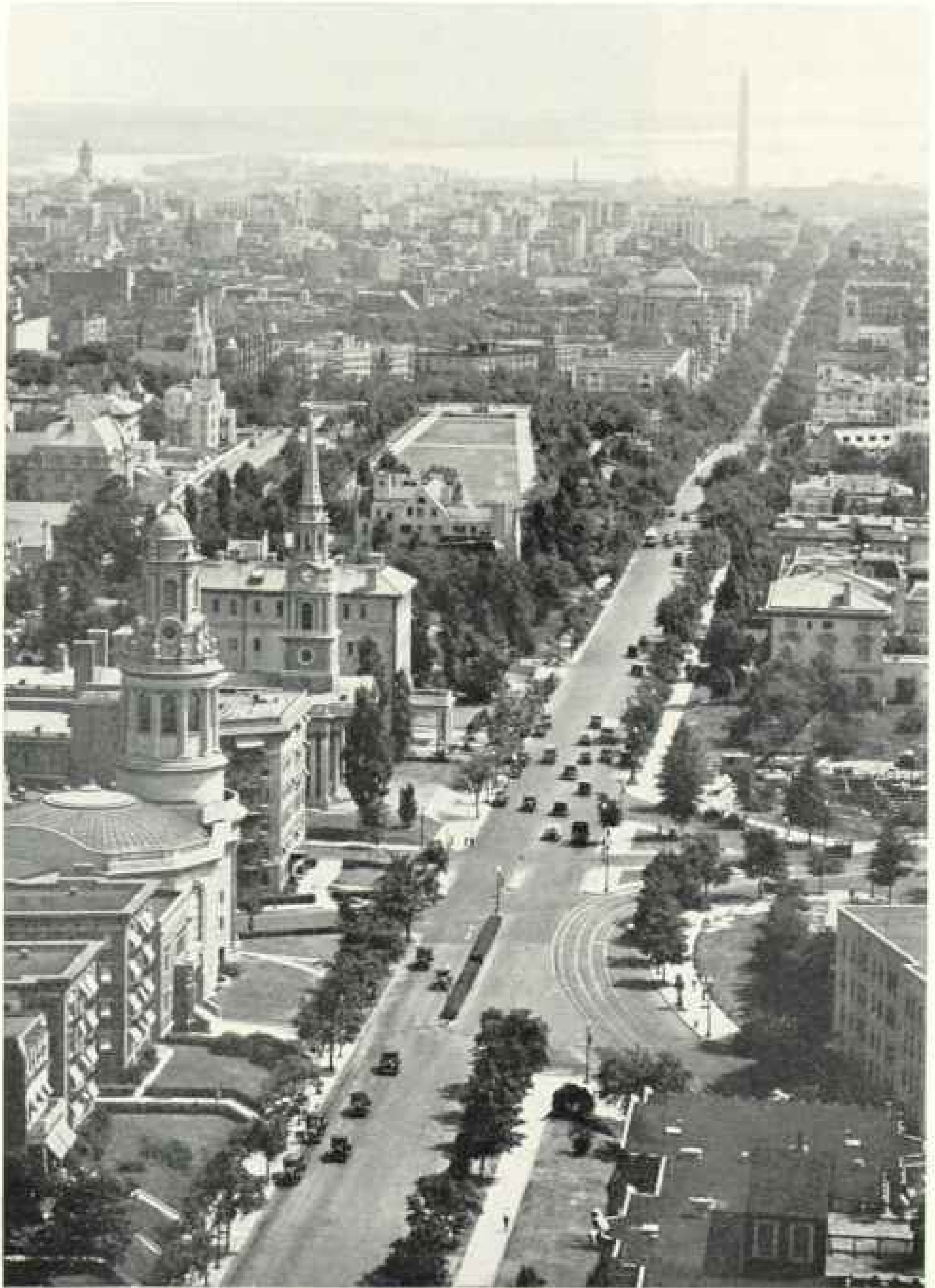
Photograph by Clifton Adams

#### THE CARNEGIE INSTITUTION, FOUNDED TO ENCOURAGE RESEARCH AND DISCOVERY

By the broad terms of its charter, including "the application of knowledge to the improvement of mankind," it carries on studies in botanical research, economics, and sociology, solar observations, nutrition, terrestrial magnetism, experimental evolution, and many other fields.

great buildings which is most important. For Washington's viewpoint is central. To it the whole Union looks, to learn what the Nation is thinking. Hence, what goes on inside the buildings is of supreme interest. They house the Nation's business.

Think of the Interior Department, for example. Its vast building holds, among other things, the largest real-estate business the world ever saw. It surveyed and transferred to private ownership the bulk of all the land in the United States. It still controls millions of acres of public domain.



Photograph by Capt. Albert W. Stevens

LOOKING DOWN SIXTEENTH STREET FROM ABOVE MERIDIAN HILL PARK

"Embassy Row," this section of Sixteenth Street is often called. The Mexican and Spanish Embassies stand below the second church on the left. Across the street are the Italian, Polish, Cuban, and French Embassies and the Lithuanian and Persian Legations. Farther downtown, on the left side of the street, rises the pyramidal roof of the magnificent Scottish Rite Masonic Temple. Sixteenth Street extends for six and a half miles from Lafayette Square, in front of the White House, to the District-Maryland line.



Photograph by Capt. Albert W. Stevens

THE UNITED STATES TREASURY DEPARTMENT STANDS IN WASHINGTON'S  
FINANCIAL CENTER (SEE TEXT, PAGE 611)

Facing the south front of the Treasury is the Sherman equestrian statue. Across from the north front, to the left, a corner of the Treasury Annex, and the Riggs National Bank; next, American Security and Trust Company. The dark building with awnings on the upper corner is the National Savings and Trust Company; in the right center, the National Metropolitan Bank.

In 1784, when Thomas Jefferson helped draft "an ordinance for ascertaining the mode of locating and disposing of lands in the western territory," the foundation for this powerful Department was laid, though it was not so styled till 1849.

Since then its work has grown, till now it not only controls public lands, but also directs Indian Affairs, Bureau of Reclamation, national parks, public education, and the Geological Survey. Our part of the great International Map of the World, on the millionth scale, is being done by this Survey. Time and again its field men have been the first whites to explore and map parts of our continent (see, also, p. 578).

Through its irrigation engineers, this Department reclaims our arid lands in that one-third of the United States west of the tenth meridian. Its giant Hoover Dam on the Colorado River will bring flood control, light, power, and water to wide farm areas and many cities in seven States of the Southwest.

In all its many ramifications, this Department directs the labors of more than 17,000 people.

FROM HERE THE LONG ARMS OF COMMERCE REACH OUT

One spring day in 1785 a group of tired business men called on George Washington to talk about trade. The Revolution had been won, but business was bad. These merchants asked the Government "to do something"!

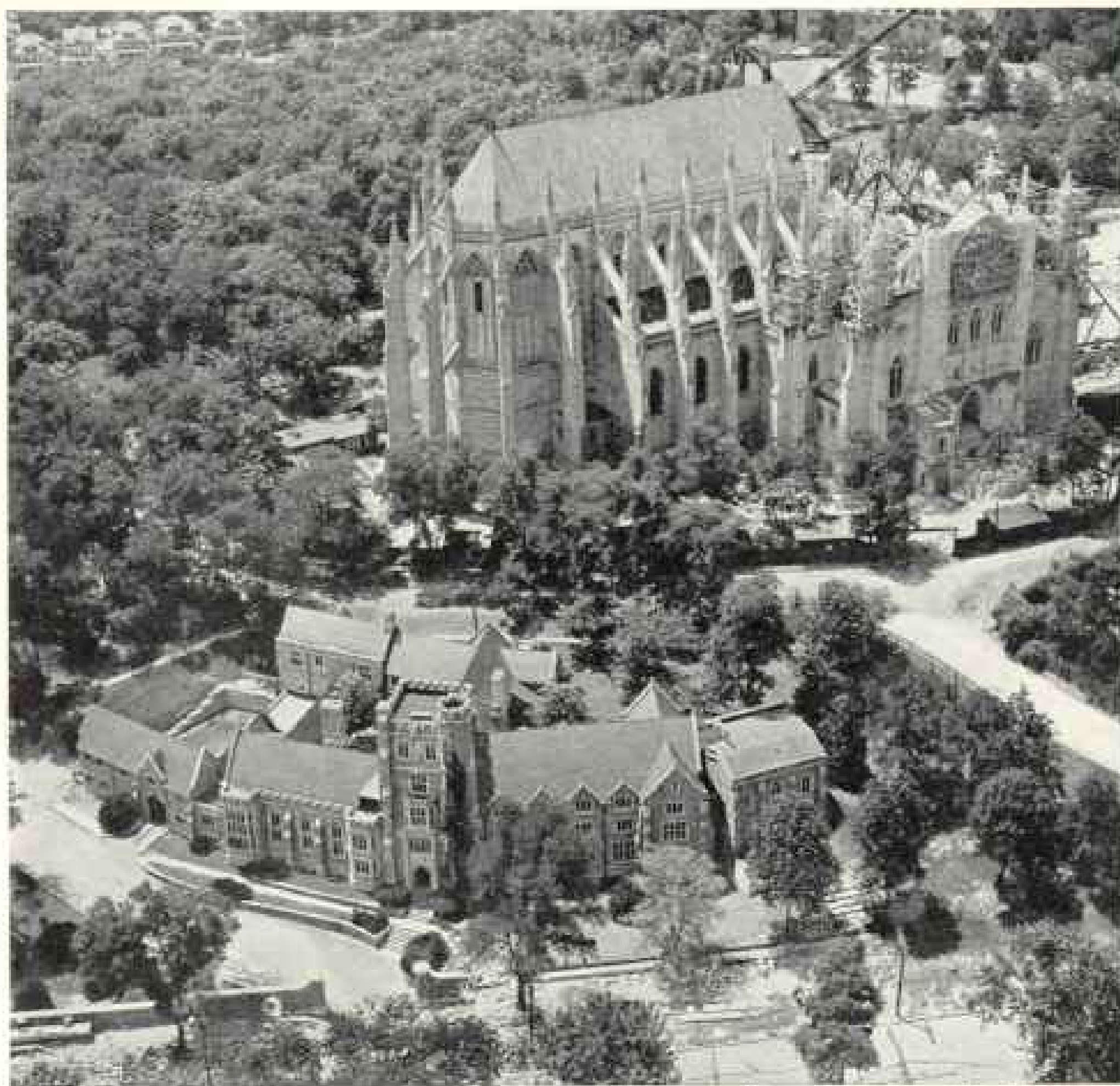
In the Constitutional Convention, two years later, it was proposed to appoint a Secretary of Commerce as one of the President's Cabinet. . . . More than a century passed. It was 1903 when Congress authorized the Department of Commerce and Labor, of which George B. Cortelyou was the first Secretary. With shrewd insight, he said: "No other Department has a wider field. . . . None will have closer relations with the people or greater opportunities for effective work."



Photograph by Capt. Albert W. Stevens

ARLINGTON AMPHITHEATER, WITH THE TOMB OF THE UNKNOWN SOLDIER BEFORE IT, AND TOWERS OF THE NAVAL RADIO STATION IN THE BACKGROUND

This classic amphitheater of marble, dedicated in 1920, seats 4,000 people. Its main entrance faces east and includes a military museum. In its basement is a small chapel. The tomb of the Unknown Soldier is rapidly being completed.



Photograph by Capt. Albert W. Stevens

STONE BY STONE, YEAR AFTER YEAR, RISES THE GREAT WASHINGTON CATHEDRAL.

Standing on an eminence overlooking the city, its central tower, when completed, will rise 107 feet higher above the Potomac than the Washington Monument. The idea of a cathedral in the Nation's Capital originated in the early days of American history (see, also, text, page 504).

Soon after, our overseas interests began to grow. To-day the Department of Commerce has become the world's largest business machine. It is truly colossal. It is moving now to its new \$17,500,000 home, just southeast of the White House—one of the greatest structures ever built. It took 99 acres of plaster to cover its walls. It stands on 80 miles of concrete piling and its 36 elevators will carry 800 people at once (see Color Plate XI).

In it you may see everything, from live fish to rotary presses that print coastal charts for navigators, and maps of airways to guide flying men, or trade-promotion movies, which may show anything from

American tractors scaring ostriches on the Argentine pampas to the antics of perfume-producing Abyssinian civet cats in the corrals of far-away Djibouti.

With 59 offices overseas and 81 scattered over our Union, the trade reporting and promoting work of this Department covers the earth. By actual count, its Bureau of Foreign and Domestic Commerce renders nearly 15,000 services every day to American business.

This Department's activities cover almost every phase of human life, from the cradle to the grave. The variety of work done here is astounding. It operates marvelous new radio signal devices, by which

officers of ocean liners follow a safe course through fogs and storms. Its servants go down into ships' boilers; they inspect the steel plates, the life-preservers, the life-boats; they require drills by officers and crews. They map the coastal waters; they discover such a submarine valley as the "Corsair Gorge." Wearing weird-looking gas masks and carrying canaries in cages, they penetrate the depths of explosion-wrecked mines to rescue survivors. They produce helium for the great dirigibles.

This Department grants the patents on endless inventions that make our life easy. It cuts waste by helping industry reduce the number of sizes and varieties of common articles. Its "Traffic Police of the Ether" keep each radio station on its proper frequency, preventing rattles and crashes, squeals and howls, in the home receiving sets. It maintains 86 stations, all over the country, that hatch and rear fish; it guards the Alaskan seals and enables us—or *some* of us—to get fine sealskin coats.

Its Aeronautics Branch inspects and licenses aircraft, gives flying tests for pilots, finds "intermediate landing fields," and maintains a variety of other airway facilities.

#### WASHINGTON BECOMES AN AIR-TRAFFIC CENTER

Here, where early-day Congressmen rode on horses or bumped in stagecoaches, we see modern Washington become a chief center of air traffic. Its main landing field, the Washington-Hoover Airport, leads the world in sight-seeing flights. In 1929 and 1930 there were 50,000 passengers carried on sight-seeing flights over Washington. Washington is the terminus of five air lines. One line carried 66,269 passengers a total of 1,523,400 miles without injury to a single passenger September, 1930-August, 1931. This airport, with 50 scheduled landings and take-offs of passenger planes each day, now ranks *second in the world* and is busier than any foreign field in scheduled passenger traffic.

You see what a vital part of the Nation's business is done in this great structure risen on the Mall, true to L'Enfant's plan. What miracles its far-flung functions would seem, if visible now, to that group of tired business men who in 1785 called on George Washington to urge help for

American trade—when our exports were mostly tobacco and furs!

#### UNCLE SAM'S TEMPLE TO DEMETER, GODDESS OF AGRICULTURE

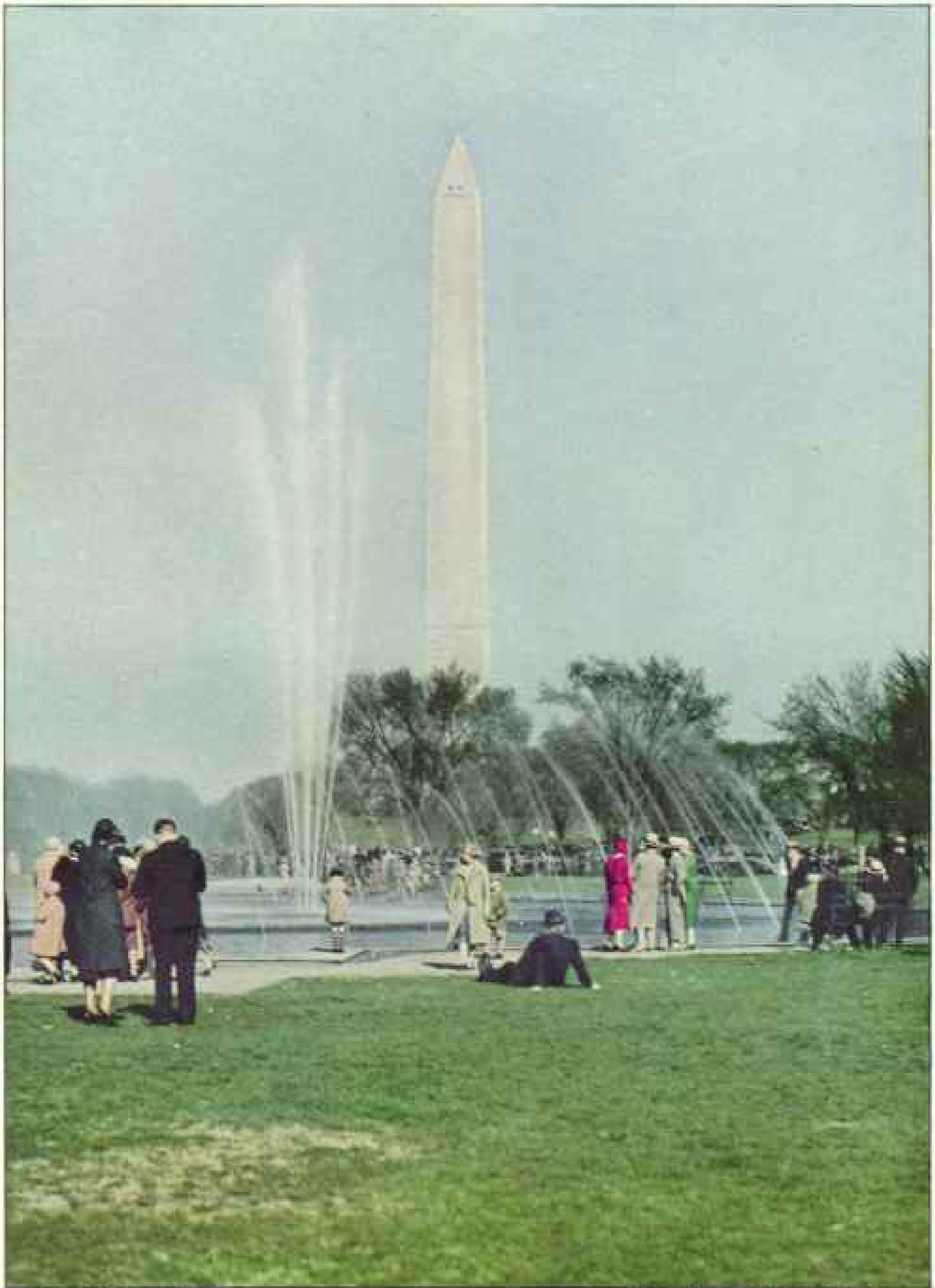
George Washington advocated a branch of government to aid agriculture, but not till Lincoln's time was such a department set up, and it was not administered by a Secretary with Cabinet rank till years later.

Now its magnificent new building stretches for 750 feet along the Mall. From it you look out over a lawn where the pioneer building rose in 1868. Then it housed only 73 persons, its whole staff; and the 40-acre park about it was at that time its only experimental farm. Today more than 5,000 people, housed in more than 40 buildings, work for the Department here in Washington; with its far-flung plant explorations, crop study, and experimental research, 20,000 serve it in the field.

Long ago the Department's work spread to wide fields. Work in home economics, public roads, forests, or food and drug administration is not exactly agricultural; yet it serves the people. Likewise the Biological Survey and Forest Service act as conservation trustees for the whole Nation.

Work done here links Washington with far places. American plant hunters, prowling the world, brought back such useful things as durum wheat, hardy alfalfa, and Sudan grass. A sugar expert flew to the wilds of New Guinea for disease-resistant canes. Less spectacular is the careful culture of vegetative strains resistant to attack by insect and fungus pests or especially adapted to certain climatic conditions. In bringing date palms from the Near East, scientists found they had also to bring the insect that carries pollen to the bearing palms.

Plagues of cholera used to sweep away vast herds of swine. Now, by the virus-serum treatment discovered in the Department, this plague is controlled. Studies proved that cattle ticks carry Texas cattle fever, and pointed the way for one of the most significant advances in human medicine achieved in the last century. It culminated, through preliminary work in the Bureau of Entomology, in man's mastery of the mosquito-borne yellow fever and made feasible the Panama Canal.



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Finlay Photograph by Clifton Adams

THE NEW WORLD'S NOBLEST OBELISK

Washington Monument towers to a height of  $555\frac{7}{8}$  feet. It was begun in 1848 but not completed until 1885. The line visible in the masonry just above the tree tops marks the place where construction was suspended for 23 years. At night from the chamber at the top of the Monument airplane signal lights warn night flyers of the towering shaft's whereabouts.





THE WITCHERY OF ARCHERY

On summer afternoons devotees of the ancient sport practice for their annual tournament.

✕



© National Geographic Society

Finlay Direct Color Photographs by Clifton Adams

WASHINGTON PARKS AFFORD A PEERLESS PLAYGROUND

Golf, tennis, polo, horseback riding, croquet, miniature golf, motoring, picnicking, and to a limited extent bathing and boating are among the city's outdoor recreations. A West Potomac golf course in the shadow of Lincoln Memorial.



Finlay Direct Color Photograph by Clifford Adams

ADMIRAL BYRD'S SHIP RECALLS DAYS WHEN SEAGOING VESSELS CAME REGULARLY TO THE CAPITAL'S DOCKS

Washington is no longer a "seaport," but water borne commerce still comes to the city from Maryland and Virginia points along the historic Potomac. In the foreground a part of the recently completed four-mile promenade in Potomac Park around Hains Point.

IN



© National Geographic Society

Finlay Direct Color Photograph by Grant London

TITANIC, EVEN FOR WASHINGTON, THE NEW COMMERCE BUILDING COVERS EIGHT ACRES

One of the first projects completed under the enlarged Federal building program, the structure which is to house the manifold activities of the Department of Commerce cost \$17,500,000. It is 320 feet wide by 1060 feet long and contains nearly five miles of corridors.

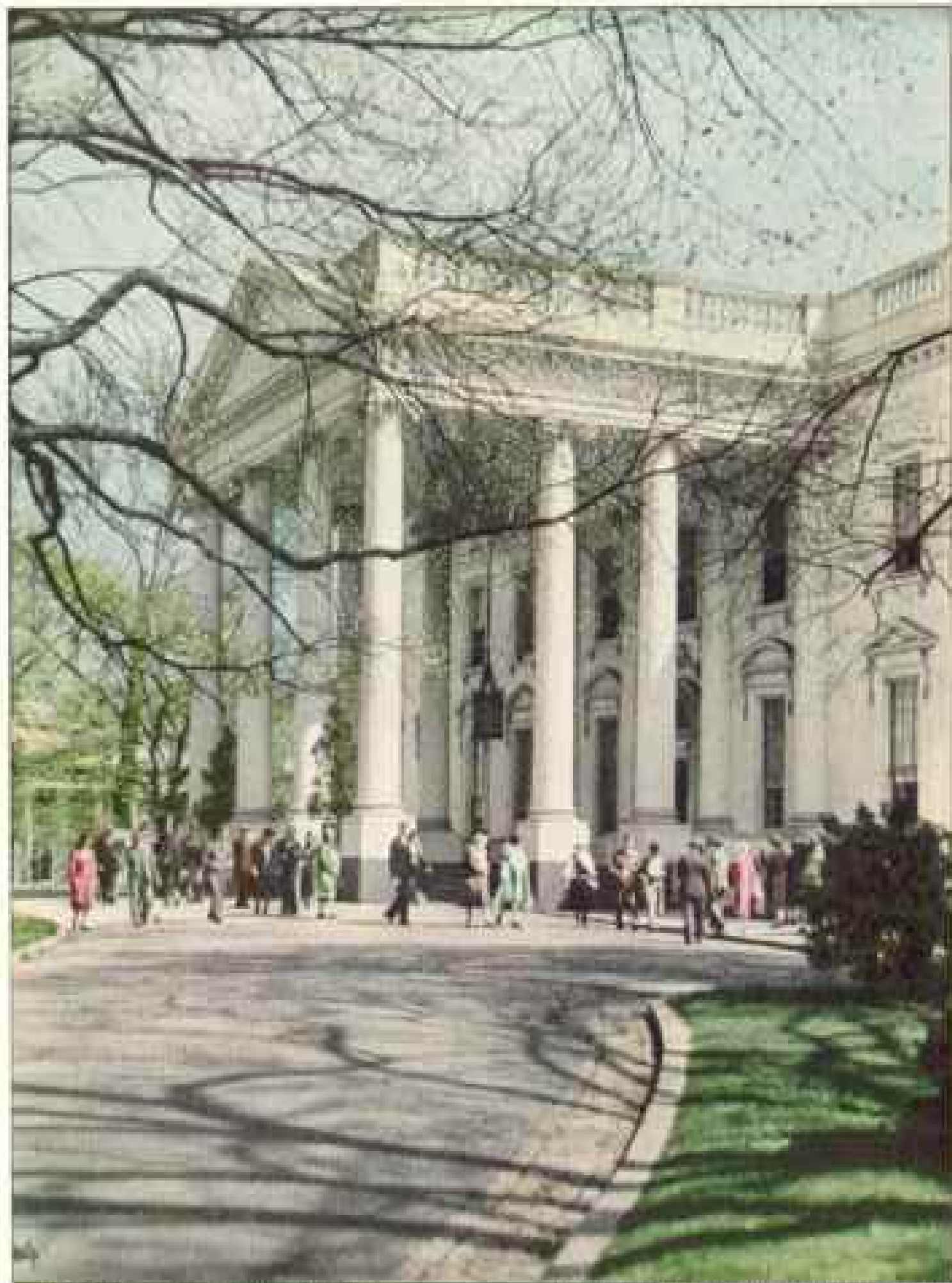


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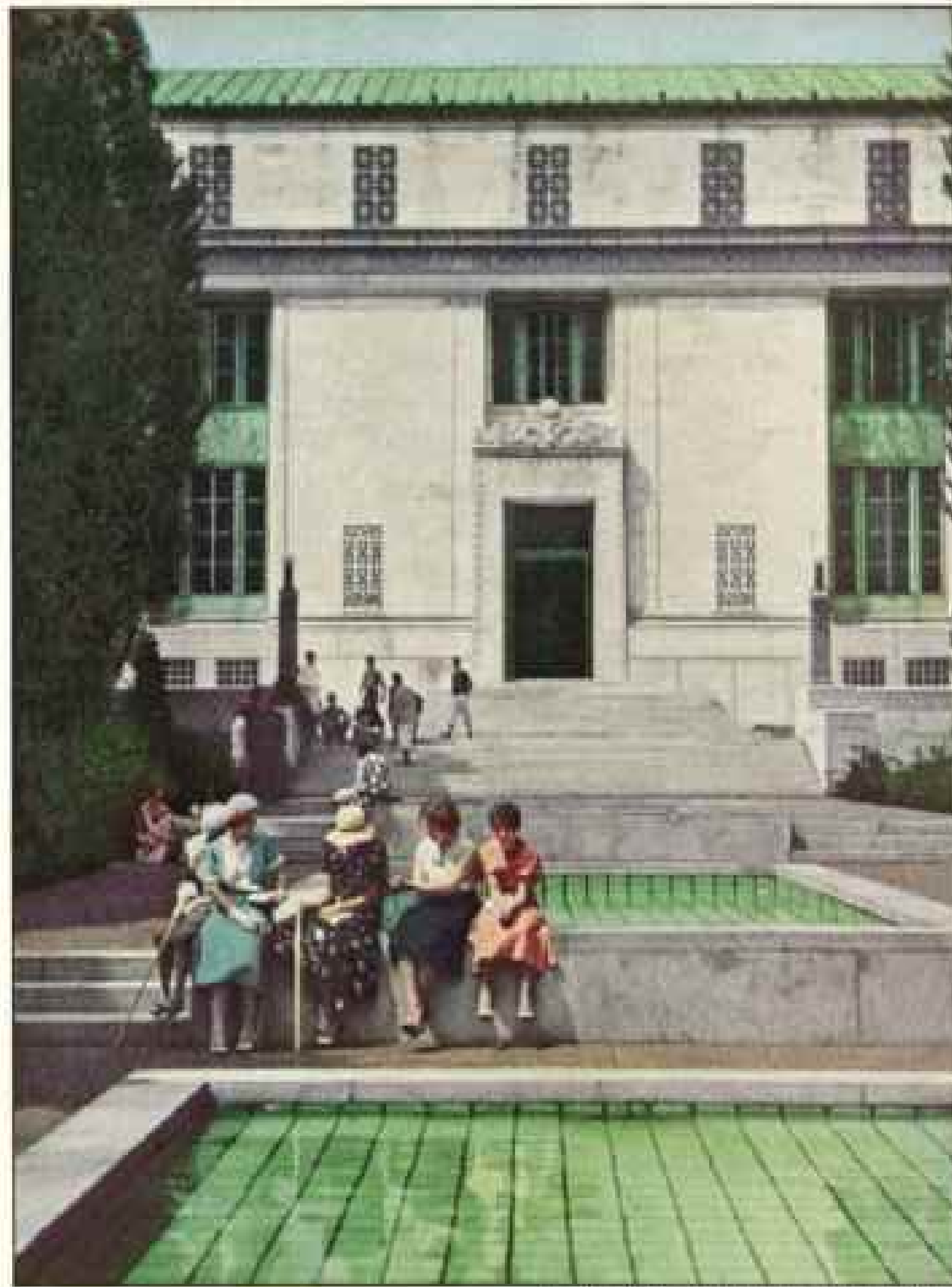
False Direct Color Photograph by Clifton Adams

STROLLERS ON THE GRASSY BANKS OF THE LINCOLN MEMORIAL POOL

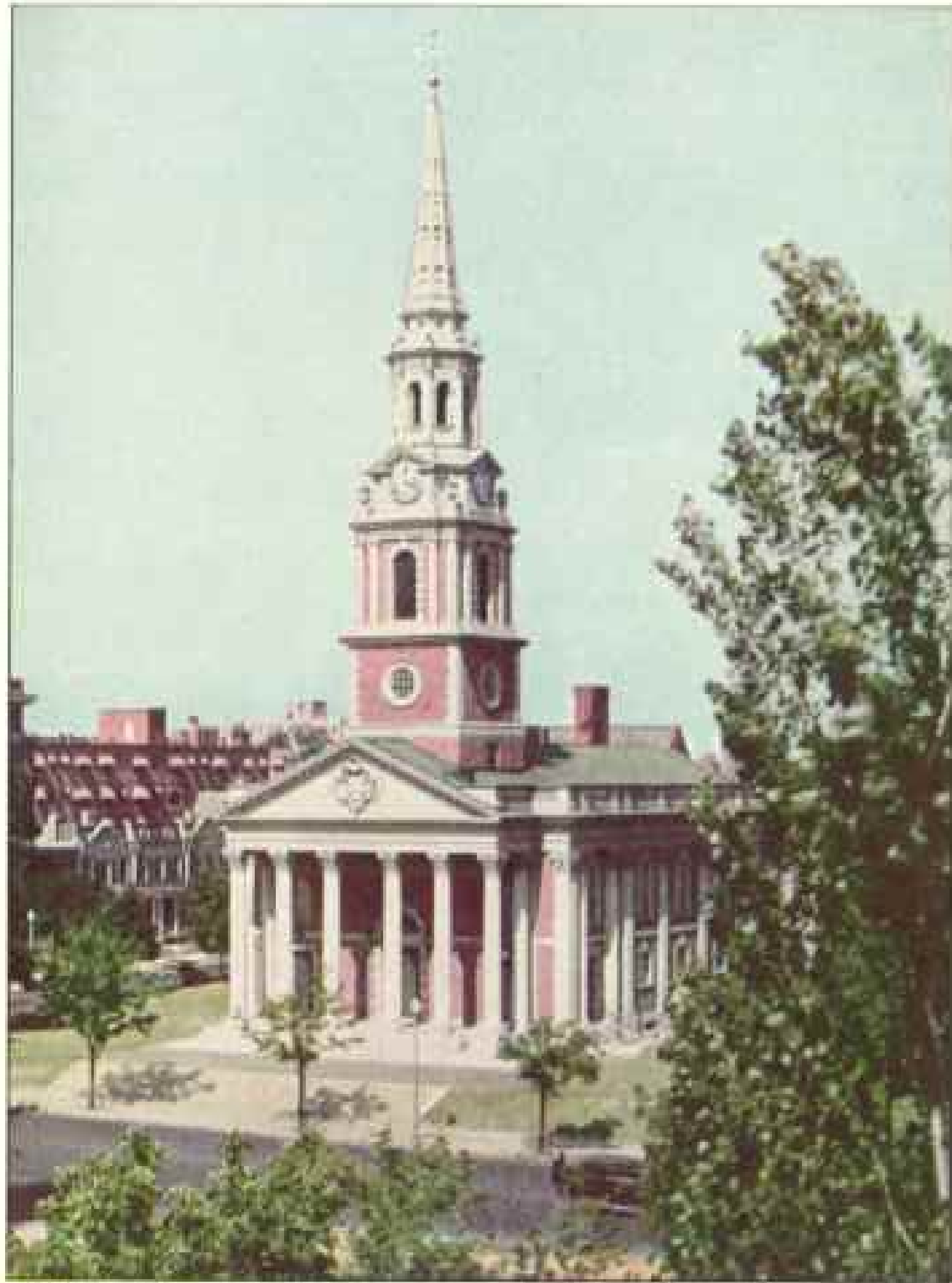
Its placid waters reflect both the impressive temple to Lincoln and Washington's towering shaft. Although more than 2000 feet long and 160 feet wide, the pool nowhere attains a depth greater than three feet and affords a safe and popular place for the activities of juvenile yachtsmen and for skaters in winter. At the left are the wartime emergency Munitions Buildings, and topping the trees the old Post Office tower. Domes of the National Museum and Capitol flank the Monument.



© National Geographic Society  
THE MAIN ENTRANCE TO THE EXECUTIVE MANSION  
Men and women from every State and station in life daily visit the home of their President.

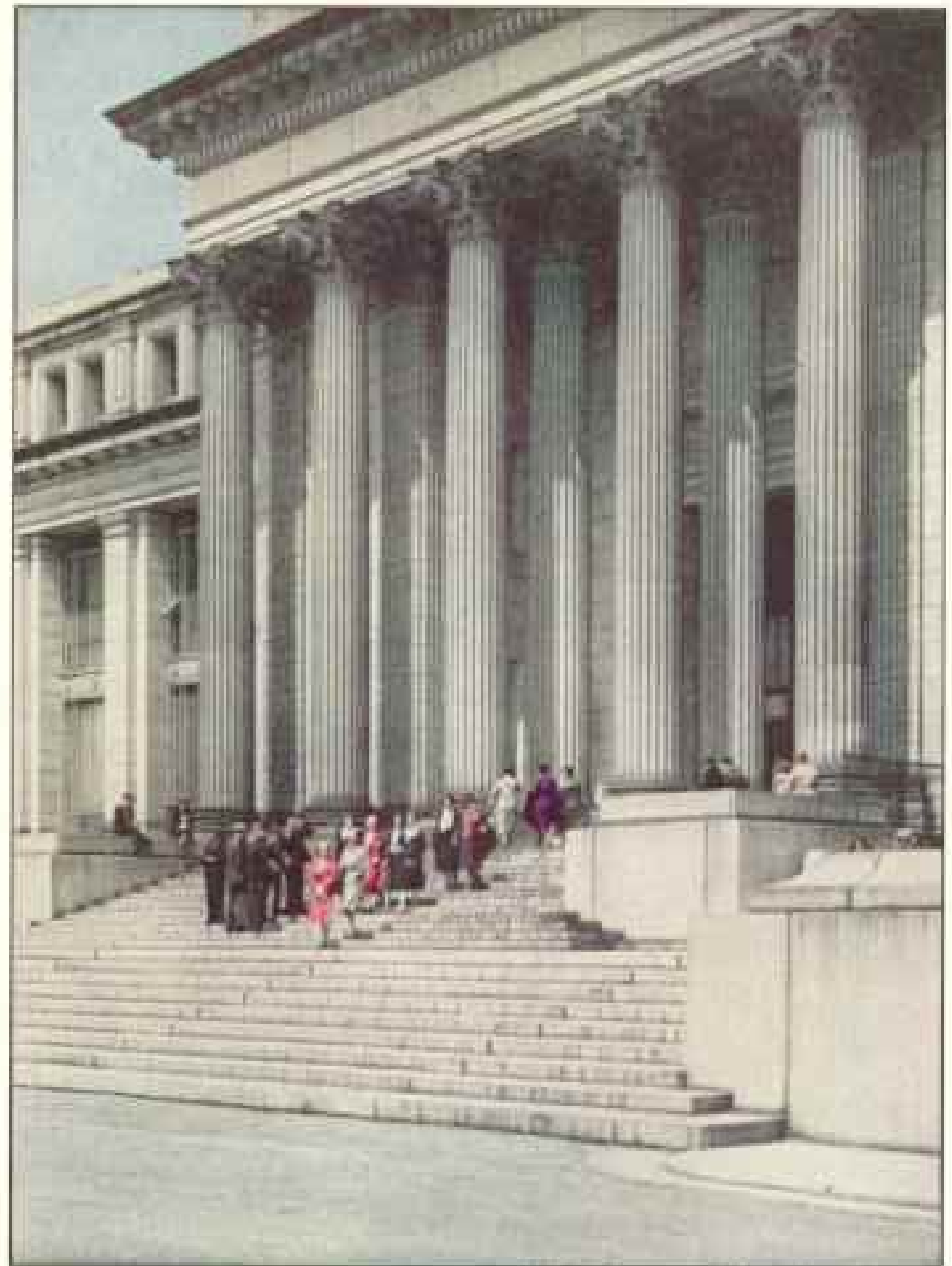


Finlay Photograph by Orin London  
A TEMPLE DEDICATED TO THE ADVANCEMENT OF SCIENCE  
Here are the administrative offices of the National Academy of Sciences. The lower floor contains numerous exhibits.



© National Geographic Society  
 Finlay Photograph by Orren Loudon  
 ALL SOULS' CHURCH, WHERE PRESIDENT TAFT WORSHIPED

Modeled after the Church of St. Martin's-in-the-Fields, London, it ranks with the most beautiful places of worship in the Capital. Its bell was cast in Paul Revere's foundry and sent to John Quincy Adams in 1822 for use in the first Unitarian Church built in Washington.



Finlay Photograph by Clifton Adams  
 TREASURES FROM ALL THE WORLD ARE GATHERED HERE

Buildings of the National Museum house so many interesting exhibits that one might spend months viewing them and still leave much unseen. An entrance to the new building which contains the Roosevelt Natural History Collections (see Color Plates IV and V).



© National Geographic Society Finlay Photograph by W. Robert Moore  
 A FOUNTAIN OF CRYSTAL WATERS KEEPS FRESH THE  
 MEMORY OF ADMIRAL DUPONT

Surrounded by colorful flower beds and the foliage of Dupont Circle's stately trees, the finely carved, heroic figures supporting the fountain are symbolic of wind, waves and stars, the constant companions of a sailor.



Finlay Photograph by Orrin Louder  
 WASHINGTON SCULPTURE REACHES SUPERB HEIGHTS IN THE  
 HENRY ADAMS MONUMENT

This figure in Rock Creek Cemetery is the work of Augustus Saint-Gaudens. The great sculptor once said, "Some call it the Peace of God, some Nirvana. To me it is the human soul face to face with the greatest of all mysteries."



Lincoln Memorial, a patriotic shrine for every American citizen  
Finley Photograph by W. Robert Moore



Arlington Memorial Bridge is the realization of a century-old dream  
Finley Photograph by Orin London

© National Geographic Society

Even in Andrew Jackson's day men talked of a great Potomac bridge, tying Arlington to Washington. To-day, it nears completion, its graceful granite arches spanning the river south from the Lincoln Memorial. In the foreground is the John Ericsson monument (see also Color Plate VII).

The Department early exterminated pleuro-pneumonia among cattle. By rigorous-wholesale slaughter of animals infected with foot-and-mouth disease, one of the most destructive of all animal plagues, it has prevented this scourge from gaining a foothold in the United States.

So this great marble palace on the Mall is more than a beautiful temple to Demeter, the Goddess of Agriculture. It is also a national laboratory in which research pays its cost many hundredfold to the American people.

#### MORE THAN 3,000 INMATES LIVE IN THE NATIONAL ZOO

Navy men, back from strafing the Barbary pirates, brought a lion to Andrew Jackson, a present from the Sultan of Morocco. Congress, in a prank, agreed he might accept it. There being no zoo then to house the lion, Jackson gave it away.

A walk through the National Zoological Park of to-day is like an afternoon stroll with Adam and Eve through the animal, bird, and snake-infested forests of Eden. Amid all the squawks, shrieks, grunts, growls, and cackles of this Zoo, you fancy that the beasts and birds of the land also send delegates here to speak for them.

Covering 176 acres of wooded hills, the Zoo, which opened in 1890, adjoins Rock Creek and the connected Potomac parks. Before it was set up, certain wild animals were confined on the grounds of the Smithsonian Institution, where they served as living models for taxidermists. When the new Zoo was inaugurated, these captives were transferred to it. In that mixed company was a white cockatoo. He is still living, at the interesting age of 46!

More than 2,500,000 people a year visit the Zoo. The new Bird House has 155 inside cages, including a flight cage, a waterfall, and pool, where tropical fowls live. There are also pheasant runs, a crane paddock, a large flight cage for eagles, and smaller ones for North American hawks and owls.

#### A NOAH'S ARK ANIMAL PARADE

Large open-air paddocks are made for hoofed animals, with pools for the big aquatic creatures. Here are fur seals from the Pribilof Islands, types of other seals, otters, and North American beavers.

These beavers built the dam which forms their lake, and in twenty years they have elevated the water more than nine feet.

The finest collection of bears in captivity, including Alaskan giant brown bears, largest of all carnivores, are shown here; also, the rarest specimen of all, the almost unknown glacier, or blue, bear.

In the lion section chimpanzees are also kept and, temporarily, the hippopotamuses. Big cats thrive here. In addition to the usual lions, there are tigers, leopards, the rare black jaguar from Brazil; also, a pair of pigmy hippos, one of them a gift from President Coolidge, who received it direct from Liberia through Mr. Harvey Firestone. N'Gi, the popular gorilla, aristocrat of the entire Zoo, lives here, waiting for the new Ape House to be built. Antelope House shelters the rare inyala and impalla, Heinie the black rhinoceros, the unusual and striking habirusa, and a trio of African wart hogs. Jumbina, the African elephant, brought from Giza in 1913, and Kechil, the Sumatran elephant, purchased by about one hundred friends of the children of Washington, each has its own building.

#### NATURAL SCENES FOR CREATURES IN THE NEW REPTILE HOUSE

In the spectacular Reptile House sight-seers are astonished at the fidelity with which the jungle, desert, and marine habitats of certain creatures have been reproduced. Stand before such a realistic miniature wild life stage and you easily imagine yourself down on the muddy, vine-draped Amazon or out among the sun-blistered, rattler-ridden rocks of Arizona. In this snake house a drowsy band of Galapagos tortoises, a fourteen-and-one-half-foot king cobra, a regal python twenty-six feet long, and a wriggling host of lizards, frogs, toads, salamanders, and tropical toy fishes are exhibited (see, also, page 591).

In many outdoor cages you see the animals and birds that can survive the winters of Washington without artificial heat. There is a chacma baboon that has lived for 21 years out of doors. Each day, near closing time, he goes into his own small house and closes the door for the night. Fifty different kinds of North American and European waterfowl inhabit a lake nearly seven hundred feet long, and in a large cage at the edge of a steep bank live





Photograph by Capt. Albert W. Stevens

EVEN AS THE MOODS OF NATURE VARY, SO THE LINCOLN MEMORIAL, REFLECTS NEW BEAUTY IN CHANGING LIGHTS AND SHADOWS.

The soothing harmony of its line and form, with its colossal approaches, is fully appreciated when seen from the air. What infinite melody it suggests to those who feel that "architecture is frozen music"! The Arlington Memorial Bridge in the background (see, also, opposite page, and Color Plate XVI).



© Theodor Horydelink

THE ARLINGTON MEMORIAL BRIDGE OPENS TO LET VESSELS PASS THROUGH

Made of molybdenum steel and painted to resemble the granite in the rest of the bridge, these double-leaf bascules, operated by electricity, rise 135 feet above the water, leaving a 140-foot passageway for ships. Balustrades on the bridge are hollow-cast aluminum, painted to resemble granite.



Photograph by Clifton Adams

#### LINCOLN TRIUMPHANT, THE COLOSSAL STATUE OF THE MARTYRED PRESIDENT

Set in the central hall of the Lincoln Memorial, this giant marble statue by Daniel Chester French—one of the largest ever carved—weighs 150 tons without its pedestal. On the wall, over the head of Lincoln, these words appear: "In this temple, as in the hearts of the people for whom he saved the Union, the memory of Abraham Lincoln is enshrined forever."

what are probably the rarest of all the captives in the park, a pair of the largest American birds, the almost extinct California condor.

To feed such a huge, mixed family demands many things—from fruit and fish to sunflower seed and horse meat. Yes, even cod-liver oil and spinach.

Once a rare and beautiful bird of paradise refused ordinary food. A telegram was sent for a rush order of "ant eggs." They came and the temperamental bird was satisfied to live on.

Each lion gets from 10 to 16 pounds of horse meat a day. But the sea lion is the

most expensive guest. He must have 10 to 20 pounds of strictly fresh fish. The monkeys' menu, changed every day, is a diet so well balanced that humans also would enjoy it.

You grasp the size of this animal-feeding job when you hear that each year this colony consumes such items as 40,000 pounds of sweet potatoes, a herd of about 280 horses, 37,000 pounds of bread, condensed milk by the dozens of crates, and many tons of hay, onions, rock salt, yeast, beets, lettuce, and rice. When a young gorilla came to the Zoo a Washington baby doctor was asked to prescribe his diet.



© Theodor Horydzak

IF THE LINCOLN STATUE COULD SEE, THIS VIEW WOULD UNFOLD

Placing his camera on a level with the eyes in the massive marble head of Lincoln, which is three feet from chin to top (see opposite page), the photographer made this view of the Reflecting Basin and Washington Monument, as seen through the columns of the Lincoln Memorial.

Few stop to think that our Capital shelters one of the world's greatest specialty factories. Such is the plant where Uncle Sam makes his paper money, bonds, postage and other stamps. It is the Bureau of Engraving and Printing, that Doric Roman structure on the Potomac, a mile south of the White House. In one year it makes paper money enough to plaster four rows of notes, representing \$3,945,000,000, around the Equator. It makes postage stamps enough to cover a 2,200-acre farm. They supply more than 56,000 post offices in the States, the Philippines, Alaska, Hawaii, Porto Rico, Virgin Islands, and Canal Zone.

Tapioca starch used on these stamps, made into a pudding, would afford a dinner dessert for the whole population of Greater New York. Yet it costs less than one cent to make a dollar note or a ten-thousand-dollar note, and 125 stamps cost only about one cent to manufacture.

Every day 240 presses run; each press prints 12 notes every five seconds. If making twenty-dollar bills, each press prints \$560,000 daily—a cowboy's wages for a thousand years.

Use of money grew with the Nation. Barter at first; then English money and Spanish "pieces of eight"; then, during the Revolution, paper currency issued by the



© National Photo Company

#### HALF A CENTURY HAS WROUGHT PRODIGIOUS CHANGES ON PENNSYLVANIA AVENUE

The picture was taken about 1880, when horses still furnished motive power for omnibus and horse-drawn car. The building in the right middle distance was the office of the *National Republican*, a leading newspaper of the period. Along the north side of the Avenue (left) are the Corcoran Building, built by the founder of the Corcoran Gallery of Art, and a number of old hostels. The photograph on the opposite page shows the Avenue from the same viewpoint to-day.

Colonies and the Continental Congress. That issued by Massachusetts was engraved by the famous Paul Revere. But, from then till the Civil War, only the State banks issued engraved paper currency, and this was made by private engravers.

#### MONEY GUARDED WITH SCRUPULOUS CARE

The first paper money made by our Government consisted of the old "demand notes" of 1861 and 1862. Then came the "legal tenders," or "greenbacks." To-day we make five kinds of paper money: notes of the United States, of the Federal Reserve, of national banks, and the gold and silver certificates.

Few capital institutions grew faster than this great factory. When set up by Congress in 1862, its Chief used one room in the attic of the Treasury and had one male and four female helpers. Now it employs about 5,000 men and women and its great plant covers ten acres of working space. In a massive vault its precious dies and plates are stored. A guard's corridor leads

around this. Reflecting mirrors, ingeniously arranged, permit a watchman near its door to see all around the vault at once, and, by a similar device, even to see down and through a passage under the vault. Electric alarms connect the vaults with police headquarters and with Fort Myer, the cavalry post near by on the Virginia hills.

Another vault holds tons of uncut sheets of printed money and bonds. Properly introduced—and politely watched—you may even be allowed to heft a package. It is an odd sensation to hold in one elbow a bundle weighing only 32 pounds, yet a fortune of \$126,000,000!

#### PRODIGIOUS OUTPUT FROM THE UNITED STATES GOVERNMENT PRINTING OFFICE

Our Government also maintains in Washington the world's greatest printing plant.

This shop covers 22 acres of floor-space. More than 4,900 people work here; their annual payroll aggregates \$10,500,000.



Photograph by Clifton Adams

## LOOKING DOWN PENNSYLVANIA AVENUE FROM THE TREASURY BUILDING

On the right, where an open space now appears, there stood till recently an old hotel, a theater, and other historic structures. Beyond the Post Office Department, with the tower, many old buildings have been removed in the process of constructing Washington.

From 404 type-setting machines some 1,635 compositors, operators, and proof-readers turn out more than  $2\frac{1}{2}$  billion "ems" of type each year. Set in newspaper style, this would fill 7,800 newspapers, each with twelve 8-column pages.

Here the same historic linotype machine that served General Pershing in France during the World War is in daily use.

Printing is turned out literally by the acre. More than 1,000 carloads of paper and something like 21,000 miles of sewing thread and stitching wire are used annually. So huge is the output that a belt conveyor runs through a tunnel under the street carrying printed matter directly to the Post Office for mailing.

One cannot even imagine it, but from here in one year came 210,000,000 money-order forms and 1,750,000,000 postal cards, to say nothing of 63,000,000 income-tax blanks!

On the morning after each legislative day of Congress, printed copies of all proceedings of that day's session are ready for members and the public. This includes bills, resolutions, reports, hearings, legisla-

tive calendars, and documents, in addition to the famous *Congressional Record*. This *Record* averages about 80 pages daily during a session and 35,500 copies are printed daily—a gigantic book-publishing feat in itself.

In an apprentice school intensive instruction is given to young men and women in the related printing trades.

A cafeteria on top of the building serves some 3,600 meals a day. The employees have their own recreation hall, orchestra, stage, bowling alleys, etc., and the shop also runs its own emergency hospital.

In an average day the plant will turn out 13,400,000 pages of printed bookwork. It is run as an independent Government establishment, not under any of the ten departments. There is no other printing shop anywhere operated on so gigantic a scale.

## ACTIVITIES OF THE BUREAU OF STANDARDS

Nature runs her own bureau of standards. One owl's egg is like another, as are acorns, herring, or peas in a pod. But



Photograph by Capt. Albert W. Stevens

TO-DAY MASSIVE BUILDINGS RISE ABOUT THE WHITE HOUSE WHICH, WHEN THE NATION WAS YOUNG, STOOD IN OPEN FIELDS

In the center, the White House. Left, the State, War, and Navy Building, soon to be remodeled, at a cost of \$3,000,000, to resemble the Treasury Building, at the extreme right (see page 571). Back of the White House, trees rise in Lafayette Square, faced by such structures as those of the Brookings Institution, the Chamber of Commerce of the United States, Veterans' Bureau, and Cosmos Club.



*Photograph by Capt. Albert W. Stevens*

THE UNITED STATES ARMY WAR COLLEGE, WITH HAINS POINT EXTENDING INTO THE POTOMAC JUST BEYOND IT.

Designed by Charles F. McKim, its cornerstone laid in 1903 with Masonic rites, this college is the highest unit in the Army educational system. Its library is the oldest maintained by the Government, with the exception of that in the State Department.

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*Photograph courtesy of Waddy B. Wood*

A DRAWING SHOWING HOW THE STATE DEPARTMENT BUILDING, AT LEFT, WILL BALANCE THE TREASURY BUILDING, RIGHT, WHEN THE PRESENT STATE, WAR, AND NAVY BUILDING (SEE OPPOSITE PAGE) IS REMODELED





Photograph by Clifton Adams

AN AUTOGIRO, FIRST OF ITS TYPE TO FLY IN AMERICA, LANDING AT THE SMITHSONIAN INSTITUTION

Designed and built in England by the Spanish inventor, Juan de la Cierva, this airplane was brought to America and first flown at Willow Grove, Pennsylvania, December 19, 1928. Presented to the Smithsonian Institution by Harold F. Pitcairn.



Photograph by Harris & Rowing

HALL OF THE EXPLORERS IN THE BUILDING OF THE CHAMBER OF COMMERCE OF THE UNITED STATES

The flags of famous early explorers shown here were reconstructed after a painstaking study of old books, woodcuts, maps, and other historic documents, and represent, at the left, those of Columbus, De Soto, Balboa, Cortez, and La Salle; at the right, Cartier, Ponce de León, Vespucci, Cabot, and Hudson (see, also, text, page 612).



Photograph by Charles Martin

#### SAILING MINIATURE BOATS ON THE REFLECTING BASIN

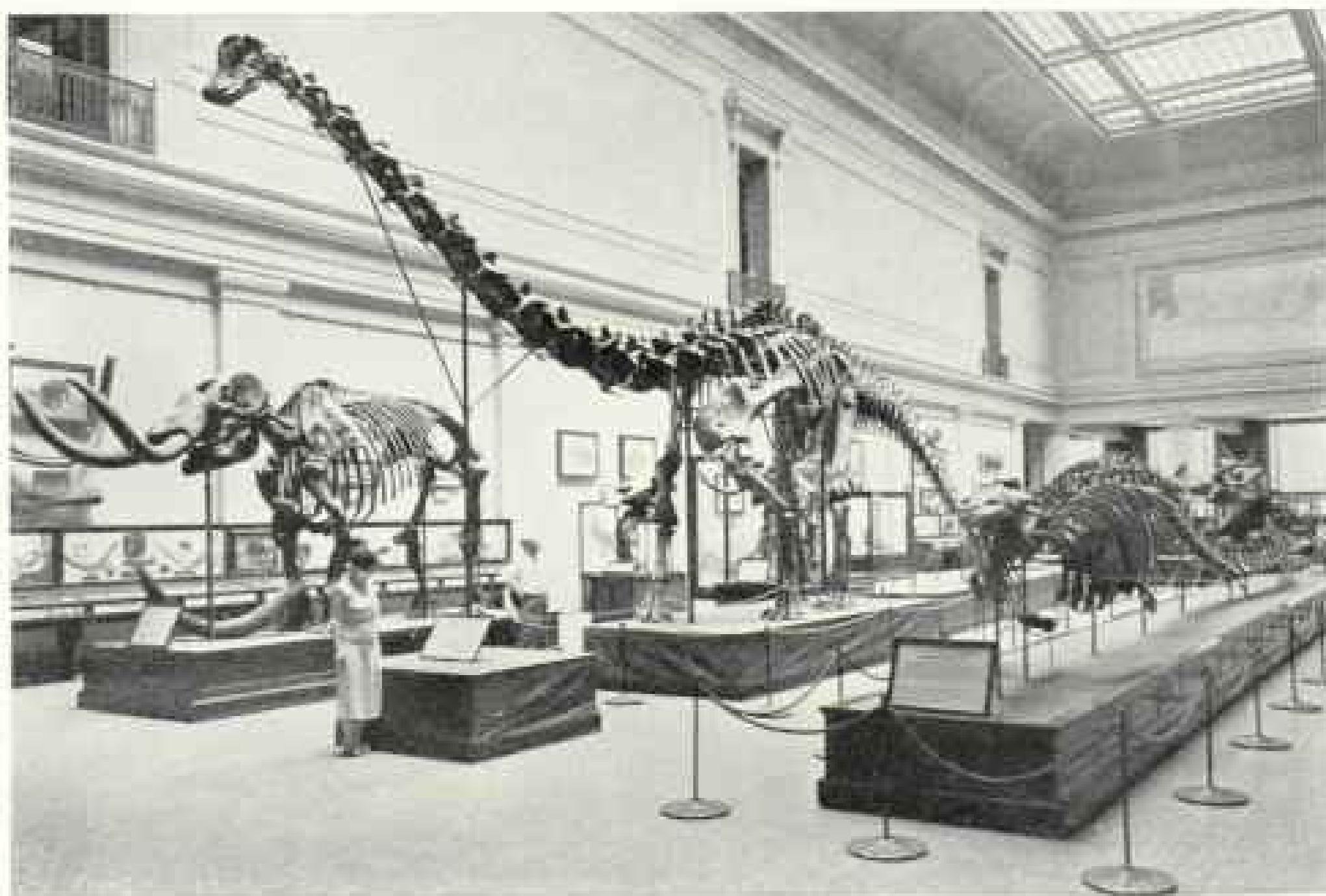
Not all boats are mere toys. Many are fair-sized models of yachts, with masts several feet high. Usually owned and sailed by their builders, they amuse old and young alike. Crowds also gather, at times, to see an occasional miniature steamer humming over the pool.



Photograph by Clifton Adams

#### IN THE GARDEN OF HISTORIC OCTAGON HOUSE

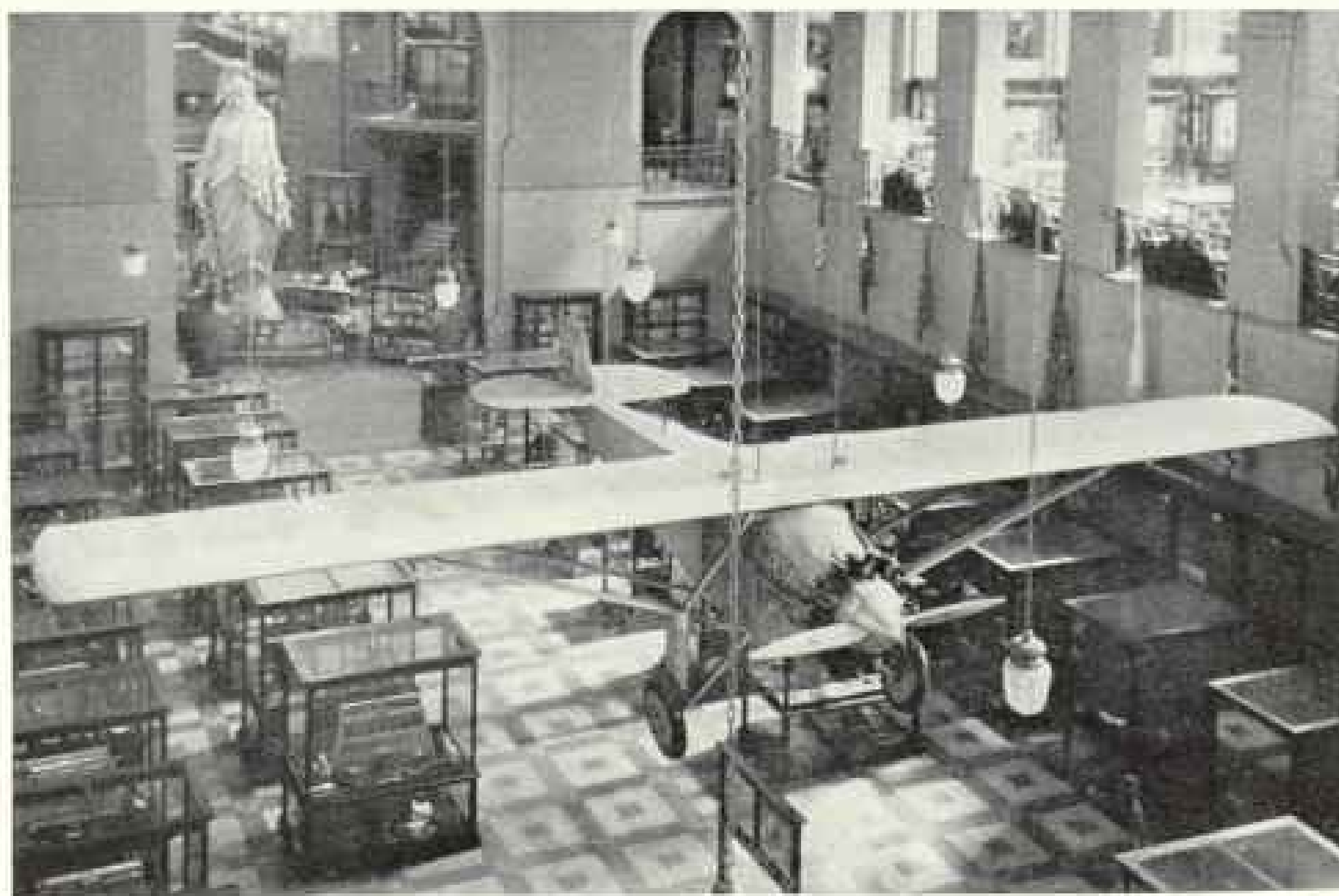
Erected a century and a quarter ago by William Thornton, first architect of the Capitol, this building is now the headquarters of the American Institute of Architects. President Madison resided here, after the burning of the White House in the War of 1812.



Photograph by Charles Martin

RECONSTRUCTED SKELETONS OF PREHISTORIC ANIMALS IN THE NATIONAL MUSEUM

Left, mastodon, found below a swamp in Pulaski County, Indiana; center, dinosaur, 70 feet long and 12½ feet high at hips, from Uintah County, Utah; right, a sea mammal 55 feet long, bones from Coosa, Alabama (see, also, text, page 602).



Photograph by Orren R. Loudon

THE "SPIRIT OF ST. LOUIS," HISTORIC AIRPLANE OF COL. CHARLES A. LINDBERGH

Like a tired swallow at rest, this single-motor monoplane, in which Colonel Lindbergh made the first nonstop flight from New York to Paris, and which was deposited here by him, is now the most popular exhibit in the vast National Museum, holding millions of items.



Photograph by Charles Martin

#### THE MAIN ENTRANCE HALL OF THE LIBRARY OF CONGRESS

This lavishly decorated quadrangle with its surrounding corridors measures 100 x 125 feet, and its central portion is open to the roof, a height of 72 feet. Its piers and arches, its Corinthian columns and elaborate frescoes and sculptures are among its outstanding features. In the lower center appears a sun of polished brass, its rays pointing to the 12 brass signs of the Zodiac. Covering three and three-quarter acres, and containing some 14 acres of floor space, the Library houses one of the world's largest collections of books. It is particularly rich in special collections of manuscripts, historical documents, maps, prints, music, pamphlets, and engravings, including the famous Smithsonian deposit (see, also, text, page 613).

man, seeking always to improve on Nature, built in Washington his own Bureau of Standards. At first it was only what its name implies—the home of the official yard, pound, quart, or volt, the national standard of measure in science and industry; but, from simply testing things for weight, size, quality, etc., this Bureau has come in the last 30 years to be a great center of scientific and industrial research. "Miracles," the people of olden times would cry, could they see its works.

Would you believe, for example, that the mere weight of your finger could bend a 5-inch steel bar? No? Well, wizards of the Bureau built an instrument so delicate that with it you can see the big bar bend when you lay your finger on it. Near by is a precision balance with an accuracy of one fifty-millionth of a pound. This scale is so delicate that, if you stand too near, the mere heat of your body affects its balance.

Practical tests giving results useful in many trades go on all the time.

You and other motor-car owners in America have saved millions of dollars through experiments made here with fuels, brake linings, tires, road material, etc. In simulating road tests for tires, for example, an automobile wheel with a nice new tire is put on a motor and speeded up. It runs against another wheel, a device which literally "runs the road past the wheel." This not only shows how fast the tire wears out, but it shows, too, how power is lost with different types of tires.

That long, queer-looking structure out in the yard, with that big motor-driven fan roaring in one end, is a "wind tunnel." In it aerial models, bombs, etc., are used, to learn the effect of wind streams on them. In such tunnels tests are also made to show pressure on skyscrapers during wind storms; with the fan revolving in one end, an artificial wind is blown through these tunnels at a speed of from 75 to 180 miles an hour.

When a house with a shingle roof gets afire during a high wind, neighboring houses are in danger from flying sparks. To study this hazard in winds of different speed, the Bureau built a shingle roof, used an airplane propeller to make the wind, and set fire to the roof. Thus it could study the flight of the embers.

Some studies, such as that of the effects of sea water on concrete construction, may go on for years. Cement used by the Government in the Panama Canal and other projects is tested here.

A device by which airships recover ballast was made at the Bureau. An airship ordinarily loses weight equal to that of its fuel burned, but by this device the moisture from the exhaust is condensed, thus recovering more than a pound of water for each pound of gasoline consumed. This saves the waste of much lifting gas, hydrogen or helium, which formerly had to be released to maintain static equilibrium.

Gunfire and how to time a gun to shoot between the revolving blades of a propeller during aerial combat; how to build a microphone for locating enemy batteries; how to make walls soundproof and measure the radiation used to kill bacteria—all these are problems the Bureau has solved.

And there are standards of performance. The Bureau aids industry in work with ships' watches, sextants, scales, airplane instruments, radio sets, lamps, milk-testing machines, and so on.

#### WASTE IN INDUSTRY AVOIDED

Loss from waste in industry, amounting to many millions a year, is avoided now by the Bureau's work in simplified practice. In the case of hotel chinaware alone, for example, 700 sizes and varieties were reduced to 67 by agreement among factories, dealers, and consumers.

The Bureau aids industry to achieve trade standards, too. Makers of many things, from locks and hinges to dress patterns and wall paper, come to it and agree that their products shall conform to certain standards.

For example, more than 100 leading manufacturers, dealers, and associations in the wall-paper trade have agreed with the Bureau that wall paper made or handled by them shall be of "commercial standard" quality in weight, size, texture, etc. As to color fastness, also, they agree that "all printed papers, grounds, backgrounds, or ink-embossed, all finished printed wall papers, shall be resistant to light to the extent that they will show no discoloration or fading" when exposed for 24 hours to an arc lamp or "fade-ometer." This test is equivalent to many months of normal use.

But the Bureau does not impose its tests or conclusions on the people. They voluntarily bring their problems to it for aid in their solution.

WHERE MEN PLUCK FRUIT FROM TREES  
OF KNOWLEDGE

Washington to-day has the largest number of scientific men gathered in any one spot of equal size in the world. In the Government service alone are more than 5,000 scientists, attached to some 56 bureaus and commissions. Here, too, are located the National Academy of Sciences, the National Research Council, the Carnegie Institution of Washington, with its Department of Terrestrial Magnetism and Geophysical Laboratory, and our own National Geographic Society.

Certain of the national societies, in addition to the National Geographic, such as the National Education Association, the American Association for the Advancement of Science, the American Chemical Society, the American Forestry Association, and the American Engineering Council, maintain their headquarters in Washington.

The most extensive scientific group under one administrative head comprises the 16 bureaus of the Department of Agriculture.

The oldest of the governmental scientific organizations is the Coast and Geodetic Survey. For more than a century, many a ship and crew have owed salvation to the tireless, painstaking efforts of this bureau, to which is entrusted the survey of all coasts under the jurisdiction of the United States, including rivers to the head of tide-water, deep-sea soundings and currents off our shores, as well as magnetic observations and researches. The results of such important studies appear in official sailing charts, harbor charts, tide tables, "notices to mariners" of floating wrecks, newly discovered rocks and other menaces to navigation.

THE NATION KNOWS ITS PHYSICAL SELF  
THROUGH THE GEOLOGICAL SURVEY

A technical library, founded a century ago, has been assembled by this Survey. Its maps, photographic negatives and prints, pamphlets, and field reports from surveying parties dealing with Alaska and with

our various boundary surveys, aggregate tens of thousands.

"The rocky crust of the earth"—with its oil, coal, ores, precious metals, and other things—has been called the subject-matter of geology.

When Congress, in 1879, set up the Geological Survey, under the Department of the Interior, there was imposed on it the task of classifying all public lands, and the study of their geologic structure and mineral deposits.

Through the years, to quote its former Director, George Otis Smith, this has meant "helping a pioneering people to settle a vacant land, and an industrial people to harness the forces of Nature in the great work of development—all this with the well-defined purpose of safeguarding the future of America."

As our Nation grew, this Survey's functions multiplied. As the West was settled, the problem of conserving water for use on arid lands became one of its tasks.

In time, too, there fell to it the work of surveying forests, and studies in mining technology. When these activities became too intense, they led to the formation of separate bureaus, sometimes under other Departments, such as the Forest Service and Bureau of Mines. In the same way the construction program, based on the study of reservoir sites, first made by the Survey, became the work of the Reclamation Service when it was formed. And, when the Bureau of Mines was transferred to the Department of Commerce, the Survey retained the engineering administration of mineral leases.

Being among the older scientific groups in the Government, this Survey has thus mothered many infant bureaus, and to-day among its major activities are things geologic and topographic, as well as water resources, conservation, and many Alaskan explorations.

The official and private scientific publications issued annually from Washington make a most impressive exhibit, difficult to visualize.

The military and civilian personnel of the War and Navy departments make very important contributions to science and its applications in engineering and medicine. Another conspicuous group of scientists, active also in research, is found in the



© National Geographic Society

Finlay Photograph by Charles Martin

VISITORS DELIGHT IN THE NATIONAL GEOGRAPHIC SOCIETY'S DISPLAY OF TREASURES

At the headquarters of The Society there is a small but priceless museum. These American flags preserved in one cabinet were carried by Admiral Byrd on his North and South Polar flights and were presented to The Society in recognition of its cooperation in his explorations. The medals are replicas of awards made by The Society for geographic achievements. In the lower center is the famous turquoise necklace unearthed at Pueblo Bonito by a National Geographic expedition.



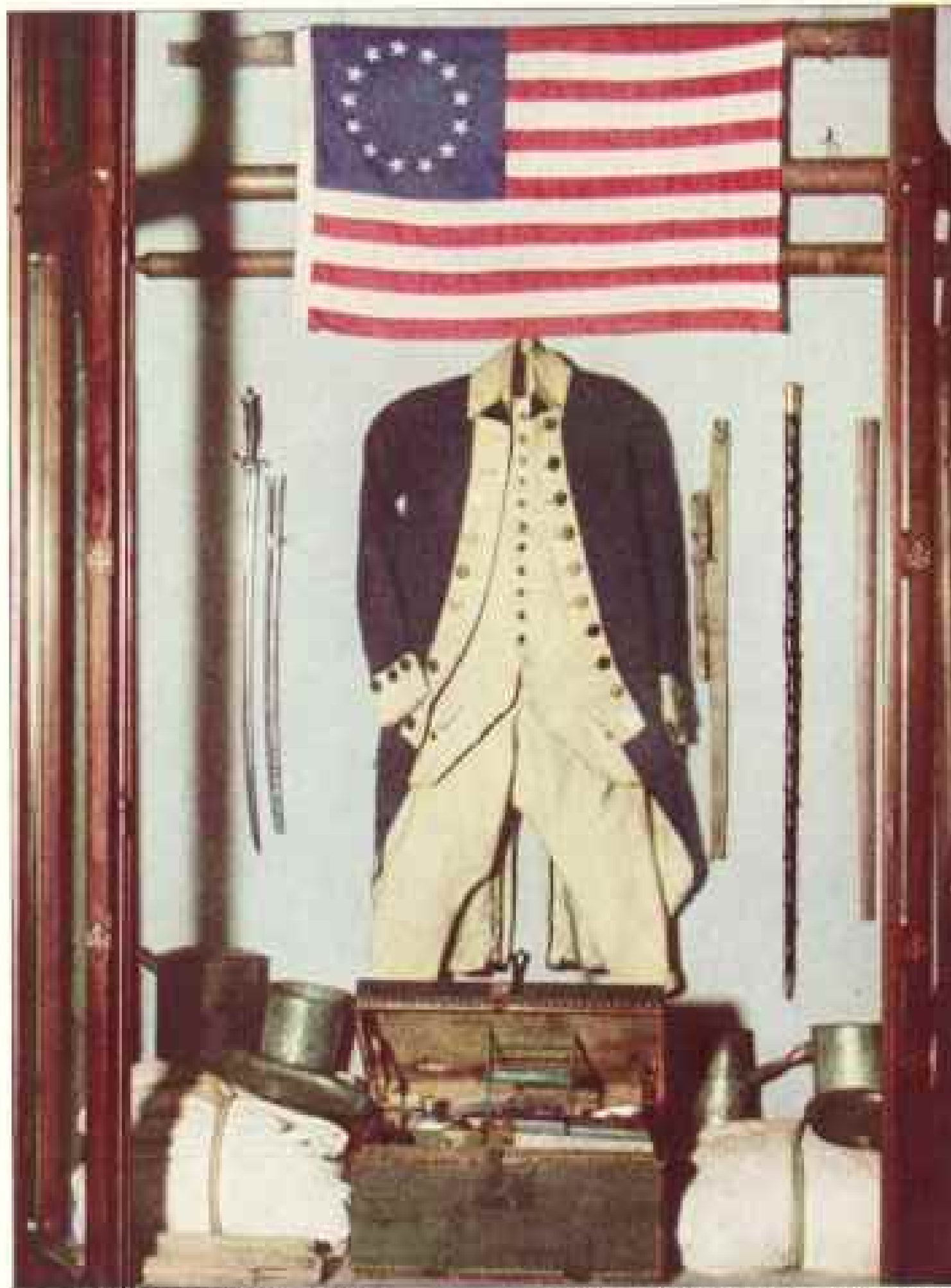


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Friday District Color Photograph by Capt. A. W. Stevens

MOUNT VERNON LOOKS TO-DAY ABOUT AS IT DID WHEN GENERAL AND MRS. WASHINGTON PRESIDED THERE

Due to the untiring efforts of an association of patriotic women, the mansion has been restored approximately to its original condition and has become America's foremost national shrine (see "The Home of the First Farmer of America" in the National Geographic Magazine for May, 1928).



© National Geographic Society  
 GEORGE WASHINGTON RELICS IN THE NATIONAL MUSEUM

The uniform was worn by General Washington when he resigned command of the Continental Army, December 23, 1783. Below are a mess chest and tents he used during the War of the Revolution. At the left hangs one of his swords and at the right Benjamin Franklin's gold-headed cane. The flag is a reproduction of the first "Stars and Stripes."



Finlay Photograph by Orren R. Louden  
 IN MEMORY OF THE DISCOVERER OF THE NORTH POLE

Rear Admiral Robert E. Peary reached the top of the world on April 6, 1909. After his death in 1920 this symbolic memorial was erected over his grave in Arlington National Cemetery by the National Geographic Society. The granite spheroid represents the earth. At the North Pole a bronze star marks Peary's heroic achievement.



© National Geographic Society. Finlay Photograph by Clifton Adams  
 CATHEDRAL VISITANTS JOURNEY DOWN THE PILGRIM STAIRS.

These steps provide an approach to the great church from the south, via the Pilgrim Way. They are 40 feet wide and on each side rare old boxwood, yew, holly, and magnolia trees are planted.



Finlay Photograph by W. Robert Moore  
 THE EQUESTRIAN STATUE OF GENERAL PHILIP SHERIDAN

Generally regarded as one of the greatest works of its kind, this bronze memorial to the Civil War hero graces Sheridan Circle on Massachusetts Avenue, surrounded by legations and imposing residences.



© National Geographic Society

Finlay Direct Color Photograph by Charles Martin

THE NATIONAL MUSEUM EXHIBITS EXQUISITELY CARVED SEMIPRECIOUS STONES

Rose quartz, carnelian, agate, onyx, malachite, chalcedony, lapis lazuli, jasper, fluorite, and silicified wood are among the materials with which artists in many centuries have worked to produce the miscellany of objects within this case. At the left is a flawless sphere of quartz or rock crystal,  $12\frac{3}{4}$  inches in diameter, which weighs  $106\frac{1}{4}$  pounds and is valued at a quarter of a million dollars.



Finlay Photograph by Clinton Adams

MEMORIAL TO PRESIDENT BUCHANAN IN MERIDIAN HILL PARK

The late Harriet Lane Johnston left a bequest providing for erection of this monument to her illustrious uncle.



© National Geographic Society

Finlay Photograph by Juana Gayer

THE LIBRARY OF CONGRESS OWNS A RARE AND VENERABLE FIRST EDITION OF THE "BOOK OF BOOKS"

Numbered among the choicest of literary treasures, this copy of the Gutenberg Bible (in three volumes) came to the Library in 1930 as a part of the Vollbehr Collection at a cost of more than \$300,000. It was printed some time between 1450 and 1455, and is one of three perfect copies on vellum known to be in existence. The skins of 300 sheep were required to make it.

OUR COLORFUL CITY OF MAGNIFICENT DISTANCES



A GLIMPSE OF THE COMMERCE BUILDING

The bronze equestrian statue, atop a pedestal of Vermont granite, commemorates General William Tecumseh Sherman of Civil War renown.

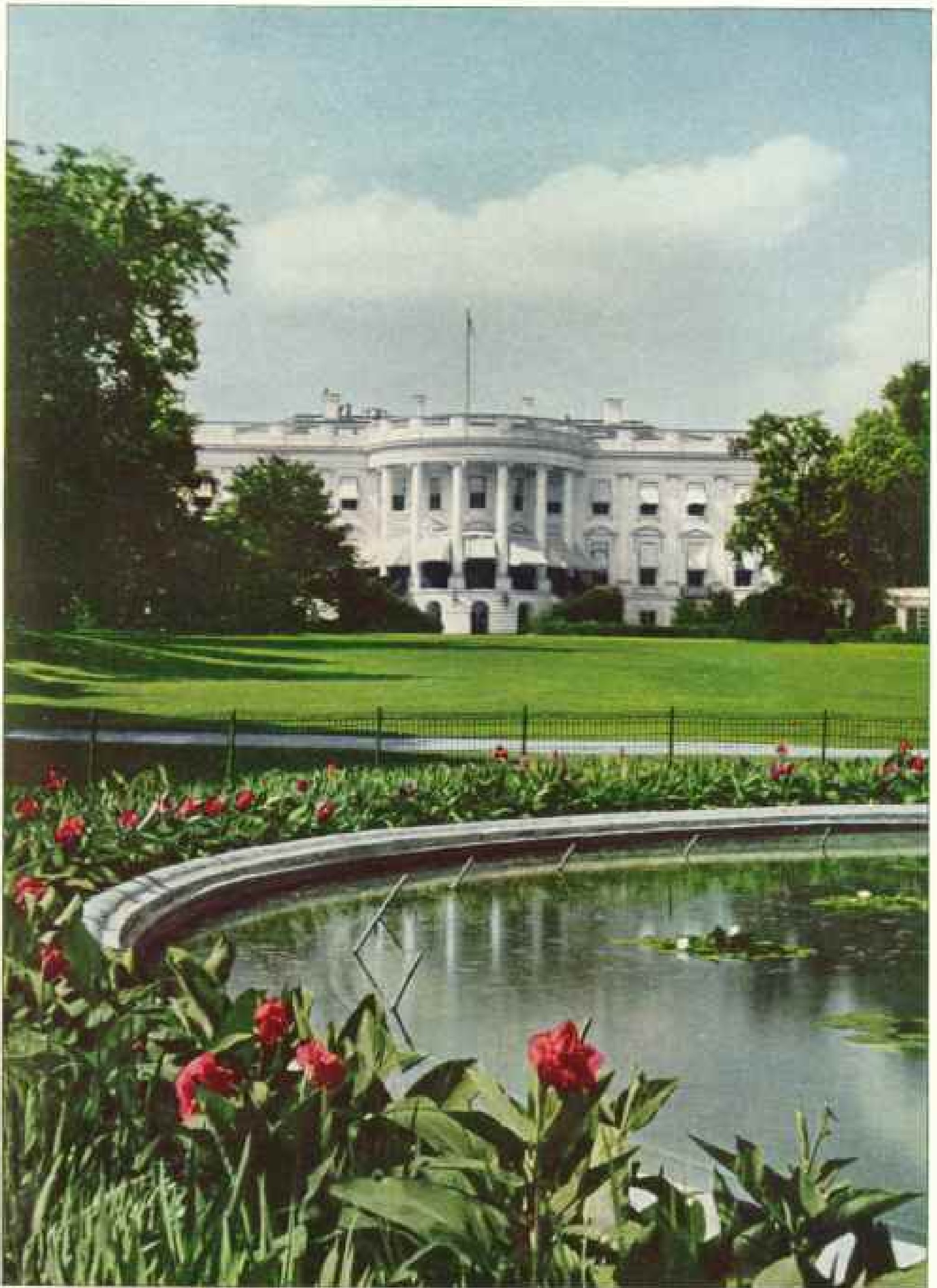


© National Geographic Society

Picture Photographs by Clifton Adams

EVERY STATE SENDS ITS QUOTA TO SWELL THE HUMAN TIDE THAT FLOWS INTO THE CAPITOL

Cars bearing license tags from Maine to California are parked on the esplanade in front of the majestic building while their occupants climb the broad marble stairs which lead to the legislative and judicial halls of the Nation. The statuary group, "The Rescue," is by Greenough and represents a pioneer struggling desperately with an Indian.



© National Geographic Society

Finlay Photograph by Clifton Adams

THE SOUTH PORTICO OF THE WHITE HOUSE

Built on a site selected by President Washington, the Executive Mansion was first occupied by President and Mrs. John Adams in November, 1800. In 1814 it was burned, but was rebuilt and ready for occupancy four years later.

Public Health Service of the Treasury Department.

#### THE VITAL ARM OF THE PUBLIC HEALTH SERVICE

If typhus breaks out in Teheran, plague in Peiping, or cholera comes down the Yangtze, the United States Public Health Service soon knows it. Our consuls in every corner of the world cable the news when certain diseases appear in foreign ports. This is so quarantine may be arranged where needed.

Rats by the myriad have been gassed out of incoming ships. Hides, furs, rags, many kinds of cargo, must be fumigated abroad before shipment here. Immigrants are examined, too, in various foreign ports where medical officers of the United States Public Health Service are stationed. The Panama Canal, for example, works like a strainer on all ships coming through it bound for American ports.

This finger of government, known then as the Marine Hospital Service, was first established in 1798. Through generations it grew, till now—with its subsidiary, the National Institute of Health, at Washington—it is one of the world's foremost medical research agencies.

Though at first it merely did relief work for seamen, to-day its manifold functions include: the protection of the United States from the introduction of disease from without; the medical examination and inspection of all arriving aliens and prospective immigrants; the prevention of interstate spread of disease and the suppression of epidemics; coöperation with State and local health authorities in public-health matters; investigation of the diseases of man; the supervision and control of biologic products; public health education and dissemination of health information; the maintenance of marine hospitals and relief stations for the care and treatment of certain beneficiaries prescribed by law; the confinement and treatment of persons addicted to the use of habit-forming narcotic drugs who have committed offenses against the United States and of addicts who voluntarily submit themselves for treatment; and the providing of medical service in Federal prisons.

#### UNCLE SAM AS A HEALER

Almost half a million persons apply annually for examination or treatment at the

155 ports in the United States of America and its possessions, where relief stations and hospitals are maintained. At 35 cities throughout Europe, Canada, and Mexico examinations are given to immigrants who plan to come here.

Besides all these routine duties, this Service makes studies of river pollution, sewage, ventilation, and the control and sanitation of shellfish-bearing areas, and looks after health in national parks and on Indian reservations. Field parties also study malaria, pellagra, and Rocky Mountain spotted fever, and the Service operates the National Home for Lepers at Carville, Louisiana.

In the 25 marine hospitals of the Public Health Service more than 300 physicians and dentists, 400 nurses, aides, and dietitians, and 1,800 other persons are employed in the care of a daily average of 4,000 patients.

#### THE ARMY'S CHIEF MEDICAL CENTER IS IN WASHINGTON

Soldiers come to the Walter Reed General Hospital for treatment from Army posts scattered from Alaska to Panama and from Porto Rico to the Philippines.

As early as Civil War times, Army medical men were urging a military hospital for Washington; but nearly a half century passed before the plan took form.

Named for Dr. Walter Reed, Army surgeon world revered for proving that certain mosquitoes carry yellow-fever germs, work here has slowly become so intensified that now practically everything science has learned of the healing arts is being applied (see, also, page 592).

Besides its most skillful procedures in medicine and surgery, its special training schools include instruction in physiotherapy and occupational therapy. This latter term is now applied to either mental or physical treatment which stimulates imagination and may thus hasten recovery from disease or injury. In this plan you see men weaving, spinning, carving, working in clay, metal, and leather; some, also, are learning to operate the typewriter by the "touch system."

From the excellent library a "book wagon" goes the rounds each morning, so that patients may choose from its racks any book or magazine that may appeal to them.





Photograph by Clifton Adams

OLD TUDOR PLACE, IN GEORGETOWN, WHERE GEORGE WASHINGTON OFTEN VISITED

Completed late in the 18th century, its early occupants included Francis Loundes, a merchant whose tobacco shipments helped make Georgetown an active trade center. He sold it to Thomas Peter in 1805, husband of Martha Parke Custis, granddaughter of Martha Washington. At times various British ministers resided here.

A social "club spirit" has been developed here to such an unusual degree that you often hear patients say, "I'm having such a good time visiting old friends—in spirit it's more like a pleasure resort than a hospital."

Likewise, with a definite therapeutic purpose, a flower garden of singular charm, designed by the late Gen. James Denver Glennan, has been created in a natural valley near by. Rugged and secluded, to this exotically appealing garden many plants and flowers have been contributed by well-known botanists.

This famous medical center of the Army stands on the site of old Fort Stevens, one of the string of defenses about the Capital during the Civil War. Here the Confederates attacked in 1864, when President Lincoln came out to view the battle. Till lately, an old tulip tree stood here, from which, tradition said, a sharpshooter fired on President Lincoln.

Religious service, held on the hospital grounds at daybreak each Easter, with the

Stars and Stripes flying over those at prayer, has become a Washington institution.

WASHINGTON HAS NEARLY SIX TREES TO EVERY INHABITANT

"I know of no city," wrote the British Ambassador, James Bryce, "in which the trees seem to be so much a part of the city as Washington!"

Here the green of growing things tempers the harshness of bricks and mortar. Despite the surge of countless automobiles, some of Washington's chief residential streets, as Lord Bryce added, afford "the most charming sylvan views." Since Grant's day, systematic tree-planting has gone steadily on. Trees march along nearly every one of the city's miles of streets. Only in the heart of the active business district have they yielded to asphalt and pipes. Even there certain old patriarchs survive, in the maelstrom of traffic. Oriental planes still line Pennsylvania Avenue from the Capitol almost to

the Treasury, and near the heart of the financial district, along Fifteenth Street, old elms arch as gracefully as in the quieter residential sections.

Tiny parked triangles at street intersections, circles where avenues meet, great squares like Lafayette and Franklin, the larger park areas, such as the Ellipse south of the White House, the Monument Grounds, the Mall, Potomac Park, the Capitol Grounds, and the rest of the city's 650 park reservations, form miniature forests.

#### TREES PLANTED IN MEMORY OF FAMOUS MEN

Rock Creek Park is a veritable tongue of virgin forest extending from Maryland far into the city, with only driveways and 30 miles of bridle paths to break its wild character. This huge park adds thousands to the tree total. Altogether, Washington has upward of half a dozen trees for each of its human inhabitants—a record among great cities approached only by Paris, Berlin, and Vienna.

Just as it has distinguished human residents, so the capital has its eminent tree citizens; some are rich in tradition. Here are trees planted by great statesmen, soldiers, poets, and artists; trees dedicated to illustrious men and significant events; trees that have had a part in shedding economic blessings on America; and trees that bring thoughts of religion, that freshen international friendships, and stir memories of young soldiers killed in battle.

Rank as the "First Tree in the Land" probably falls to the Washington Elm, in



Photograph by Edwin L. Wisner

#### WOODROW WILSON'S HOME AFTER HE LEFT THE WHITE HOUSE

The war-time President retired to Number 2340 S Street N. W. On the day he died, after a prolonged illness, silent watchers knelt at prayer in the street before the house.

the Capitol Grounds—a huge 100-foot patriarch planted by the first President when the foundation for the Capitol was being laid.

In the grounds of the Washington Cathedral on Mount St. Alban is the Jefferson boxwood, moved from Monticello, where Thomas Jefferson planted it. Near by is the Dolly Madison boxwood, grown from a sprig taken from a corsage bouquet worn by that famous White House hostess.

Among the 97 kinds of trees in Lafayette Square, across Pennsylvania Avenue from the White House, is a red oak



Photograph by Clifton Adams

THE LARGE FLIGHT CAGE IN THE BIRD HOUSE AT THE NATIONAL ZOOLOGICAL PARK

This newly completed home for the feathered inmates was finished in June, 1929, at a cost of \$150,000. It exhibits 1,000 individuals of 330 species. There is a very fine flock of parrots from the collection of the late Victor J. Evans.

planted by the District of Columbia Federation of Women's Clubs "as a monument to the affection felt by the people of Washington for Mrs. Coolidge."

Among the "presidential trees" in the White House Grounds are an elm planted by John Quincy Adams, another set out by President Hayes, a sweet gum set out by Benjamin Harrison, a Japanese maple planted by Cleveland's bride, two fern-leaved beeches placed in the ground by President and Mrs. Roosevelt, a scarlet oak planted by President McKinley, an elm set out by President Wilson, a tree

dedicated by President and Mrs. Harding to the animals that perished during the World War, a birch planted by President Coolidge, and an elm planted by President Hoover.

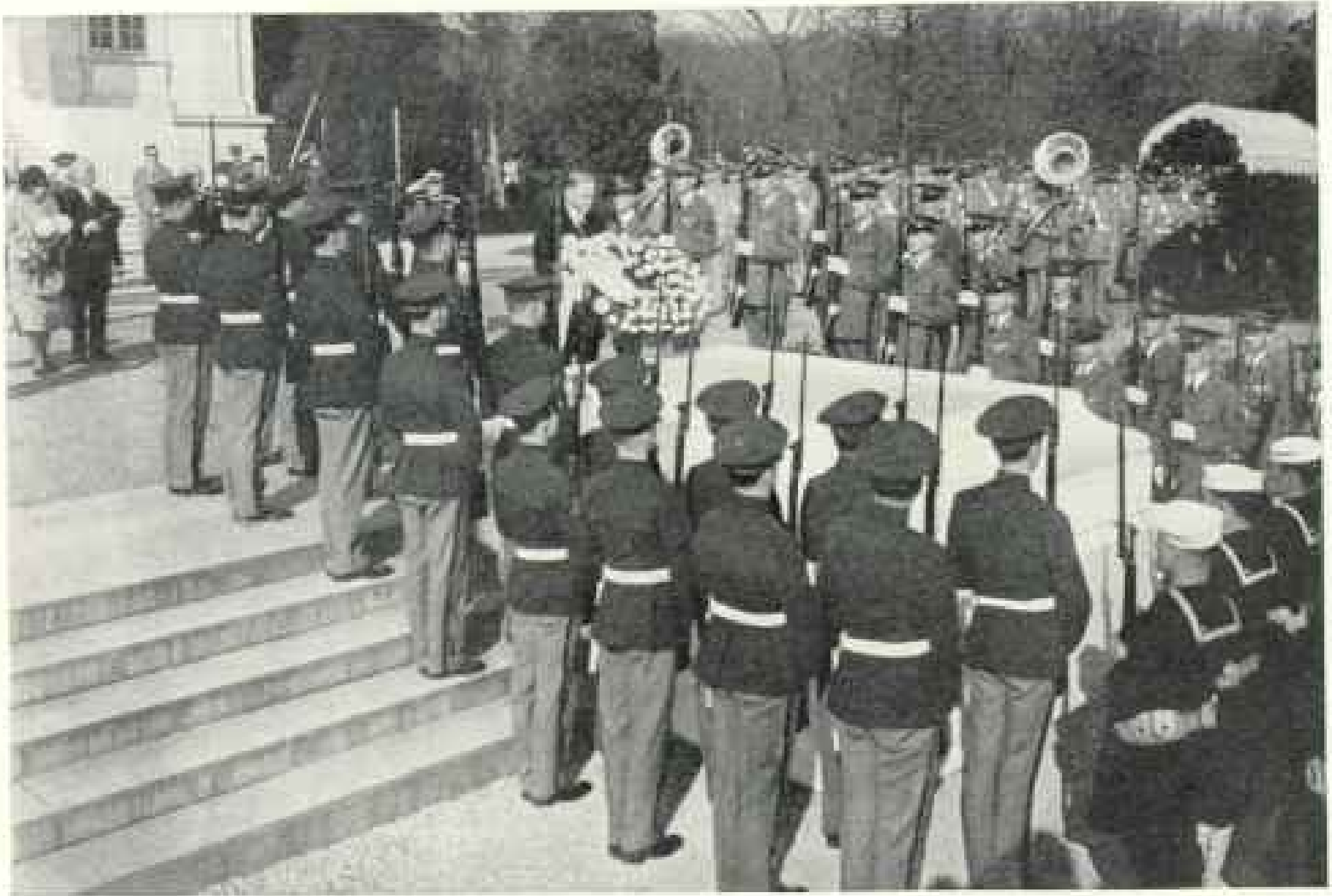
SOME TREES IMPORTED FROM FAR PLACES

In the Botanic Garden are the Oak of Confucius, grown from an acorn from the tomb of the Chinese philosopher; two cedars of Lebanon; and the Peace Oak, commemorating the close of the Civil War. The Lincoln Tree, a hornbeam planted by the Martyred President, and long the most famous of the Garden's storied trees, died in 1928 a victim, presumably, of heat from newly installed steam pipes. An aged sycamore on the Pennsylvania Avenue side of the Garden, pointed out for a century as the hitching post of John Adams in its sapling days, has also recently passed away.

The Glastonbury thorn, in the grounds of the Washington Cathedral, is an outstanding tree of legend. It has been grown from a cutting from a thorn tree at Glastonbury Cathedral, England, which

is reputed to have sprouted from the staff of Joseph of Arimathea.

Best known of the trees of the National Capital are the Japanese cherry trees, that rim the Tidal Basin and line three miles of the riverside driveway of Potomac Park. Each spring, when these trees are pink with bloom, crowds of tourists come to admire them. They were the gift in 1912 of the Mayor of Tokyo and his council, and the first tree was planted by Mrs. William Howard Taft, then First Lady of the Land, who had suggested their introduction.



© Harris and Ewing

PRESIDENT HOOVER PAYS TRIBUTE TO THE UNKNOWN SOLDIER ON ARMISTICE DAY:  
ARLINGTON NATIONAL CEMETERY



Photograph by Clifton Adams

ALLIGATOR POOL, IN THE NEW REPTILE HOUSE AT THE NATIONAL ZOOLOGICAL PARK

The visitor views them at close range through plate glass. In the simulation of reptilian habitats, verisimilitude is achieved by use of plants, vines, weeds, and trees as found where the reptiles live in their natural wilds.



Photograph by Capt. Albert W. Stevens

THE VAST WALTER REED GENERAL HOSPITAL, OPERATED BY THE UNITED STATES ARMY, IS A CITY WITHIN ITSELF

With its club, library, and gardens, its many training schools, and its well-known work in occupational and physiotherapy, as well as medical and surgical procedures, here is the greatest Army medical center in the United States. Officers, enlisted men, and their families come here for treatment from as far away as Panama, Alaska, Hawaii, and the Philippines (see, also, text, page 587).



Photograph from Henry W. Taylor

ABRAHAM LINCOLN READING HIS ADDRESS AT HIS SECOND INAUGURATION, MARCH 4, 1865

Here, again, Lincoln enriched the political literature of America with another masterpiece when he said: "With malice toward none; with charity for all, with firmness in the right, as God gives us to see the right, let us strive on to finish the work we are in."



Photograph by Capt. Albert W. Stevens

FORT WASHINGTON, AN OBSOLETE POTOMAC DEFENSE, STANDS OPPOSITE  
MOUNT VERNON

Though still a small post, the fort is no longer of military importance. Here, at the mouth of Piscataway Creek, John Smith found an Indian settlement; later Governor Culvert conferred with Indians here and, about 1794, George Washington urged that a fort be built on the spot. L'Enfant planned Fort Washington as well as the Capital City and he lived at Warburton Manor, whose grounds are now included in the military reservation, for seven years as the guest of Thomas Digges, at whose nephew's home, Green Hill (Riggs Farm) he subsequently died and was buried.

Washington's tree memorial of greatest sentimental value extends for more than a dozen blocks along both sides of upper Sixteenth Street, the broad avenue that runs north from the White House. There are planted 550 Norway maples, each with a little stone beside it dedicating it to one of the World War soldiers from Washington who died for his country.

HERE A GREAT CATHEDRAL IS BUILDING, IN  
FOURTEENTH-CENTURY GOTHIC STYLE

On Mount St. Alban, one of the most commanding sites in Washington, rises the completed portion of the Washington Cathedral, which its builders, the Protestant Episcopal Cathedral Foundation, herald as the church for "national purposes, such as public prayer and thanksgiving."

mentioned as a part of the original L'Enfant Plan.

Men, women, and children from every State in the Union have contributed millions to its construction.

Cruciform in design, the Cathedral was laid out so that the apse points toward the spot on the horizon where the sun rose on Ascension Day. The apse and north and south transepts are nearly completed, comprising about one-half of the entire structure (see page 553).

More than 300,000 visitors enter the Cathedral Close annually. Many come to feast their eyes upon one of the world's finest examples of 14th-century Gothic architecture and to stroll through the gardens framed in boxwood, a large portion of which was transplanted from colonial



Photograph by Capt. Albert W. Stevens

SIXTEEN MILES ABOVE WASHINGTON THE POTOMAC FOAMS THROUGH THESE  
ROCKY GORGES

Tumbling and roaring, the Great Falls of the Potomac was a familiar sight to George Washington when he helped to survey the old canal around the Falls, as it was later to Daniel Webster, strolling its sylvan solitudes on his fishing trips.

estates in near-by Maryland and Virginia that were familiar to George Washington and his family. Some come to see the tombs of Woodrow Wilson, Admiral George Dewey of Manila fame, Melville E. Stone, one of the founders of the Associated Press, and clergymen and laymen who in life were closely associated with the Cathedral undertaking. And many come to attend daily religious services. In the wooded amphitheater in the shadow of the Cathedral as many as 15,000 people have attended a single service.

The graceful ribbing of the vaulted Cathedral ceiling will meet at more than 1,000 stone bosses, each of which will be adorned with carving symbolizing religion. Nearly 200 stained-glass windows, the work of expert craftsmen whose shop has been set up in the Cathedral Close, will be framed in its lofty limestone walls. More than 800 niches will be provided for stat-

ues. The magnificent lantern tower that will rise above the crossing will be 107 feet higher above the Potomac River than the Washington Monument.

Ultimately the sixty-seven-and-a-half-acre Close will be inclosed in a wall with 12 gates, each of which will be named for an apostle. These gates will open to a labyrinth of roads and walks, flanked by many auxiliary cathedral buildings.

HERE ROMAN CATHOLICS ERECT ONE OF  
THE WORLD'S MOST BEAUTIFUL SHRINES

On the campus of the Catholic University of America, members of the Catholic Church are building the National Shrine of the Immaculate Conception, a gigantic undertaking that will lend a touch of Northern Italian Romanesque architecture to Washington's already imposing north-eastern skyline. Its colorful dome will rise 204 feet, while a campanile at one corner





A MEMORIAL TO THE DAUGHTERS OF THE AMERICAN REVOLUTION

In the rear of Memorial Continental Hall, opposite the Pan American Union's garden, this monument by Mrs. Harry Payne Whitney stands. The inscription reads, "To the women whose patriotic foresight made possible the National Society Daughters of the American Revolution."



Photographs by Clifton Adams

MOTOR CARS FORDING ROCK CREEK, ON ONE OF THE PARK DRIVES

After heavy rainstorms, park police set up "Closed" signs at these fords, if the water is considered too deep for safety. In winter Rock Creek sometimes freezes over, affording fair skating.



Photograph by Maynard Owen Williams

IN RECREATIONAL ACTIVITIES THE POTOMAC IS THE THAMES OF WASHINGTON

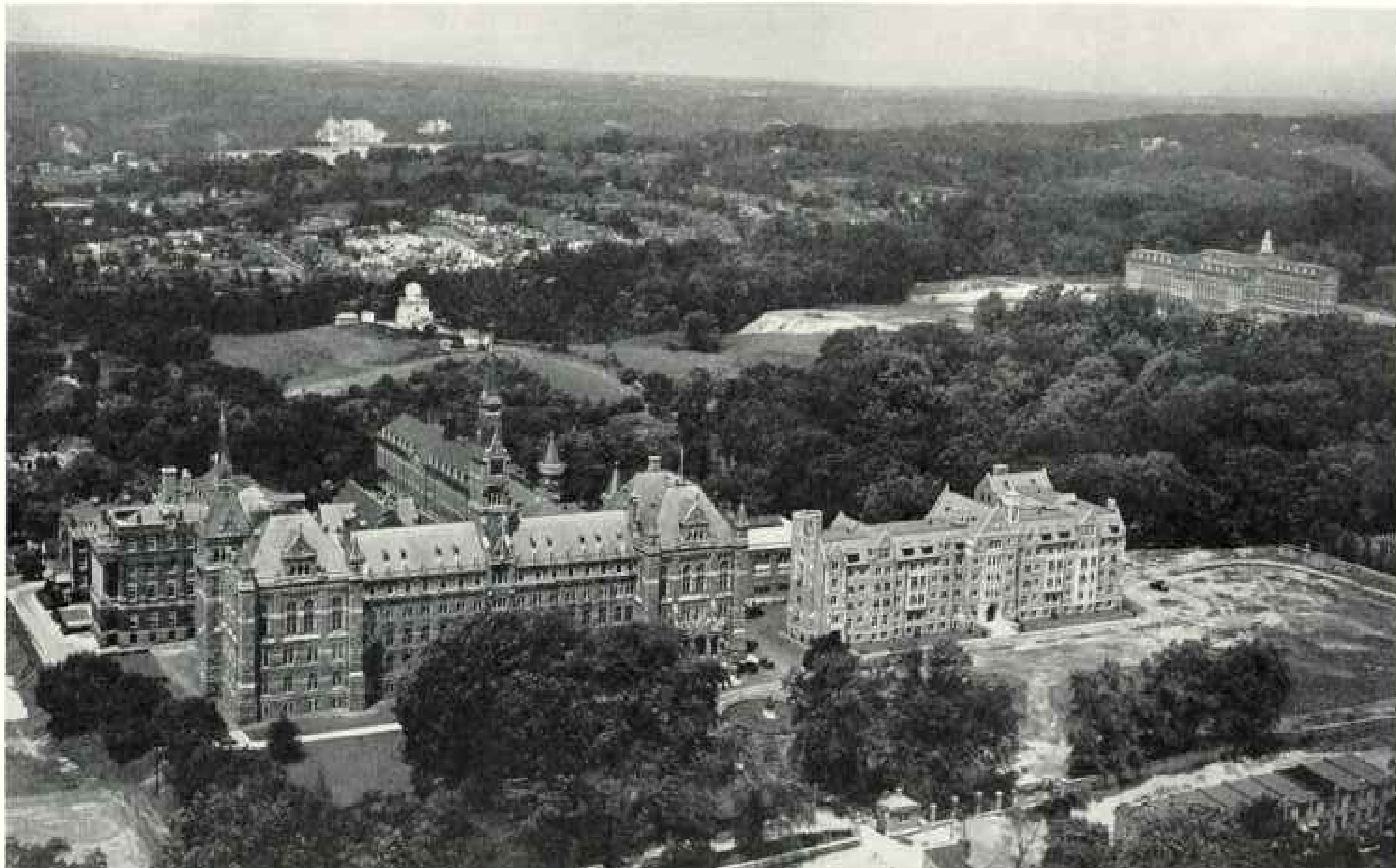
Fleets of canoes ride its currents. Fishermen swarm its rocky banks, especially in "herring runs," and from Washington up to the falls of the Potomac campers' cottages and boathouses dot its banks. On the Virginia side, above Key Bridge.



Photograph by Clifton Adams

THE NEW FOLGER SHAKESPEARE MEMORIAL LIBRARY

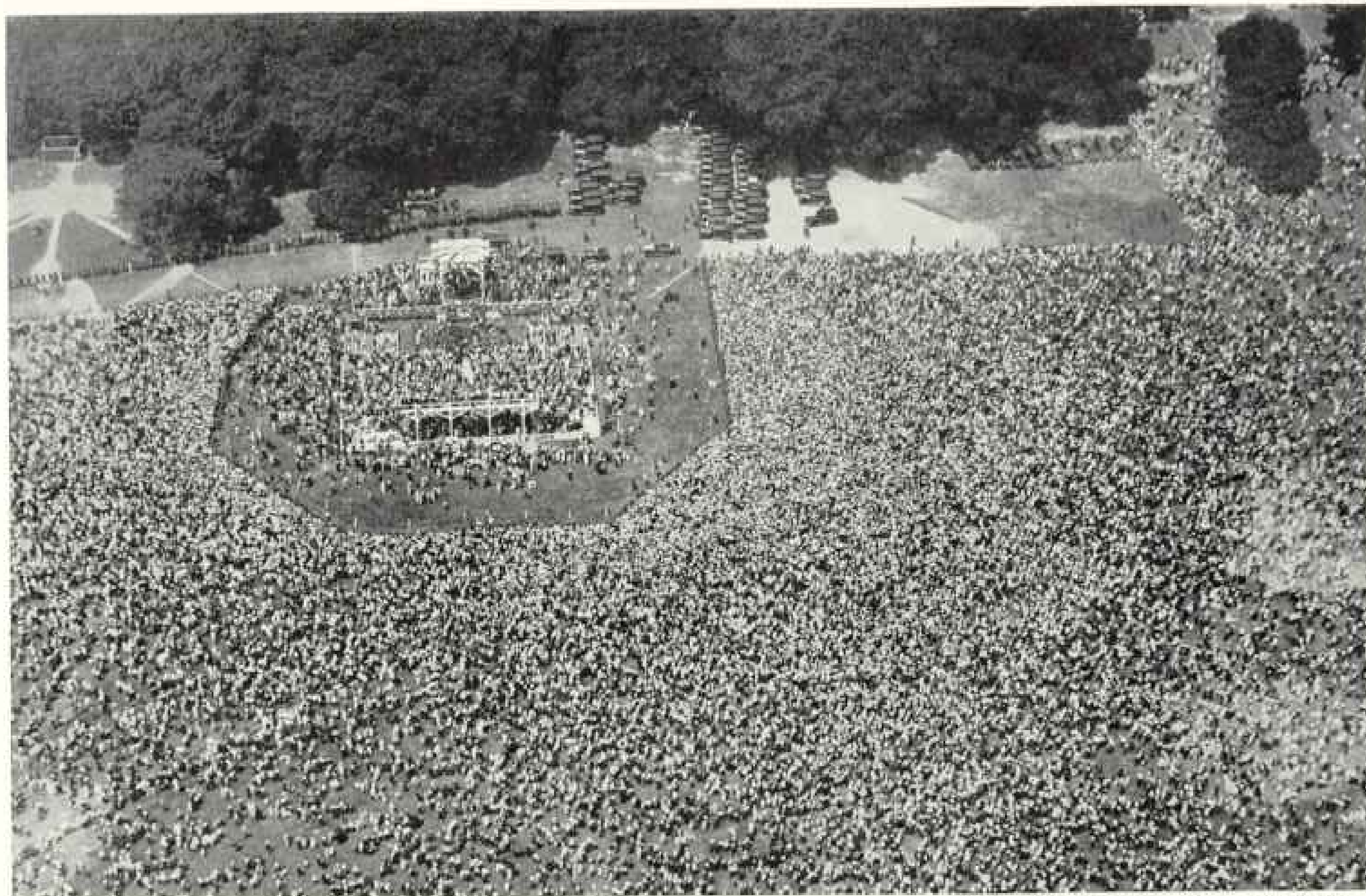
This new and impressive American shrine, in memory of the great English poet, is near the Library of Congress. A gift to the Nation from the late Henry C. Folger, it will house his vast collection of Shakespeareana and contemporary Elizabethan literature.



Photograph by Capt. Albert W. Stevens

GEORGETOWN UNIVERSITY HAD ITS ORIGIN IN A TINY SCHOOL, FOUNDED BY THE REVEREND ANDREW WHITE, S. J., WHO CAME WITH LEONARD CALVERT TO SETTLE MARYLAND

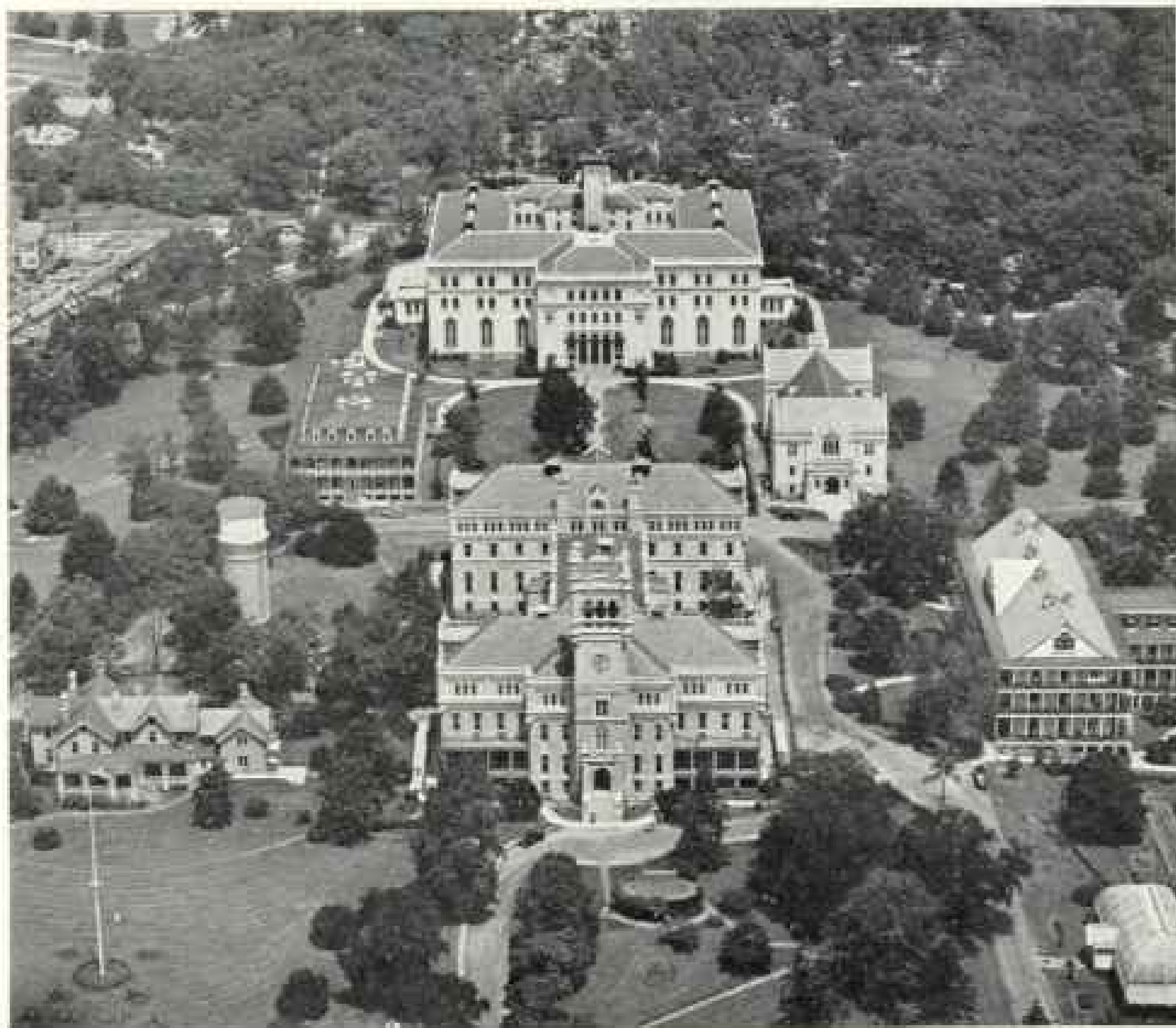
This magnificent panorama shows part of the University's ninety acres and some of its buildings. In the back center, with white dome, is its well-known Astronomical Observatory, which has housed some of the world's leading astronomers and meteorologists. At upper right, the new building for the School of Medicine and the School of Dentistry. On the right of the main building stands the new Copley Hall Dormitory (see, also, text, page 617).



Photograph from International Newsreel Corporation

A WASHINGTON CROWD ACCLAIMS LINDBERGH AFTER HIS RETURN FROM PARIS

Taken from the top of the Washington Monument, June 11, 1927, while President Coolidge, on the stand erected in the Monument Grounds, was decorating Col. Charles A. Lindbergh in recognition of his nonstop flight across the Atlantic. Through a microphone, Lindbergh briefly addressed the Nation.



Photograph by Capt. Albert W. Stearns

THE UNITED STATES SOLDIERS' HOME, FOUNDED BY GEN. WINFIELD SCOTT, SHELTERS DISABLED, INVALID, AND RETIRED SOLDIERS OF THE REGULAR ARMY

Here battle-scarred veterans, who may range in age from 19 to 98 or more—veterans of the Civil War, Indian Wars, the Spanish-American War, Philippine Insurrection, the China Boxer uprising, and the World War—all find comfort. The home has its own theater, band, library, gymnasium, and religious services. It has its own outstanding Holstein dairy herd and poultry farms. The soldiers themselves, by small deductions from their pay, amassed the major portion of the funds to build and operate this institution without Federal appropriations at any time. At the lower left is the old homestead known as Anderson Cottage (named after the defender of Fort Sumter). It has been used as a "summer White House" by four Presidents—Buchanan, Lincoln, Hayes, and Arthur.

of the edifice will thrust its graceful bell chamber nearly 340 feet above its base.

In the completed north crypt chapel is a treasury of religious symbolism and fine art. Thirty-nine varieties of marble are worked artistically into the floor. Three apses hold 15 small chapels, adorned with handsome altars of Algerian onyx. Figures of the saints for whom these chapels are named are worked in the chapel walls in colored mosaic tiles with golden tiles framing them.

More than 50 marble and onyx pillars, some slender and graceful and others mas-

sive and strong, are set at frequent intervals around the crypt wall. Tapes bearing the legends "Ireland," "South Dakota," "Norway," "Iceland," "Spain," etc., indicate the international interest in the Shrine's construction.

The chief treasure is the magnificent mosaic of Murillo's painting, "The Immaculate Conception," a gift of Pope Pius XI. The work is 10 feet 6 inches high and 8 feet wide. It took three artists four years to piece together the 800,000 bits of colored glass of more than 20,000 tints and shades that compose the work. It is

a masterpiece from the famous mosaic factory of the Vatican.

HERE IS THE MECCA  
OF AMERICA

Other denominations, too, have erected national churches in the Capital. Among these are the Metropolitan Memorial Methodist Episcopal Church, which, having occupied a national status since 1852, is perhaps the dean of such institutions in Washington; the National Baptist Memorial Church, provided for jointly by its Northern and Southern branches; All Souls' Unitarian Church; the National City Christian Church; National Universalist Memorial Church; Mount Vernon Place Methodist Episcopal Church South; the Swedenborgian Church of the Holy City; and Grace Lutheran Church, representative of the American Lutherans. The Presbyterians have a national church in project here, while the Church of Jesus Christ of Latter-Day Saints (Mormon) has one under construction.

Huge religious gatherings, as well as trade, scientific, political, agricultural, educational, and other groups—national and international—swarm to Washington to stage their demonstrations in the shadow of the White House. G. A. R., Shriners, Knights of Columbus, Spanish War Veterans, the American Legion, Boy and Girl Scouts, Labor Day celebrants—all march down Pennsylvania Avenue.

Conventions never cease. This or that national group seems always in session. The year around one sees crowds of men



Photograph by Clifton Adams

MAKING AIR PICTURES OF WASHINGTON

The remarkable air photographs illustrating this presentation were made by Capt. A. W. Stevens, U. S. A., and with the full cooperation of the Army Air Corps. Captain Stevens's articles and graphic photographs from both Americas have frequently appeared in the National Geographic Society's Magazine.

or women wearing badges, carrying banners, following bands, touring the city in big buses which flaunt gaudy streamers telling who the pilgrims are and where they came from.

In vacation time school children by the hundreds of thousands flock here from all over the Union, remindful of that Children's Crusade of ancient days. They crowd the city's 77 hotels, its 605 eating places, and miles of rooming houses. Some visitors bring tents or come by automobile and roost on the commons beside the Potomac, known as the Tourist Camp Grounds.

More than 500 national associations have offices here, representing every interest, from the Chamber of Commerce of the United States and the American Federation of Labor to the Cannery and Dyers and Cleaners.

For lack of garage space, it is estimated that 50,000 cars park in the streets all night every night.

To-day private cars crowd the curb like pigs fighting for nose room in a trough. From every direction paved roads radiate into Washington and streams of traffic flow in from dawn to dusk. Only one out of seven works now for the Government; yet 70,000 clerks daily storm the departments, glutting the streets at nine and five.

But huge motor travel is nothing compared with the crowds that come by rail. All counted, at least five million visitors a year see the Capital. And 10,950,000 travelers use the Union Station annually, more than three times as many as all the whites in the United States when the city was laid out.

#### MUCH OF ALL WE KNOW ABOUT THE WORLD REVEALED IN ONE MUSEUM

Nobody has seen everything in the National Museum. Nobody could. There is too much. To see its 13,000,000 different specimens—at the rate of one thing a minute, working eight hours a day—would take more than 74 years!

This Museum preserves all collections of objects in science, history, industry, and art belonging to our Government. It is the storehouse for specimens that range in size from the tiniest of shells and insects to airplanes, automobiles, and huge skeletons of fossil animals. The whole has been valued at more than \$120,000,000. Because of its host of odd objects that are the only ones of their kind in existence, the collection could not be duplicated at any price.

Because nobody could see all, only some of the most interesting things are set out for public exhibition. These include fine examples of different kinds of animals, well-known historical objects, pictures, weapons, inventions, vehicles, and series of specimens of various kinds that have interest and attraction. Properly arranged and labeled, each tells its own story. This exhibit is so organized that visitors in simply walking through the halls may gain

a concrete impression of endless subjects foreign to everyday life. Nearly two million persons each year visit the halls.

The most popular single object to-day is the *Spirit of St. Louis*, the plane flown by Col. Charles A. Lindbergh in his lonely voyage on the first nonstop flight from New York to Paris, on May 20 and 21, 1927. You see also the original Langley flying machine, the first machine purchased from the Wright Brothers by the United States Government in 1908; the *Chicago* (which in 1924 circumnavigated the globe); the first Liberty engine, and many other items in the development of aeronautics (see pages 572, 575).

#### SO MANY EXHIBITS NO ONE CAN SEE THEM ALL

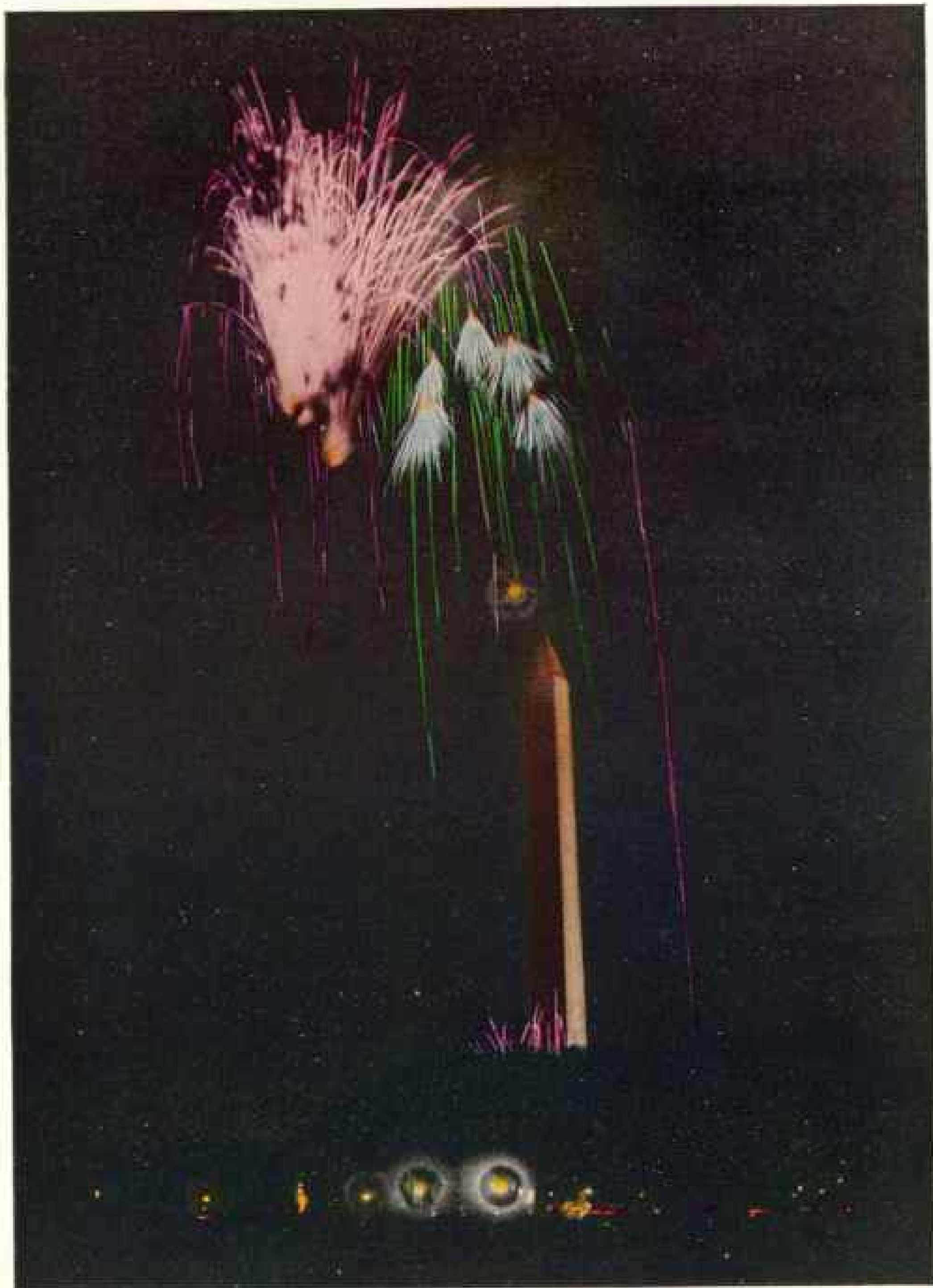
Second in popular interest is the costume collection, especially the gowns of mistresses of the White House, beginning with that of Mrs. Washington and extending without break through the succeeding presidencies. These are shown on figures, grouped in open cases, where they may be viewed from all sides. A conventional face has been selected for these figures, so that the features in all are identical, apparent individual differences being due to the style of hair dressing and other similar details (see, also, Color Plates XXVIII and XXIX).

In the Natural History Hall, the groups of large animals collected by the Roosevelt African Expedition are the most popular exhibit. Lions, water buffalo, zebras, and others, arranged in lifelike manner, with the vegetation of their native haunts as background, show the types of mammals met on that historic hunt. Thousands of other specimens, large and small, from this same expedition repose in mothproof storage cabinets in the Museum laboratories, where they are the basis of scientific research (see, also, Color Plates IV and V).

There are other exhibits of equal interest, but less widely known. Groups of various Indian tribes illustrate these peoples in characteristic activities in their homes or camps. Extensive series of stone implements, pottery, and other things show types of weapons, tools, and dress of primitive peoples of North America and some other parts of the world.

In the fossil halls has recently been installed the skeleton of a huge dinosaur, an

OUR COLORFUL CITY OF MAGNIFICENT DISTANCES



© National Geographic Society

Finlay Photograph by E. A. Stewart

THE CULMINATION OF A FOURTH OF JULY CELEBRATION IN WASHINGTON

Citizens of the National Capital observe a "safe and sane" Independence Day. However, partly to recompense the younger generation for the official ban on firecrackers and torpedoes, a dazzling display of municipal fireworks is given in the park between the White House and Washington Monument.





© National Geographic Society

Flair Direct Color Photograph by Capt. A. W. Stevens

THE MALL IS ONE OF THE MOST IMPORTANT OF WASHINGTON'S MANY PARKS.

On the left or south side of the Mall, extending toward the Washington Monument, are the Old National Museum Building, the castellated Smithsonian towers, the Freer Gallery of Art, and the new Agriculture Department. Facing these across the Mall are the New National Museum, a corner of the Internal Revenue Building, and the new Commerce Building. The unsightly chimneys beside the last-named edifice and the temporary structures visible in the lower right corner are being razed. In the distance (left) Arlington Memorial Bridge, with the Virginia hills in the background.



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CONTRARY TO THE EXPECTATIONS OF ITS FOUNDERS, THE "FEDERAL CITY" HAS GROWN MAINLY NORTH AND WEST

Finlay Direct Color Photograph by Capt. A. W. Stevens

George Washington always modestly referred to the new city which bore his name as "the federal city," and so sure were he and his contemporaries of its extension in an easterly direction that the Capitol was built to face that way. However, the star of civic development headed northwest. In the foreground is the new British Embassy, its entrance on Massachusetts Avenue (lower right corner). In the middle distance, at the left, is the large white administrative building of the Naval Observatory, while in the right background impressive apse and choir aisles of the Washington Cathedral give promise of the noble Gothic structure which is to crown Mount St. Alban.



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DRESSES ONCE WORN BY "FIRST LADIES" OF THE LAND NOW CONSTITUTE A COSTUME HALL OF FAME



Natural Color Photographs by Charles Martin

At the left one of Mrs. George Washington's gowns (1789-97) adorns a comely plaster figure in the National Museum. The group at the right includes Dolly Madison (book in hand), who was famed for her wit and charm; Eliza Kortright Monroe, and Maria Hester Monroe (rear), daughter of the President and first White House bride. The features on all the figures are the same, to escape the problem of attempting artistic plaster likenesses. The hair arrangements are different, however, being designed to represent the coiffures of the respective periods.



© National Geographic Society

Finlay Direct Color Photograph by Charles Martin

THEIR COSTUMES RECORD WHITE HOUSE MODES OF THREE DECADES

Mary Todd Lincoln (1861-65), Julia Gardiner Tyler (1841-45), Angelica Singleton Van Buren (1837-41, daughter-in-law of the President), and Sarah Childress Polk (1845-49). This exhibit of the gowns of White House ladies is perhaps the most popular one in the museum. The idea of such a collection was conceived by a Washington woman, who, with the coöperation of one of her friends, began to trace the gowns and to secure permission of their owners to use them for this purpose. Her efforts have met with a tremendous popular response.



© National Geographic Society

PENNSYLVANIA AVENUE CONNECTS THE LEGISLATIVE AND EXECUTIVE HOUSES OF THE FEDERAL GOVERNMENT

Finlay Direct Color Photograph by Capt. A. W. Stevens

In 1800 a member of Congress records that the great avenue from Capitol to White House was "nearly the whole distance a deep morass covered with alder bushes" and not until many years later was it properly paved. Along its broad way have passed inaugural parades, triumphal processions, and the funeral corteges of national heroes. No thoroughfare in all the Nation has staged so many glittering pageants as this historic tree-lined thoroughfare.



© National Geographic Society

Fullay Direct Color Photograph by Capt. A. W. Stevens

THE "CITY OF MAGNIFICENT DISTANCES" IS BEST REVEALED FROM THE AIR

Historic Pennsylvania Avenue reaches away to the northwest from the Capitol. At the end of the tree-studded Mall, the Washington Monument and Lincoln Memorial dominate the landscape. The group in the middle distance includes the New National Museum, Internal Revenue, and Commerce buildings, and the old Post Office-Department. Two miles beyond appear Key Bridge and the beginning of the Potomac Gorge.



THE NORTH FRONT OF THE FAR-REACHING DEPARTMENT OF AGRICULTURE.

This branch of the Government service employs more than 28,000 people, about 5,600 of them in Washington. It directs the work of food and drug inspection and of the Weather Bureau, Forest Service, Bureau of Public Roads and Bureau of Biological Survey, as well as the strictly agricultural activities of the Nation.



© National Geographic Society

Finlay Photographs by Clifton Adams

FOR 30 YEARS THE "MUM" SHOW HAS BEEN AN ANNUAL FALL EVENT IN WASHINGTON.

Some 700 varieties of chrysanthemums, all grown in the Department of Agriculture experimental greenhouses, are displayed. Leaders of social and official life in the Capital attend the opening of the show, which lasts a week and attracts many thousands of visitors.

extinct reptile of the Cretaceous period, a specimen 82 feet long, and so arranged that visitors may walk beneath it, and so gain a clearer idea of its vast size. Such skeletons are found embedded in stone, so that the bones need to be chiseled out carefully by hand. With this great beast appear many other fossils of bizarre and unusual type. Footprints fossilized in stone and many millions of years old give indication of life and movement by creatures otherwise known only from bones.

#### THE WONDERS OF SCIENCE, ART, AND NATURE REVEALED

One hall shows only minerals. Here is the original nugget that started the gold rush to California in 1849, a bit of metal smaller than one's finger nail, but one of great historic importance. As the central figure in the mineral hall, there is a ball of rock crystal  $12\frac{3}{4}$  inches in diameter, the largest perfect sphere of its kind known in the world. It is valued at a quarter of a million dollars (see Color Plate XXI).

A great collection of coins and medals begun by the Treasury Department is deposited in the National Museum and forms an exhibit highly attractive to the numismatist. A fine collection of postage stamps is arranged in specially designed cabinets.

One hall in the Arts and Industries Building shows man's use of power, from its primitive beginnings. Here are engines that the visitor may operate electrically by pressing a button, and so examine the operation of the driving mechanism of an auto and other machines. Textiles and their manufacture form an absorbing show.

And you see, too, the original Star-Spangled Banner, historical relics of Washington, Lincoln, and many other great Americans, a collection of swords, one of firearms, of woods, musical instruments, timepieces, typewriters, and curiosities so varied that any visitor is sure to find somewhere something to hold his interest.

In the Natural History Building is the nucleus of a National Gallery of Art, for which a separate building is planned. It includes rare paintings by old masters, as well as many of recognized merit by modern artists; sculptures, miniatures, ceramics, metal work, and carved ivories. This collection has been valued at ten million dollars.

No wonder more than 5,000 people a day flock here! Yet they see so little—of

the whole. The bulk is guarded in laboratories. In constant use for scientific studies, there flows from here a steady stream of new facts and ideas of scientific interest, most of which ultimately have definite application to the welfare of man.

#### WASHINGTON NOW A LEADING WORLD FINANCIAL CENTER

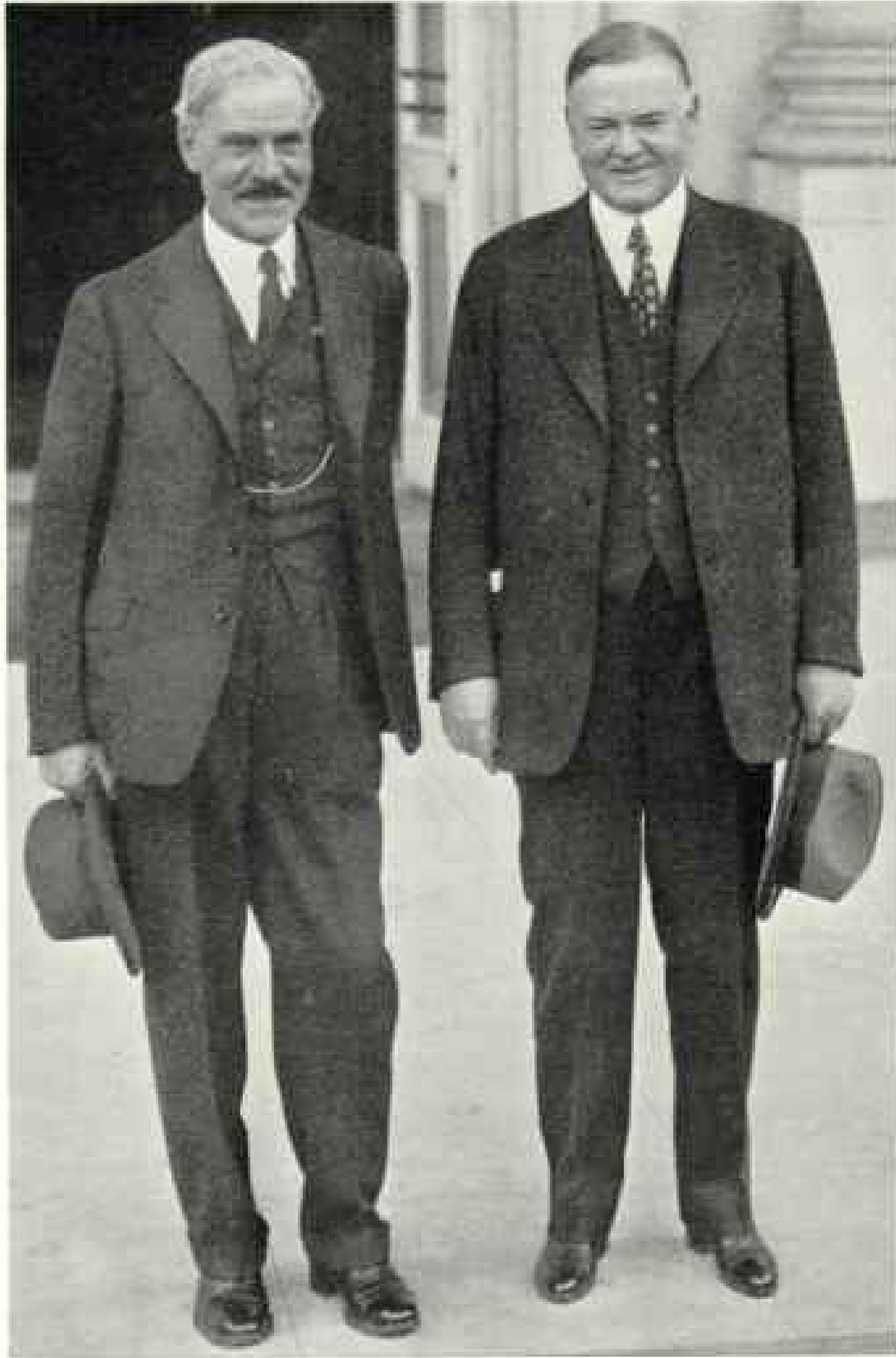
When Alexander Hamilton voted to locate the new capital on the Potomac, provided Jefferson would vote for Federal assumption of State debts, he could not foresee that one day this artificially created city was to become the financial heart of modern civilization. Yet the wealth of America, poured through the United States Treasury, probably decided the World War!

Only a few years ago the banks of the United States, separated by thousands of miles, struggled with the problem of exchanging debits and credits set up by check-writing within a nation of more than a hundred million people. To-day the Federal Reserve System, with headquarters in the Treasury Building, makes a deposit in a San Francisco bank as convenient and effective for use in New York City as a credit balance in a New York bank. Through the operations of the twelve Federal Reserve banks and the 8,052 "member banks," more than one hundred and fifty billion dollars of payments between banks were made last year by mere daily book-keeping transfers in the ownership of a central fund of gold.

#### FEW REALIZE THE MANIFOLD ACTIVITIES OF THE TREASURY

When the Government was transferred to Washington, a hundred and thirty-one years ago, its income was about ten million dollars a year. That income has increased in the last few years to a figure between four and five billion dollars. During a single day last summer the Treasury took in and spent about a billion dollars in *less than eight hours*. The cash that poured into Secretary Andrew Mellon's till on June 16, 1931, was more than two hundred and twenty times the total sum that Secretary Alexander Hamilton received during all the days of 1791. These figures would have been vastly more impressive if Mr. Mellon had needed a larger supply of cash. He refused five billion four hundred and ninety-four million dollars that day, when





Photograph by Harris and Ewing

PREMIER RAMSAY MACDONALD VISITS PRESIDENT HOOVER  
Prime Ministers, Kings, Princes, high and low in every walk of life  
from every land, find inspiration in George Washington's city.

the banks subscribed more than \$6,300,000,000 toward his offer to borrow just \$821,410,350!

It is difficult to realize how swiftly Washington, a city without industries and almost a village in size when compared with New York or London, has grown into a dominant financial center.

America's own financial transactions, conducted by the United States Treasury throughout the same period, have been gigantic. In the three years following our declaration of war against Germany, in

1917, the Government spent almost thirty-seven and a half billions of dollars. As a result, our national debt, which was only \$1,225,145,567.53 in 1916, rose to \$25,484,506,160.05 in 1919. During the next ten years one-third of this great sum was retired, thus reducing the debt in 1930 to \$16,185,309,831.43.

Yet while toying with money in multiples of millions the Treasury has found time for much other work. It has fought yellow fever in the Tropics and herded icebergs in the North Atlantic. It has hunted criminals through the slums and palaces of big cities and guarded the health of shellfish under the seas. It has drawn plans for the construction of beautiful buildings while conducting a home for lepers. It has killed deadly germ-carrying rats in ports and suppressed mutinies on the high seas. Counterfeiters and drug addicts, physicians and bankers, diamond smugglers and owners

of big incomes, almost every conceivable type of citizen, come under the control of this greatest single unit in the world of finance.

#### A CLEARING HOUSE FOR NATIONAL BUSINESS THINKING

On Lafayette Square, in the shadow of the Treasury, rises that stalwart temple of American business, home of the Chamber of Commerce of the United States. It stands on the spot that once held the home of Daniel Webster; and Webster's or-

nate writing desk, suggestive of his own long flowing phrases, is used now by its president.

Time was when our Nation's business, like its Government, was simply organized, and small enough so that it could "see itself"; but, as the Nation grew, its varied trades and industries grew also, multiplied, became complex—and interdependent. "What does business think?" was a question no one could longer answer; America was changing too fast. Yet the Government itself had to know. Tariffs, trade treaties, freight rates, commercial policy—Washington had to solve all these, and needed advice from business.

So it was, in 1912, that President Taft invited American business to send its delegates to Washington and work out a plan by which the Government could read the mind of trade, finance, and industry and learn "what business thinks."

Hundreds responded and formed this Chamber. They took this motto: "If it is not for the public good, it is not good for business." Embracing to-day 1,800 trade groups, an underlying membership of nearly one million business men, here is the world's strongest company of traders.

And it is utterly democratic. Through it a plumber may talk to a railway president, or North to South, and East to West. And when, after painstaking surveys, it learns by vote of its members just what American business thinks about current problems that concern the Nation's economic welfare, it passes these facts impartially on to the Government. Time and again Congress makes good use of its thorough, non-partisan surveys.

#### WASHINGTON AS AN EDUCATIONAL CENTER

Many forces make Washington a cultural center of the Nation. They flow from the Government itself, concerned as it is with broad cultural problems and developing within its departments educational resources of great value; from the many scientific, industrial, and other associations located here; from the work of the diplomatic missions, and from five great universities.

Foresceing all this, Congress early provided "that the facilities for research and illustration in any governmental collections now existing or hereafter to be established in the City of Washington for the

promotion of knowledge shall be accessible . . . to the scientific investigators and to students of any institution of higher education now incorporated . . . under the laws of Congress."

Among the world's great storehouses of knowledge is the Library of Congress. It has more than four million books and pamphlets, accumulated from the ends of the earth, including nearly every book printed in America and the most prized of foreign publications. The most complete collection of Russian and Chinese literature is preserved here.

Then there is the Smithsonian Institution's collection of the proceedings of learned societies, constituting the most complete scientific library in America; and the famous Folger collection of Shakespeareana, soon to be housed in a marble pile near the Library of Congress.

Other libraries have become preëminent in special subjects, such as those of the State Department, the Patent Office, the Army Medical Museum, the Bureau of Standards, the Geological Survey, etc.

There are in all 216 libraries in Washington, where students are always welcome.

American education finds a focal point in the Interior Department. Its Office of Education gathers data from all parts of the Nation. Through experiment and experience, it converts its information into aid and advice given back to State, county, and municipal school officers.

Think what it means to students to have access to the researches of the American Council of Education, the National Academy of Sciences, the National Research Council, the National Education Association, the National Congress of Parents and Teachers, the National Geographic Society, the Carnegie Institution of Washington, the Carnegie Institution for the Advancement of Peace, and many others.

On the staffs of the embassies and legations are trained and obliging diplomats, not only learned in the political and economic backgrounds of their own countries, but reflecting the social and artistic cultures of the nations which they represent.

Of art galleries besides the National, there is the Corcoran, exhibiting the work of prominent American artists and sculptors. It also houses the famous Clark collection of old masters and other items of European art. The Freer Gallery also



*From an altitude of 20,000 feet*

*Photograph by Capt. Albert W. Stevens*

**A REMARKABLE PHOTOGRAPH INCLUDING WASHINGTON, BALTIMORE, ANNAPOLIS, AND CHESAPEAKE BAY.**

In the foreground appears Alexandria. In the far right distance is Chesapeake Bay, whose head, dimly visible, is 85 miles away. On the Patapsco River, extending to the left from Chesapeake Bay, is Baltimore. The Susquehanna River enters the bay from the same direction beyond. In the upper right corner is Kent Island, with Annapolis on the Severn to the left. The white line of Arlington Memorial Bridge spanning the Potomac is easily discernible at the left center (see, also, page 618).



From an altitude of 20,000 feet

Photograph by Capt. Albert W. Stevens

THE DISTRICT OF COLUMBIA SPREAD BEFORE THE EYE

An inch and a quarter from the top of the picture are the rapids below the Great Falls of the Potomac. The falls are hidden by the gorge and by woods. The dark area in the middle ground on the right is Rock Creek Park.



WINTER AND SUMMER, THE WINDING BRIDLE PATHS OF ROCK CREEK PARK GIVE HAPPINESS AND THRILLS TO MANY

Besides its bridle paths, totaling thirty miles, a net of curving, scenic motor roads and sylvan footpaths covers this vast area of wooded hills and shady valleys. A rider fording Rock Creek below the falls at Pierce Mill.

illustrates this combination, with works of James McNeill Whistler and oriental sculptures, paintings, bronzes, and jades. There are also in Washington private galleries open to students of the arts.

#### HERE COLLEGE STUDENTS ENJOY UNIQUE PRIVILEGES

In such an atmosphere it is natural that seats of higher learning should develop. Five universities now give to Washington the largest proportional student population of any city in the country.

In 1791 Georgetown University opened its doors (as elsewhere told) under the jurisdiction of the Jesuit Order. Second in date of founding is the George Washington University (then Columbian College), chartered by act of Congress in 1821. The Catholic University of America was authorized by Pope Leo XIII in 1889 and is supported by the Roman Catholic Church. It has a program of expansion to

culminate in 1939-40, when the University celebrates its fiftieth anniversary. Fifteen buildings of the University already erected and forty religious houses accommodate several thousand students.

American University, under the patronage of the Methodist Episcopal Church, was chartered in 1893. Seven of its marble halls are already built and in use. Howard University, for the colored race, was chartered by Congress in 1867.

For years Washington has also been the location for many secondary and pre-collegiate private schools attended by boys and girls from all America. Music, sculpture, architecture, landscaping, and literary life in the Nation's Capital form an environment in which the youth of the land may develop a true feeling for the fine things of life.

George Washington wished a national university built here. In his will he left fifty shares of stock in the Potomac (Ca-

nal) Company for its endowment, "to which the youth of fortune and talents might be sent for the completion of their Education . . . and by forming friendships in Juvenile years, be enabled to free themselves . . . from those local prejudices and habitual jealousies . . . which when carried to excess are never-failing sources of disquietude to the Public mind and pregnant of mischievous consequences to this Country."

Pursuant to that project of the first President, Columbian College was established. The stock which General Washington willed became worthless. But in 1819 the Reverend Luther Rice, a Baptist missionary, formed a group to buy land for the use of a college. With General Washington's idea in mind, John Quincy Adams, John C. Calhoun, and others became patrons of the new college and raised a fund for it.

By 1822 the main building was in use. Two years later President Monroe, John Quincy Adams, John C. Calhoun, Henry Clay, and the Marquis de Lafayette attended its first commencement. In recent years Herbert Hoover, Calvin Coolidge, General Pershing, Ramsay MacDonald, Prime Minister of Great Britain; King Albert of Belgium, and King Prajadhipok of Siam have attended its commencements and addressed the University body.

Its Medical School was opened in 1825; in 1826 the Law School was organized, discontinued soon afterward, but reestablished in 1865. It is the oldest law school in Washington and was the first in the United States to establish a graduate course in law.

In 1904 Congress removed the school from denominational control and provided it with self-perpetuating trustees, empowered to change its name. That same year it was renamed "The George Washington University."

In 1931 it enrolled more than 8,500 students, and a new plan of academic organization was achieved, resembling the master-apprentice relation of the old guild system.

Georgetown University is the capital's oldest seat of higher learning. Its founding was coincident with the Constitution and the inauguration of our first President. It saw the Maryland Legislature raise "George Town" to the dignity of a

city. Treasured among its archives are records of three visits to it by George Washington and two by the Marquis de Lafayette. When the first President visited Georgetown in 1796, Robert Walsh, "a student in the Humanities," read a poem of greeting to him.

The University's origin has been traced to the little schoolhouse opened in 1634 at St. Inigoes, Maryland, by Reverend Andrew White and his companions, who came with Leonard Calvert in the Lord Baltimore company to found Maryland. In 1651 the school stood near Calverton Manor, on the Wicomico River. In 1677 it was moved to Newtown Manor, and later to Bohemia Manor. In this embryonic Georgetown University John Carroll, intimate friend of Benjamin Franklin, and his cousin, Charles Carroll "of Carrollton," famous for his fearless signature on the Declaration of Independence, received their early training.

#### HIGH ABOVE THE POTOMAC RISE ANCIENT COLLEGE TOWERS

John Carroll, in 1785, planned the founding of the school where it now stands. Three years later the first building was started, although the deed to land was dated January 23, 1789. To-day the familiar towers of the venerable University dominate a pleasant, commanding position on the north shore of the Potomac, called "Cohonguroton," or River of Swans, by the Indians (see page 598).

Almost disrupted by the Civil War, the University saw its sons in rival camps. But when the Nation turned again to books, Georgetown's newly chosen colors of Blue and Gray spoke again of a united North and South. Succeeding years were painful; yet the wounds of war slowly healed and in 1870 a School of Law was added. After the Spanish War came the University Hospital; later a Training School for Nurses and the Dental School.

Georgetown's observatories on the hill-top are world renowned. The Astronomical Observatory, with such directors as Secchi, De Vico, and Hagen, was built in 1843. The Seismological Observatory, for so many years directed by Francis A. Tondorf, was erected in 1909.

After the World War the Nation needed more men trained for diplomatic service and those skilled in overseas trade; so in



From an altitude of 20,000 feet

Photograph by Capt. Albert W. Stevens

#### LOOKING DOWN ON WASHINGTON FROM FOUR MILES UP.

In the left foreground is Anacostia Island, recently acquired as the site for the National Memorial to Theodore Roosevelt. In the middle distance, on the axis of the Lincoln Memorial, the Washington Monument and the Capitol, is Lincoln Park. In the upper left corner, below the oval of the Benning race track, is Mount Hamilton, site of the new National Arboretum. In the lower right corner, at the end of the Highway Bridge, is Hoover Airport (see, also, illustration, page 519), directly above which, across the Potomac, the Washington Channel and the Anacostia River are the Naval Air Station and Bolling Field (Army airport).

1919 Georgetown set up its School of Foreign Service, the first of its kind in the United States. To-day this school has graduates stationed in 37 foreign countries and its great new buildings crown the Potomac hills.

GENERATIONS OF AMERICANS YET TO BE  
WILL USE THESE TEMPLES

Such is the growth of Washington from L'Enfant to Hoover. When Nebuchadnezzar built Babylon, slaves stamped his name on each big brick. On no stone or temple here is cut the name of L'Enfant. Nor need it be. His fame can never fade. The very form, and the elastic plan of the city itself, are his memorial.

Stand at the tomb of L'Enfant on a June day. Look down a wide avenue, across the classic Memorial Bridge that spans the Potomac. There is the splendid city, its marble mansions shimmering white against the solid green of countless trees—as, long ago, the Maya temples

gleamed amid the green forests of Yucatan.

The Emperor Augustus, we are told, found Rome built of brick, but left it a city of marble. We might say that now of those who build the new Washington.

To-day an army of artists, architects, and builders make the Nation's Capital ready for the 200th anniversary of George Washington's birth. Millions in 1932 will honor the Father of his Country, and the Bicentennial, centering here, will be the most widely organized celebration any American city ever observed. And no plaster palaces then, of ornate, flimsy, exposition type, but abiding structures of grace and beauty, built so that Americans for hundreds of years may use and admire them. Huge stones weighing many tons we see being swung into place; and we remember that when floods came and winds beat upon a certain house it fell not, for it was founded on a rock. Modern Washington will be like that, God willing.

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Members of the National Geographic Society may wish to consult the following articles dealing with the development of the National Capital and its environs which have been published previously in their NATIONAL GEOGRAPHIC MAGAZINE:

"The Nation's Capital," by James Bryce, June, 1913.

"Washington: Its Beginning, Its Growth, and Its Future," by William Howard Taft, March, 1915.

"The Capitol: Wonder Building of the World," by Gilbert Grosvenor; "The Lincoln Memorial," by William Howard Taft; "The Transformation of Washington," by Charles Moore; "The Sources of Washington's Charm," by J. R. Hildebrand, June, 1923.

"The Great Falls of the Potomac," by Gilbert Grosvenor, March, 1928.

"Mount Vernon, Virginia: Home of the First Farmer of America," by Worth E. Shoults, May, 1928.

"Fame's Eternal Camping Ground: Beautiful Arlington, Burial Place of America's Illustrious Dead," by Enoch A. Chase, November, 1928.







REFUELING THE EXPEDITION STEAMER ON CHRISTMAS MORNING

All small steam craft plying the Orinoco are wood burners, and many natives turn a penny by maintaining fuel stations to supply them. The sticks, cut in uniform lengths, are passed aboard after the manner of the buckets of the old-time fire brigades.



HE WHO BOILS THE POT CONTROLS THE DESTINIES OF NATIONS

Armies, they say, travel on their stomachs. So do expeditions. And the farther they leave behind the distractions of civilization, the more the minds of the personnel gravitate toward the cook pots. The author's traveling stove was a simple affair improvised from a gasoline tin by cutting a hole in the side and filling the bottom with sand.

## IN HUMBOLDT'S WAKE

### Narrative of a National Geographic Society Expedition Up the Orinoco and Through the Strange Casiquiare Canal to Amazonian Waters

BY ERNEST G. HOLT

LEADER OF THE NATIONAL GEOGRAPHIC SOCIETY VENEZUELA-BRAZIL EXPEDITIONS

*With Illustrations from Photographs by the Author*

A SMALL sailboat slips from the mouth of the Rio Apure and turns to battle the mighty Orinoco. The rains have begun, yet the stiff easterly trades still blow, and the great river is whipped into a sea of whitecaps  $2\frac{1}{2}$  miles across. The boat is crudely fashioned and clumsy, and although her crew of Indians are skillful river men, she is tossed about wildly and, to the great anxiety of two white men huddled under the thatched covering aft, seems in imminent danger of swamping. The very next wave might spell the irrevocable loss of priceless instruments and records, specimens that have cost weeks of labor.

Such was the introduction to the Orinoco, on the 5th of April, 1800, of one of the greatest travelers of all time, Baron Friedrich Heinrich Alexander von Humboldt, and his friend, M. Aimé Bonpland. Diego de Ordaz had made known the magnitude of the Orinoco almost three centuries earlier, but it is to Humboldt more than to any other man that the world owes what little knowledge it possesses of the vast hinterland lying along the upper reaches of this great river. And to Bonpland, as a direct result of his travels with Humboldt, is credited the enrichment of science by no less than 6,000 new species of plants. No mean event, this voyage of a primitive sailboat!

Four generations later, a small stern-wheel steamer breasted the Orinoco opposite the mouth of the Apure, and took up Humboldt's trail. She carried a government commission headed for the Brazilian-Venezuelan frontier to mark the boundary between two great republics sprung into existence since Humboldt passed. Yet, though the political map has been altered mightily, though astounding progress has been made in every field of science, could

Humboldt retrace his Orinoco route to-day he would find little change. Four hundred years after its discovery, the Orinoco remains much the same, and, at least in its upper course, almost as little known as when Ordaz entered its mouth.

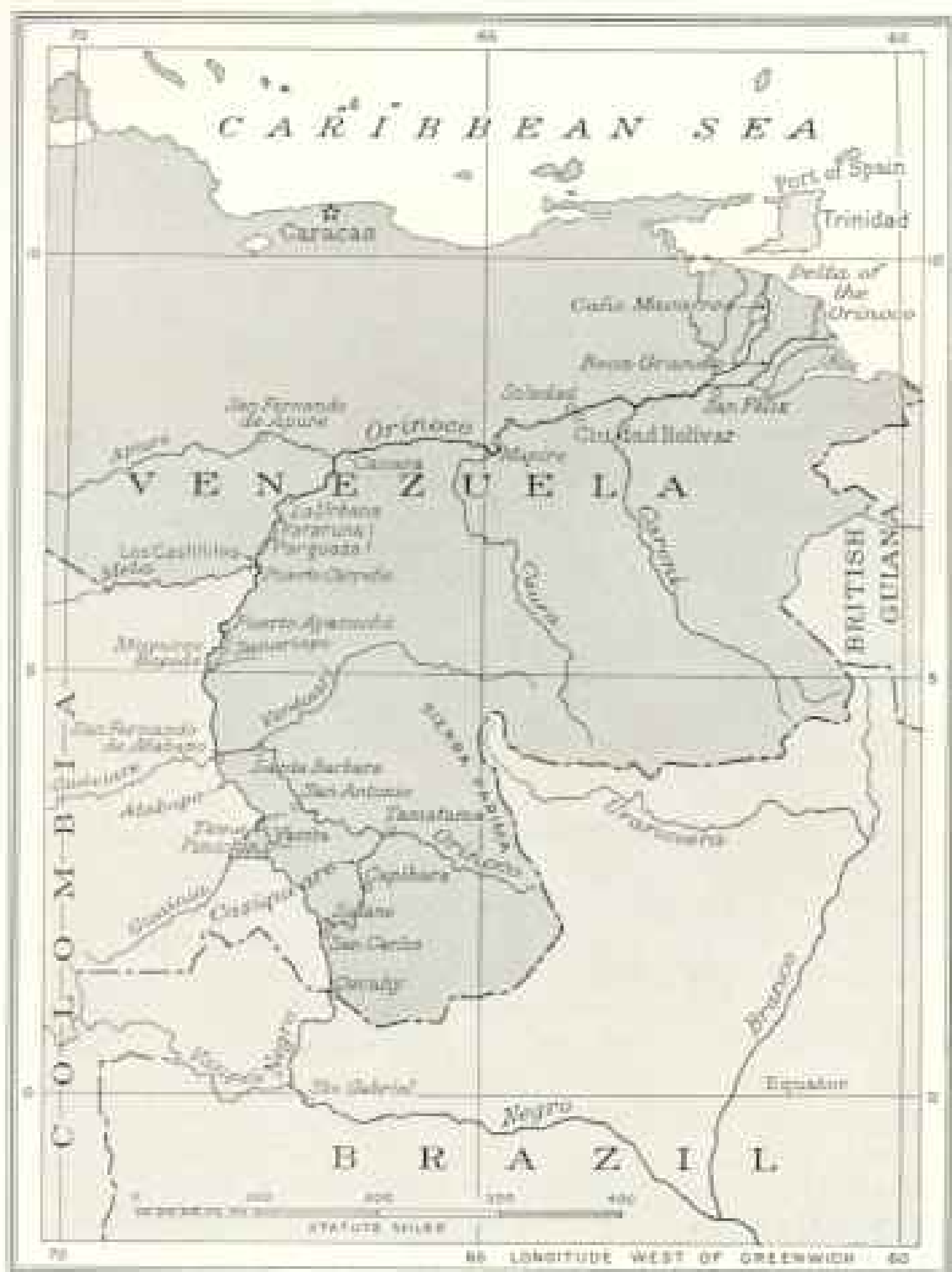
#### GEOGRAPHIC SOCIETY EXPEDITION ACCOMPANIES GOVERNMENT PARTY

Through the generous courtesy of the Venezuelan Government, a National Geographic Society party was included among the voyagers on the little stern-wheeler.

Our purpose was to make natural history investigations in the almost unknown region lying along the Brazilian-Venezuelan line, and in the execution of this mission we traveled as guests of the Comisión Venezolana de Límites for more than a thousand miles over inland waterways followed by the illustrious Humboldt.

Like Humboldt, we, too, began our journey to the Orinoco at Caracas, Venezuelan capital and first city, but we chose a very different means of transport. Humboldt traveled across the *llanos* by horseback. Our impedimenta were too great for this, and as the season rendered the llanos still impassable for motor trucks, there remained for us no alternative to the water route via Trinidad. At Port of Spain we transhipped to a Venezuelan river steamer and disembarked at Ciudad Bolívar.

The Orinoco ranks third among the rivers of South America. Estimates of its length are as diverse as they are numerous, and all are but approximations, for the uppermost reaches have never been charted; but probably the best figures are those of the Venezuelan National Cartographic Office—1,800 kilometers (1,118 miles). The mighty stream sprawls across the map of Venezuela like a giant fishhook, the shank flattened out to form a



Drawn by A. H. Buttstedt

#### ORINOCO BASIN, THIRD IN AREA AMONG SOUTH AMERICAN RIVERS

Members of the National Geographic Society Expedition proceeded from Caracas, capital of Venezuela, to Port of Spain, Trinidad, thence by ocean steamer to Ciudad Bolívar, metropolis of the Orinoco basin. From this base the party journeyed with the Venezuelan Boundary Commission up the Orinoco, through the Casiquiare to the headwaters of the Rio Negro, an affluent of the Amazon.

delta, the point stuck far away somewhere in that shadowy range called the Sierra Parima.

Its tawny flood is discharged into the Atlantic through no less than 36 distinct channels radiating northeastward from the main stream in the form of a fan. Only two are considered practicable for steamers. Caño Macareo, which offers the most direct route from Port of Spain, is employed so long as the depth of the water is sufficient; at other times boats enter via Boca Grande. We ascended the former, entering its mouth under gloomy afternoon

skies that only served to accentuate the natural melancholy of this great waste.

#### "THE LAND OF A SINGLE TREE"

The delta has been graphically described by Beebe as the land of a single tree. He refers, of course, to the red mangrove, that grotesque tree that stands on its toes like a frightened sand crab poised for flight; but while the mangrove is the dominant tidewater tree of tropical seas the world around, it is not by any means the only species in the Orinoco Delta. Graceful palms soon appear above the bush growth, and it is not long before the banks are lined with forest trees of great variety. Along the upper reaches of the Caño Macareo are extensive cacao plantations.

Nevertheless, the delta remains, despite the innumerable channels that dissect it in every direction, perhaps the most hopelessly impenetrable jungle on the globe. In 1927 Paul Redfern, on an intended flight from Brunswick, Georgia, to Rio de Janeiro, dropped his plane somewhere in this wilderness and never a trace has since been found. The delta is inhabited by Guarauno (Warrau) Indians, who build rude palm-thatch huts on piles along the water's edge.

#### EMERGING FROM THE DELTA

The insistent ringing of the dinner bell brought us reluctantly from the rail, where we were watching the parrots flying two by two across a brilliant sunset. But be-



OCEAN STEAMERS ASCEND THE ORINOCO TO CIUDAD BOLÍVAR, 228 MILES FROM THE SEA. Small vessels like this reach the city even at low water, but larger ships can navigate the river only at flood stage. The mean depth here is 335 feet; the extreme rise and fall, 52 feet.

fore the meal was finished the reason for early service was all too apparent—to get dinner over before mosquito time.

On the second day the steamer emerges from the delta into the Orinoco proper—a river of truly majestic proportions and placid surface, though jaundiced of countenance. Wide savannas roll away on either hand, those to the south breaking against the rocky, gold-bearing hills that held Sir Walter Raleigh's last hope of redemption.

Some distance higher up, two ancient forts occupy strategic positions atop rocky eminences on the right bank at a point where the river is squeezed into a narrow channel. These are Los Castillos, and mark the site of the old Spanish village of San

Thomé, which was captured and ultimately destroyed by Sir Walter's forces in 1618, on that inimitable adventurer's last expedition to the Orinoco in search of El Dorado. This fracas with the Spaniards cost Sir Walter his elder son and his own head.

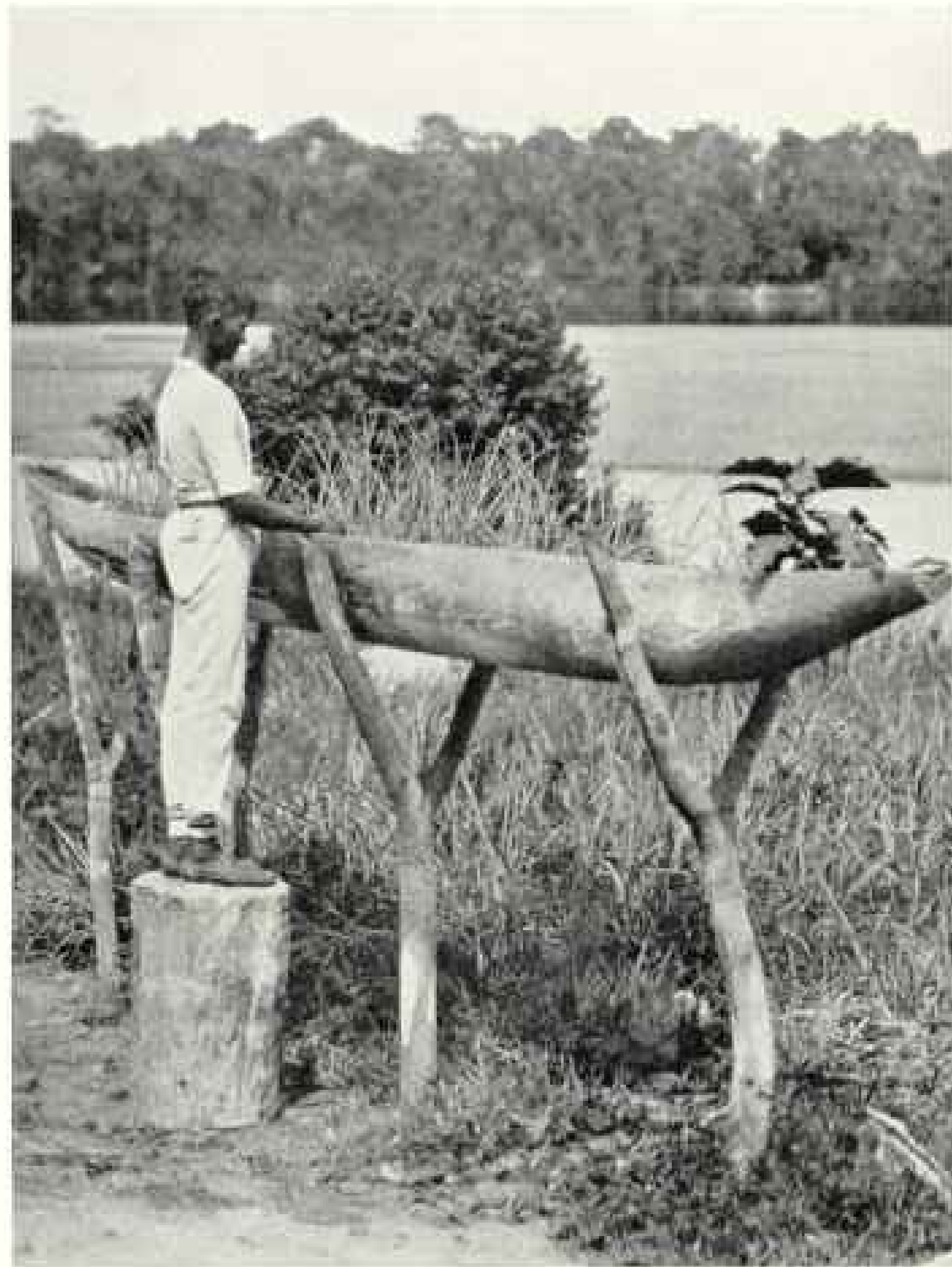
The forts were garrisoned by Spain for another two centuries until abandoned to Bolívar in 1817. Now a handful of Venezuelans keep watch there to prevent their brethren of contrary political views, expatriate in Trinidad, from catching Ciudad Bolívar napping.

Four hours above Los Castillos, the steamer stops at San Félix, a small right-bank town which has long functioned as the port for the famous gold fields of Venezuelan Guayana.



#### BLUE MONDAY

At the Ciudad Bolívar public laundry clothing is boiled in 5-gallon gasoline tins, bleached on the hot rocks under a blazing tropical sun, and then pounded on the stones until it seems no fabric ever made could withstand the strain. Usually, after the third or fourth trip to such a laundry, the khakis came back as white as bed linen. The Orinoco swirls past this point of rock with such terrific force that it has scoured out a channel to a depth of 262 feet below the level of the sea (see, also, text, page 626).



ONIONS FOR THE STEW

Because of the swarms of ants that everywhere plague the gardens; and the pigs and chickens that are privileged members of every community, the natives of the Orinoco grow all tender vegetables in containers set well above the ground. Old dugout canoes are in demand for this purpose.



RAMÓN TAKES A TURN AT THE HELM

Although lashed alongside the launches, the clumsy *piraguas*, in which the Expedition cargo was carried, had to be steered, especially through whirlpools and rapids. These boats were covered aft with a shelter of thatch as a protection against the torrential rains.



AN OVERDRESSED BRAVE

The cloak of inner bark is not a normal part of the male Guahibo's attire (see illustration, page 637). The turtle is a queer reptile covered with ridges and bumps, called *matamato*, and has been brought along for barter (see text, page 639).

Above San Félix, the dark waters of the Caroní, entering from the south, flow side by side in striking contrast with the mud-brown stream of the Orinoco before finally losing their identity.

For the third time we go to bed to the churning of the stern paddles, but awake to face Ciudad Bolívar, surmounting a low rocky hill on the south bank, her white-washed walls still somber when the first rays of sunlight strike the cathedral's checkered tower. We get up at 5:30, but the whole ship is astir before us. At Port of Spain the *Delta* takes her passengers aboard for an 8 o'clock sailing and sends

them to bed supperless; here she discharges them without breakfast. So we demand bread and cheese in our cabins when tipping the stewards.

This little city of 17,000, 228 miles from the sea, was our rendezvous with the Venezuelan Boundary Commission. Capital of the State of Bolívar and gateway to an enormous region as yet served only by river, it is the metropolis of the Orinoco. It was founded by the Spanish in 1764, under the name of San Thomé, and exhibits the massive, boxlike, flat-roofed houses built in solid blocks, the protruding, heavily barred and shuttered windows, and entrancing patios so typical of Spanish America. Its chief claim to fame is that it is the birthplace of the Venezuelan constitution and Angostura bitters.

#### A RIVER CHANNEL 262 FEET BELOW SEA LEVEL

Quite naturally, the town soon came to be known as Angostura (strait), because between its rocky hill and the one from which Soledad faces it, the whole Orinoco is squeezed to a width of only 800 yards. Swirling with tremendous force through this narrow gap, the river has scoured out a channel to a depth of 262 feet *below sea level*. The mean depth of water is 335 feet, but the river has been known to rise 52 feet above low stage and flood the entire business section of the town.

Ciudad Bolívar is a pleasant place in early morning, when the market bustles with activity, and at evening, when the town turns out to take the air on the



## WHY WASHERWOMEN WORRY

Despite the fact that some 200,000 cayman skins have been exported from the Orinoco region during the past year, the hideous reptiles still menace the native women who sit in the edge of the river to pound the buttons off their husbands' shirts. The author's modern rifle, making a hole in this 10-footer as big as a man's fist, exploded the popular idea that an alligator can be killed only by a shot through the eye. The 25-footers reported by Humboldt probably existed only in the imaginations of his native helpers.

breeze-swept Paseo; at noontime it swelters in the glare and heat of a tropic sun, and even the imperturbable burros nod as they mince along the steep, flag-paved streets. Only the blackbirds—yellow of eye and spry of step—remain indifferent, and fish industriously in the waste water in the open midstreet gutters (see illustrations, pages 623 and 624).

Great bustle on the water-front marked the passing of the winter solstice. The bales of cassava and the piles of five-gallon gasoline tins of rice, beans, corn meal, coffee, and crude sugar—all carefully sealed with solder—had dwindled and disappeared from the beach into the hold of a tiny stern-wheeler under charter to the Boundary Commission.

Then the peons had repaired to their favorite cafés to fortify themselves against—they knew not what, only that they needed fortification. So earnest were they about this that at midnight the aid of the police had to be enlisted to round them up and get them on the steamer.

At 2 a. m. there was still unrest aboard; at four the stokers went to work, and at daylight (December 22) the *Amparo* snorted, wiggled, pushed her blunt nose out into the stream, and with a prolonged shriek turned westward. Then, squirming for the thousandth time in a cabin exactly 68½ inches long by 60½ wide, we lost consciousness until the terrific din of a gong advised us that breakfast was ready.

The *Amparo* was our home for the next ten days, though with three launches lashed alongside she resembled more a mother duck with her brood.

Above the Angostura constriction the Orinoco is again a splendid stream, maintaining for several hundred miles an average width, including islands, of three and three-quarter miles. Of course, this does not compare with the Amazon, but because of its numerous *playas* (sand beaches and exposed sand bars in midstream) and the relief of its banks, the Orinoco is the more picturesque of the two. Flocks of waterfowl, and numerous caymans lying like





AN EXPEDITION LAUNCH GOES FOR A JOY-RIDE

In order to have a faster means of transport on the upper river than the time-honored method of poling, it was necessary to haul launches from the lower river 42 miles overland around the great rapids of Atures and Maipures. From the top of the low hill, Cerro Perico, the surrounding country is seen as a vast map (see, also, pages 630 and 631).



RETRIEVING AN AMERICAN EXPLORER'S LOST MOTOR

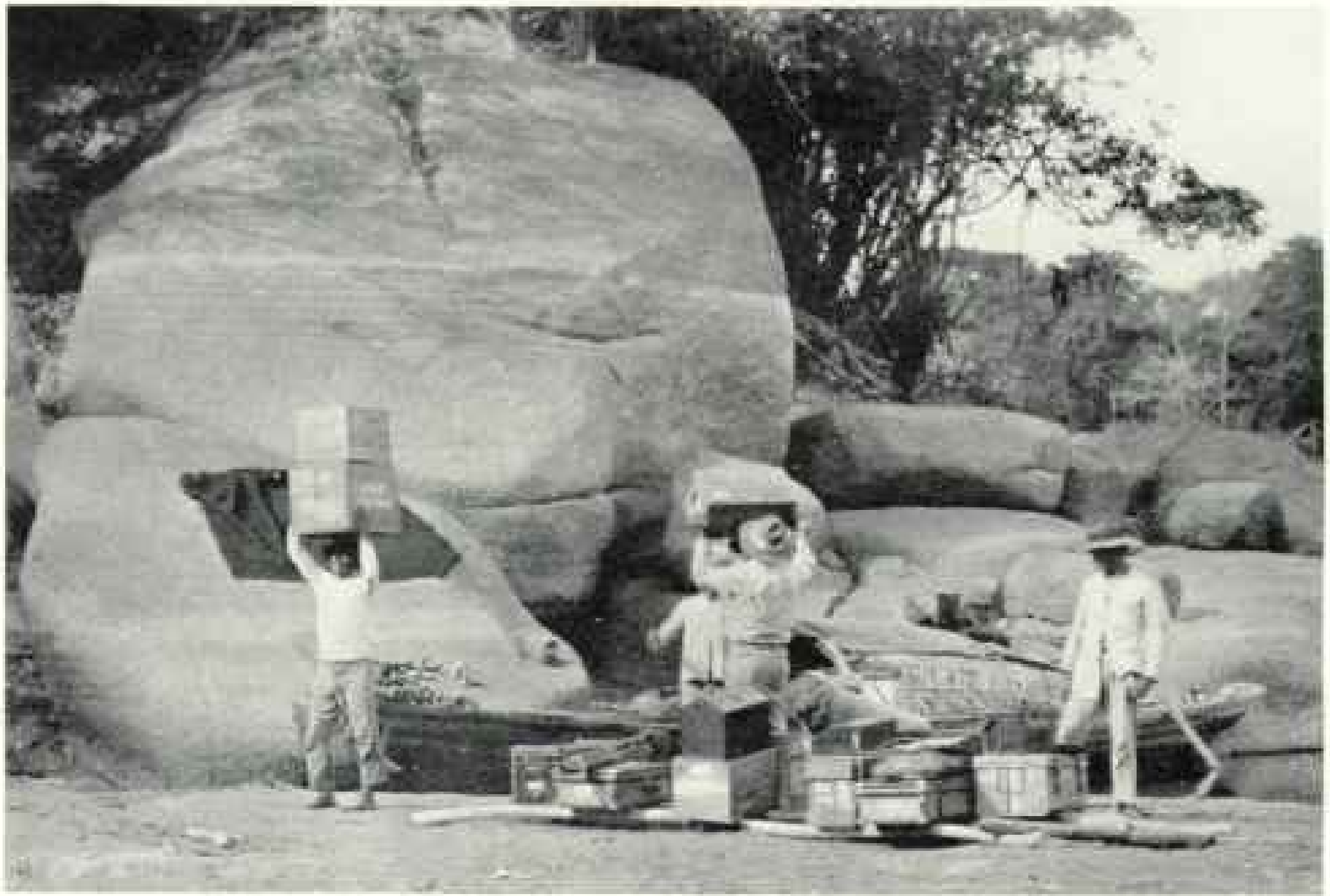
Because of the breaking of one of the Expedition's motors, a halt was called above the Castillitos rocks in the Orinoco to pick up an outboard motor known to have been dropped here six months before by an American.

629



THE EXPEDITION RUNS AGROUND IN THE CASIQUARE

Though freely navigable by canoes, the Casiquiare was often so shallow that the launches had trouble getting through. At such times the smaller craft would proceed as shown.



DISSEMBARKING RARE SPECIMENS FROM A REMOTE FRONTIER AT THE BEGINNING OF THE MAIPURES—ATURÉS PORTAGE

One who has not participated in a wilderness expedition can hardly imagine the constant care and anxiety involved in getting the collections safely home. The actual taking of the specimens is the least of an expedition's work. The white line across the bowlder indicates the level reached by the river in the wet season.

water-soaked logs on the margins of the beaches, add life to every scene.

Small farms line the banks at irregular intervals, though they make but little impression on the general emptiness. Planting is begun when the river starts to fall and is continued to the water's edge, keeping pace with the receding flood in order to utilize the rich alluvium as fast as it is exposed. Now, at low water, the sloping banks were carpeted with green patches of corn and beans in every stage of growth from tender sprouts to maturity. In a few months the flood would come again to cover even the high banks where the houses stood, and drive the occupants to the hills.

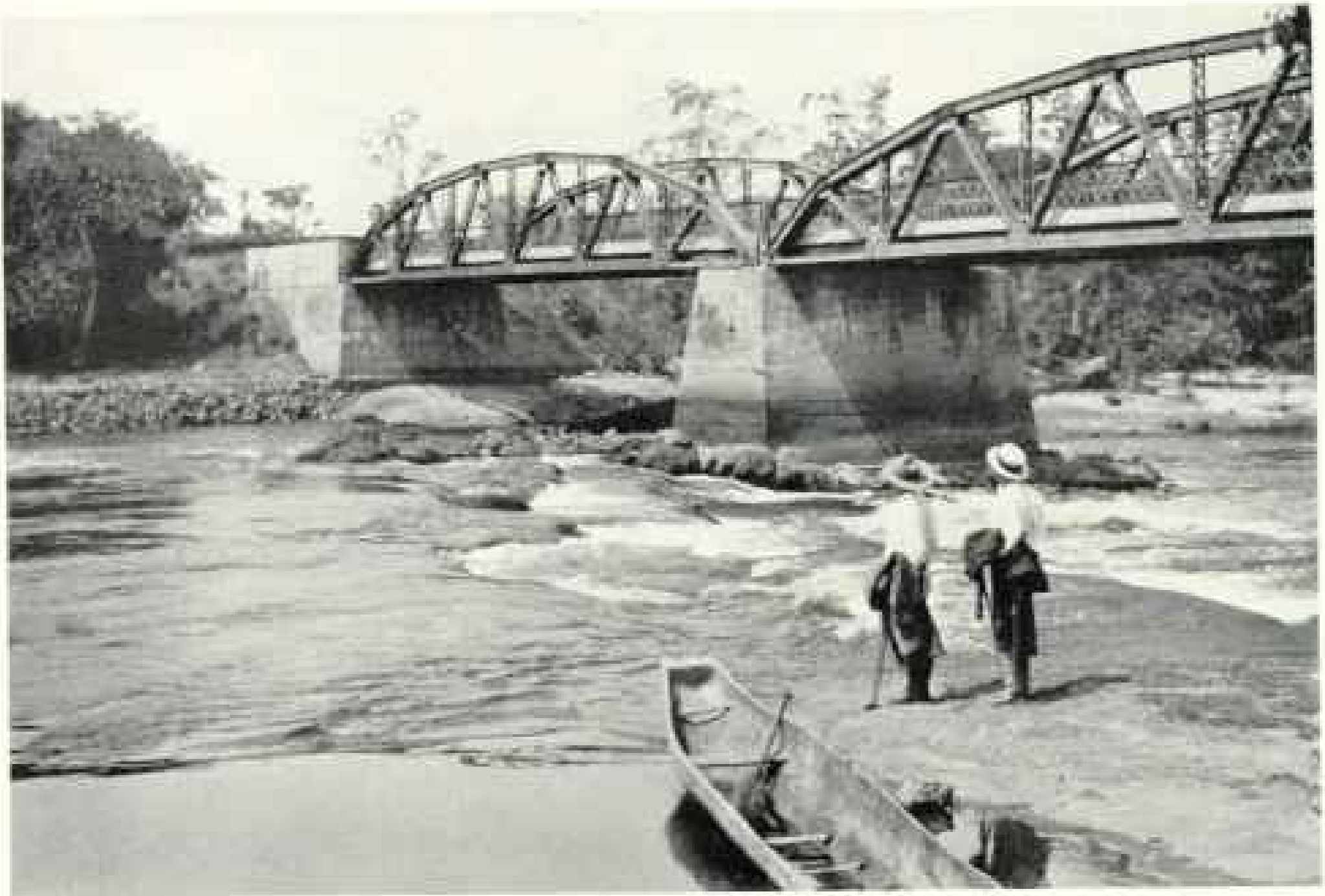
#### A CLOSE CALL IN RAPIDS

Below the little mud town of Mapire, the Orinoco is doubled back sharply by a range of hills, and forced through two rocky channels so narrow that during the rainy season the current at times attains a velocity of 12 miles an hour. This is El Infierno, the most respected rapid of the mid-

dle Orinoco. When we approached it the captain ordered the launches to cast off from the *Amparo* and go it alone.

A large launch, taking the small one in tow, cut in ahead of the steamer a moment too soon, and the small launch, swinging like a pendulum on her hawser, swept directly into the *Amparo's* path, to be instantly caught and pinned under the bow. There was a sickening, splintering crash, and she heeled over and filled with water before the steamer's engines could be stopped. Luckily she was equipped with only an outboard motor, and did not sink. The river men succeeded in getting her into shallow water where she could be righted. Miraculously enough, she was uninjured except for her smashed superstructure.

Christmas morning the steamer hauled up at a wood station to replenish her fuel. The women were all busy making *hallacas*, the traditional Christmas dish of Venezuela. The kitchen was out of doors because the house was only a wall-less hut of thatch, its undivided space crowded



GOOD AMERICAN STEEL SPANS WILDERNESS STREAMS

The portage road, built at enormous expense by the Venezuelan Government to transport traffic around the impassable rapids of Atures and Maipures, is carried over the numerous intervening streams on good bridges of American manufacture. But for them the Expedition could never have transferred its heavy launches to the upper river (see page 628 and text, page 630).

with four ragged hammocks and a few articles of clothing slung over a pole. A neighbor from across the river, reputed to be an hallaca expert, was crushing hulled, boiled corn on a flat stone, manipulating a smaller smooth stone with her hands.

A large river turtle, including toe-nails and head, was already cooked, the meat lying in the same bloody carapace from which it had been extracted. This meat, when chopped and highly seasoned, is enveloped in corn dough to form pies about the size and thickness of the hand, and these, separately wrapped and tied in plantain leaves, are boiled for a couple of hours. Almost any kind of meat seems permissible, though fresh pork is that most generally used. It is customary on Christmas for each family to exchange hallacas with the neighbors.

#### TOUCHING HUMBOLDT'S TRAIL

Just above Caicara, the only Orinocan town of any importance above Ciudad Bolívar, we changed our course from west to south and, passing the principal embouchure of the Apure, took up Hum-

boldt's trail. The Orinoco is here  $2\frac{1}{2}$  miles from bank to bank.

A large sand bar in midriver harbored an enormous nesting colony of terns and skimmers, which, like the turtles, return year after year to nest on the same sand bars as soon as they are exposed by the falling river.

Above La Urbana the hills become higher and some sweep up from the very stream. A thin line of gallery forest still hides the savannas from the river, but no tree relieves the somber slate-gray of weathered granite. Table-lands break in sheer cliffs; isolated bosses, knobs, and smoothly polished domes rise on every hand; monstrous rocks are thrown here and there in utter confusion, and where they are touched by the Orinoco in its rise and fall, are covered by a highly burnished enamel as black as ink. It is a strange, weird, fascinating region.

Here on two islands of fine, buffy sand was beginning the great annual gathering of turtles, one of the most remarkable phenomena of the Orinoco. In season, turtle eggs are to be found in the sand of



THE MATE'S PET WATER-DOG ON A POINT

Otters are quite common on the Orinoco, and especially on the Casiquiare, but they are rarely tamed. The fur is silky and lustrous, but too short to be in great demand.



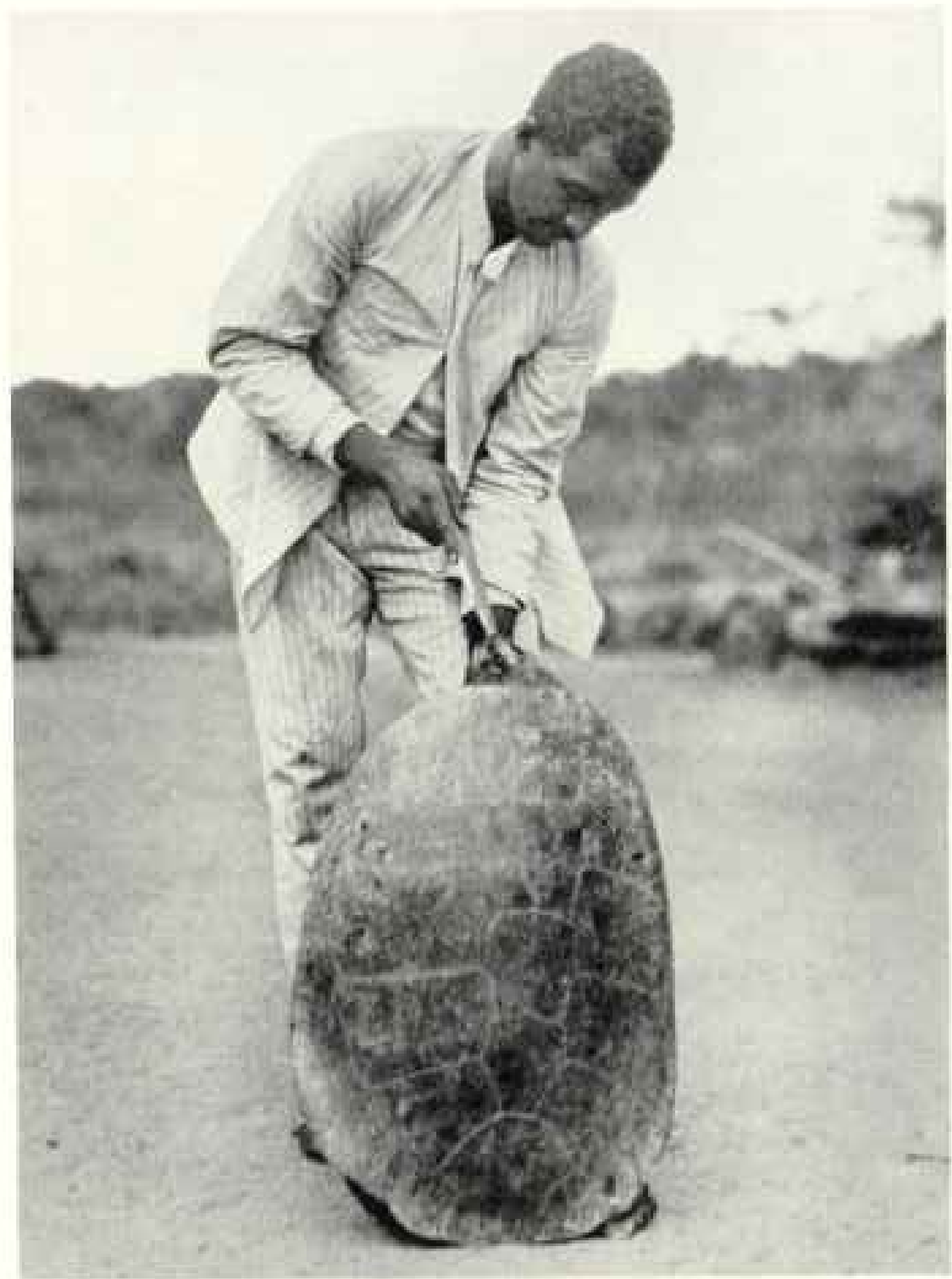
A MAQUIRITARE VERSION OF A CHICKEN HOUSE

The civilized natives of Venezuela let their fowls shift for themselves and roost in any convenient tree, but the Indians seem to feel that domestic animals are entitled to more consideration.



ONE OF THE YOUNGER SET

The young matron carries her babe in approved Guahibo fashion. Even these nomadic people exhibit the Indian's innate love for pets and take birds or monkeys on all their wanderings.



AN IMPORTANT NATURAL RESOURCE

When the Grinoco is at low stage, thousands of turtles assemble on two sand islands above La Urbana to deposit their eggs. In turtle season, the river people eat practically no other meat (see text, page 631).



THE STAFF OF LIFE ASSUMES STRANGE FORMS ON THE ORINOCO

In the civilized parts of the region, cassava cakes, 30 inches across, but less than half an inch thick, are the natives' mainstay. Sometimes, when made with a hole in the center, they resemble exaggerated phonograph records. Wrapped in wild plantain leaves, with an outer casing of *moriche* palm, they keep well; and huge bales of them, like a shipment of automobile tires, made up a goodly part of the Expedition's baggage.

almost every beach, yet in the whole course of the Orinoco and its tributaries only these two sand bars seem especially favored as nesting places.

#### TURTLES BY THE TON

To these sand bars at the beginning of each year the big turtles come literally in thousands, followed by a human horde bent upon their destruction. Formerly there were no restrictions, and those who were able helped themselves, but in the many fights which ensued the natives spilled so much of their own blood along with that of the turtles that the authorities finally intervened.

Now each year the turtle rights are sold as a concession to the highest bidder. In December the concessionaire raises small white flags on tall poles as a warning to steer clear of the islands and not frighten the turtle vanguards. When we passed upbound, these fluttering tatters were the only human evidences in a vast wilderness; upon our return in March the vicinity had become a scene of intense activity.

The camp at Playa Pararuna, where the turtles concentrate in greatest numbers, was on a high sandy bank, the only roof a thatched hut serving as storehouse for provisions. Hammocks, unsheltered, hung from almost every tree. Craft of every description were tied up at the bank, including a large sailboat that had just arrived from Ciudad Bolivar after a voyage of 11 days, and which would return the very next morning with a cargo of 300 turtles.

The season had begun about the end of February, and already some four thousand turtles had been taken. While they are being caught the surface of the sand is not disturbed, but after the laying season is pretty well advanced, the sands are dug over to obtain the eggs. The quantities are amazing. They are thrown into a dug-out, the leathery shells pierced with a sharp stick, and thoroughly stirred with water so that the oil contained rises to the surface. This is ladled off, boiled, and sold as turtle lard. When the eggs contain small turtles, these are recovered, boiled in salt water, and eaten as a delicacy.



CAT FOR SUPPER

The Orinoco abounds in fish, and the voyager who has time to catch them has a supply of fresh food always available. The Expedition traveled so hard, however, that fish was more of a delicacy than a staple. The larger catfish, a *cojaro*, is 39 inches long.

Against such odds it seems impossible that the turtles could keep their species from extinction. Humboldt estimated that a grand total of 330,000 turtles repaired to the three sand bars then occupied. There are no such numbers to-day.

#### THE "AMPARO" FIGHTS RAPIDS WITH DAUNTLESS PERSISTENCE

So far both sides of the Orinoco had been Venezuelan territory; from the Meta southward to San Fernando de Atabapo the western bank belongs to Colombia. On a point of sand in the angle between the Meta and the Orinoco, backed by a low hill of naked black rock, stands Puerto Carreño, the only Colombian village on the whole frontier. It did not exist in Humboldt's day.

A short distance above Puerto Carreño the Raudal San Borja confronts the voyager. It was given scant notice until the *Amparo* essayed the middle passage—and was hurled back. Surprised, she shook off the launches to shift for themselves, and tried strategy. Moving out from the shelter of a sand bank, she steamed across

the channel as if defiance of the river were her last intent; then, when almost to the other side, she wheeled and charged. This time she almost got through, but her strength failed. For several moments she held her own, puffing and quivering, then began to drift slowly backward. In another moment she was caught by the terrific current and sent flying into a whirlpool below, where she careened so wildly on her flat bottom that it was feared she would capsize.

Panting like an exhausted mule, she crept back behind the sand bank to catch her breath. Again and again she pitted her old engines against the violence of the stream, trying first one passage and then another, but always with the same result. Once a whirlpool almost drove her upon an ugly black rock, and she was barely saved by reversing the engines.

Finally, on the sixth trial the rapid relented, and she steamed through to calmer waters above. In Humboldt's time there was a mission here—a strategic place for salvaging souls that had been frightened into repentance.





#### A SUNDAY SUPPLEMENT TO BEANS AND RICE

One of the Expedition's Indian helpers turned up 45 cayman eggs in the delta of the Ventuari. They were promptly boiled for supper, but proved too oily for white palates.

The last day of the year found us at the end of the first leg of our journey, the small settlement of Puerto Ayacucho just below the impassable rapids of Atures. Here our difficulties began with a vengeance, for two of the launches had to be hauled up out of the Orinoco by block and tackle, transported 42 miles overland, and put back into the river above Maipures Rapids (see illustration, page 628).

#### AN AUTOMOBILE ROAD IN THE WILDERNESS

Until recently the two rapids were portaged separately by ox-cart, the distance between them being covered by canoe; now a motor road, constructed by the Federal Government at enormous expense, avoids both rapids with a single span. Beginning atop the high bank at Puerto Ayacucho, it is carried over numerous streams on excellent American steel bridges to end abruptly at a lone mud warehouse on the Rio Sanariapo, two-thirds of a mile above its junction with the Orinoco (p. 631).

The construction of the road brought Puerto Ayacucho into existence, and wrought still another shift in the political geography of the district. Humboldt men-

tions a mission of Atures, founded in 1748, but its exact location is now uncertain. In 1913, a village of six or eight huts, called Atures, stood on the bank of the Cataniapo. In 1928 the Venezuelan Congress, deciding to move the capital of the Territory of Amazonas from San Fernando de Atabapo nearer to lines of communication, designated Atures the seat of government, and so it is—in the statute books and the most recent school geographies. When the new territorial governor arrived he was probably a bit nonplussed to find that there was no such place. Instead of rebuilding the village, which had been burned in a savanna fire, the governor wisely established himself at Puerto Ayacucho, and the road builders' camp has become *de facto* capital.

Our lines had hardly been made fast when we received a deputation from the governor, General Argenis Azuaje. The general himself was confined to his quarters with fever (and it may be remarked that more than one of his garrison succumbed to that insidious scourge—malaria—during our brief stay), but his aide, a fine, clean-cut young colonel, offered every facility at his command and ordered



A DEPUTATION TO SEE THE GOVERNOR

The Guahibos have no canoes of their own, so these nomads from Colombia had to ask the governor of Venezuelan Amazonas to send a boat to fetch them. They wanted salt, and the excitement of a visit to Puerto Ayacucho (see, also, text, page 638).

that we be quartered in the whitewashed huts of the town. For this hospitality we had most obvious reasons to be grateful, for even our exchange of amenities was punctuated by attacking hordes of insects. Though of mud and thatch, like all other houses in the territory, these huts were sharply different; they were fly-screened.

#### UNWELCOME BEDFELLOWS

But screens work in both directions—they hold in as well as keep out. One night I was startled from sound sleep by cries issuing from my wife's hammock. Thinking that a nightmare had gotten in with the tough old parrots which we had stewed up for supper, I caught the hammock to keep her from falling out, but the cries grew louder and the thrashing more violent, and the next instant she bounded from the net to seize a flashlight.

I confess that during these few seconds my hair rose perceptibly, and I reached for a gun with which to blow *boa constrictor*, or what not, hammock and all, to pieces. Then we both roared with laughter. In the bottom of the hammock the flashlight

revealed a huge spider and a monstrous cockroach at death grips.

The spider had pounced on the cockroach in the thatch overhead and in the ensuing struggle they had lost their footing and fallen on my wife below. Forthwith she was for declaring war on all the scores of spiders that shared our hut, but I could see no harm come to anything inclined to prey upon the filthy vermin that damaged our specimens, chewed our books, polluted our food, and even bit at my toes while I slept.

The portage of supplies, equipment, and two of the launches around the rapids consumed 12 days.

A motor road implies modern transport facilities, but only one man operated trucks on this one. He had bought three old trucks from the roadbuilders, and when we arrived two were still running. One of these soon went out of commission, leaving only a decrepit Ford just when the bigger launch had to be moved. This boat was so heavy that her engine had to be taken out before she could be budged from the streamside. After she had been warped



THE SEÑORA GOES SHOPPING AND THE CHIEF'S WIFE TURNS SALESWOMAN

These Guahibo visitors from Colombia have just landed at Puerto Ayacucho—without customs formalities—and Mrs. Holt rushes to buy a new bark dress (see text, below).

up to the road, she was mounted on a pair of ox-cart wheels, and, with her prow in the bed of the truck, hauled slowly overland to Sanariapo.

Here the road ends several hundred yards from the stream, and to get the launch into the water she had to be shoved along by sheer man power across an extensive outcrop of bare rock. When she was at last afloat her engine had to be re-assembled. This was really the worst job of all, for nowhere is there such a plague of insects as at Sanariapo, and despite the intense heat the white men were obliged to work in head nets.

But we suffered from the heat only because we worked in the full glare of the sun. We made careful observations with standard U. S. Government thermometers, and the highest temperature we encountered along the Orinoco was 97.5° at Puerto Ayacucho. In the heavy forest the mercury rarely rose above 90°.

While the engineers were laboring with the portage we found opportunity to examine the natural history of the surrounding country. The vicinity of the great rapids is exceptionally varied. Stretches

of open savanna are broken by abrupt hills, some almost devoid of vegetation, others heavily forested; lines of forest follow the streams; great barren outcrops of granite lie in nearly horizontal masses raised but little above the ground surface; expansive sand beaches margin the river—each habitat with a distinctive fauna.

INDIAN VISITORS

One day about thirty Guahibos appeared on the shelving rocks opposite Puerto Ayacucho and made signals for someone to bring a boat (they possess no canoes) to fetch them. As eagerly as schoolboys on a picnic, men, women, and children tumbled into the canoe sent by the governor.

The women wear a single garment of inner bark from neck to knee; the men, a bark loin cloth; the children, nothing.

Scarcely had their widespread toes touched the sand before some big deals were under way. My wife was determined to have a couple of the newest of the bark frocks, and sacrificed two dresses from her own limited wardrobe to get them, the Guahibo ladies declining to be turned adrift in their birthday clothes.



## BUSINESS IS BRISK

The author swaps an old pair of breeches for a loin cloth at Puerto Ayacucho, and though the fit is not perfect, everybody seems satisfied.

My Swiss assistant was equally keen to get a queer, flat-headed turtle covered with ridges and bumps like a plowed field. After this, trade lagged, for the Indians had brought nothing to barter except parrots and parrakeets. There was not a bow or an arrow among them, and it was plain that they had purposely left them on the other side so that they would not be tempted to dispose of them. The chief, after drinking a glass of the governor's rum, did become willing to swap a little orphan girl for a suit of clothes, some tobacco, and salt, but we were not anthropologists.

## A POLYGLOT CREW

When at length we swept out of the Sanariapo to resume our southward voyage up the Orinoco our 40 noses might well have constituted a guerrilla band. Better still, a foreign legion; for, besides the Venezuelans, we numbered among us Americans, British, French, Spanish, and Swiss subjects, and representatives of at least three tribes of Indians.

But no babel was ever half so cheerful. No matter what contingency arose it was met as a joke. Neither back-breaking work in the rapids nor exposure to "cannibal" fish and sting rays when we ran aground in the shallows could dampen the spirits of these river men.

We traveled daily from about 6 a. m.—the earliest the pilots could plainly see the dangerous rocks in the stream—until around 5 p. m., when camp was pitched for the night on the clean sands of some beach. We ate breakfast and lunch on board; here, too, we washed our clothes, and hung them out to dry in the breeze of our own making.

## WHERE A FIEND REIGNED

San Fernando de Atabapo is the saddest place in all Venezuelan Amazonas. In Humboldt's time it was the chief of the Jesuit missions, and numbered more than 200 people; with the rise of rubber the wilderness village became a flourishing town. To-day only a remnant of the place



WHAT A MAN-EATER HE MIGHT BE IF HE CHOSE!

The *pallara*, living in the same waters with the bloodthirsty *caribe*, belies his looks and is quite inoffensive—at least to man.

remains—perhaps 40 occupied houses—a monument to a monster. In 1913 a river trader named Funes gathered around him the worst scoundrels in the territory. He murdered the governor, set himself up as absolute monarch of the whole region, and instituted a reign of terror that for sheer ferocity and fiendishness is incredible.

For eight years he murdered for greed, for lust, or for suspicion, until the male population was decimated. Because he controlled all exits to this remote district, his victims, like trapped rats, had no escape; and the tremendous difficulties of communication prior to the construction of the roadway around the rapids gave him immunity from federal authorities.

But retribution, long delayed, came like a lightning flash from a clear sky. The rebel leader, Cedeño—also an outlaw, but the very antithesis of Funes—was operating in the llanos to the north. Hearing that Funes possessed a large store of arms and ammunition that he himself sorely needed, he executed a maneuver as characteristic as it was daring. With his mere handful of followers, he moved up the Orinoco, struck San Fernando before the

surprised cutthroats knew what was happening, and took possession of the town.

Bearing no malice toward anyone, Cedeño merely threw Funes into jail until he could be persuaded to disclose the whereabouts of his hoard. Funes temporized—most unwisely. His delay gave the stricken townspeople the opportunity to pour into Cedeño's ears a tale of inconceivable horrors. Funes faced a firing squad. The crumbling walls and falling roofs of the homes he emptied are his fitting memorial.

Three days after leaving San Fernando—three days in which we had seen not a single occupied dwelling, nor met a canoe—we came to Santa Barbara. Although shown on some maps, this place comprises only three houses, the largest in a pitiable state of dilapidation. Behind the settlement, savannas stretch away to the southern horizon, in front of it the Ventuari (universally called Ventuario by the river men) discharges into the master river through a maze of innumerable islands and dykes of rock that form a series of the worst rapids in the upper Orinoco. Even our powerful motors were no



TO AVOID ATTACKS OF "THE PLAGUE"

Mrs. Holt finds it necessary to don headnet, canvas gloves, and heavy woolen stockings to escape the terrible scourge of blood-sucking gnats at Samariapo. The natives aptly term these insects "the plague." Mrs. Holt sits on a block of balata gum, an important article of export used chiefly in the belting industry.

match for this current while they towed the heavy cargo boats, so these were cut loose to proceed by the time-honored method of the *espia*.

The *espia* is the tow-rope of the Orinoco, a loose cable of palm fibers that always floats. It is made fast to a rock or tree, and then all hands aboard haul on it, forcing the boat up through the rapids by brute strength. It is back-breaking work.

#### INTO THE BALATA COUNTRY

Two days more brought us to San Antonio, two dozen mud-and-thatch houses on the left bank. Neither the village nor the bold mountain of Yapacana, in plain sight down the river to the north, are shown on the latest map. San Antonio is the establishment of a balata trader, Carlos Wendehake, and is the first and largest of three settlements of importance on the upper Orinoco and Casiquiare. The others are Tamatama and Capibara. At these stations, the Indians, who do all the work, live during the dry months; in the wet season they ascend the smaller tributaries to collect balata latex.

One morning the entire surface of the river was covered with light flecks. This is often the case below rapids when the obstructing rocks spray the stream with spume, but we rounded bend after bend and no rapids appeared. Then we became aware that these flecks were not froth, but that the water was strewn with the lifeless bodies of countless May flies.

Farther on a long wisp of mist seemed to be drifting downstream to meet us. This, too, turned out to be illusory. We were soon surrounded by myriads upon myriads of the ephemerids on their brief nuptial flight. The natives say that when the May flies go downstream the river will fall; when they fly against the current, the waters will rise.

#### LOFTY CERRO DUIDA

On January 23 the almost fabulous Cerro Duida, blued by distance, reared its sheer sides and flat top directly across our course to the northeast. Humboldt declared that no person had ever reached its summit. Leo E. Miller tackled it in 1913, but had to give up because he was aban-

done by his Indians, who considered the mountain the abode of spirits. It seems probable, therefore, that when G. H. H. Tate and C. B. Hitchcock scrambled over the last precipice, in 1928, the towering mesa felt for the first time the tread of human foot. They determined the highest point as 7,860 feet above the sea and brought back many species of birds and plants hitherto unknown to science.

Later in the morning we met a dugout containing one man, two women, three dogs (no backwoodsman ever travels without his dog), and a pig. They were the first travelers we had seen since leaving Sanariapo.

In mid-afternoon we drew abreast of the Bifurcación, the intake of the Casiquiare.

#### THE QUERREST RIVER IN THE WORLD

The Casiquiare is a stream without a counterpart. The investigation of this unique river, "whose existence had been alternately proved and denied for half a century," was the principal object of Humboldt's journey. But even Humboldt's classical publications have not sufficed to dispel the mystery surrounding the Casiquiare. A reputable American scientist, writing in 1879, refers to it as "a mixture of white and black water, which flows one way or the other according to the season."

The current of the Casiquiare is not reversible. The stream is simply an arm of the Orinoco, which, instead of passing around some island and then rejoining the mother stream as do the countless other arms and channels, gets lost on a wide, low plain and wanders over into the territory of the Amazon. There it joins with the Guainia, rising far to westward in Colombia, to form the Rio Negro, the largest affluent of the Amazon from the north. Thus approximately a third of the original volume of the Orinoco finds its way to the sea through that master of all rivers.

The land surface is of slight relief, and in time of flood some of the overflow from the Orinoco, breaking through the almost imperceptible barrier between the Orinoco and the waters to the south, cut a tortuous channel that in time became permanent.

Because of this condition one may pass westward by canoe up one of the Casiquiare tributaries, through a swamp, and down another small stream to the Guainia; or by way of another tributary, the Paci-

moni, to a stream entering the Rio Negro below São Gabriel. It was in the low country to eastward of the Casiquiare that early geographers located the mythical Parima Lake, on the shores of which the fabulous city of Manoa—where dwelt El Dorado, the Golden Inca—was supposed to stand.

At the beginning the Casiquiare is, of course, a white-water stream like the Orinoco, with the same high, forest-clad banks of clay. Imperceptibly the banks lose height, and change in character; the vegetation takes on more Amazonian affinities.

Nine miles below the mouth of the Casiquiare the thatched village of San Carlos stands on the Rio Negro's left bank and faces Colombia.

Humboldt turned back at San Carlos, but our destination was the Brazilian military outpost of Cucuhy, seven hours farther down the Rio Negro on its left bank. Here we arrived on January 30—forty days after leaving Ciudad Bolívar. While the Venezuelan engineers under Dr. Francisco J. Duarte, and the Brazilian engineers under Commandante Braz Dias de Aguiar together surveyed the international boundary and erected concrete monuments along the line toward the east, we scoured the surrounding country for birds and other creatures of the wilds. Strange birds they were, too, many of them; others surpassingly beautiful.

#### HOATZINS—HANG-OVERS FROM THE PAST

In the steaming swamps, where the engineers struggled against almost every obstacle Nature could impose, hoatzins—hang-overs from a bygone age—find an environment sufficiently primeval for their needs. Like crested fowl, brown streaked, with long tails, they sit idly in the bush growth overhanging the water, oblivious of the passage of time.

Speeding centuries have wrought little change in this lizard-bird comparable to the evolution of some of the more plastic birds of the forest. The young hoatzin's wing is still equipped with the claws of its reptilian ancestors, and it is hatched with an instinctive ability to swim and even dive. Before ever a feather appears to hide its hideous nakedness, it can clamber over the branches of the nest tree almost as well as the iguanas. And should it tumble into the inky water below—and be



SPRUCE'S RIVEN ROCK

At Capibara stands an enormous granite boulder that has been split asunder as by a Brobdignagian machete. It so piqued the interest of the botanist Richard Spruce, two generations ago, that he carefully preserved a drawing of it, so well executed that a photograph is hardly an improvement.

lucky enough to escape the jaws of the hungry caymans, its erstwhile brethren of the slime—it has but to swim to the trunk of its home bush and climb back to its nest.

As it grows to maturity the hoatzin loses its reptilian claws, but a sinister, snake-like hiss remains its only greeting to the intruder upon its haunts. And lest its pheasant-like appearance tempt some hungry collector to consign one to the pot, it emits a buzzard-like essence that has caused it to be dubbed "Stinking Hanna." In all the bird world there is no other like it.

At a break in the marginal bushes we step from the canoe to explore the interior of this seemingly impenetrable tangle. Something skulks through a heavy mat of vines overhead, running along a horizontal branch. A mammal, no doubt. There is but a glimpse, but a quick shot brings it down. A night heron! But whoever saw a night heron with such a bill? Three inches long, but nearly two inches wide, and arched like an inverted boat! It is the South American boathill, a relative of

the herons, but so distant that ornithologists have erected for it a family of its own.

#### AN AVIAN ANVIL CHORISTER

Wearying of parboiling in the breathless swamps, we turn to the grateful coolness of the forest and follow dim trails of vanished rubber gatherers. The forest is still, silent. Then, in the distance, rings out clearly the stroke of a hammer on an anvil. For a moment we sense nothing unusual; then we remember that the only human beings for many leagues around are several miles behind us. Pursuing the sound of this mysterious blacksmith shop deeper and deeper into the forest, we discover at last that the infrequent strokes fall from the top of one of the very tallest of the giant trees. We search it with binoculars—and almost refuse to believe our own eyes. That clear ringing note, as of metal on metal, is the "song" of a snow-white bird only a little larger than a robin! Queerer still, from the base of its upper bill hangs a 3-inch caruncle, which now and then it flips up as a stiff black horn





BRAZIL AND VENEZUELA UNDERTAKE A DIFFICULT TASK

Engineers of the two countries struggle to locate the international boundary in trackless jungle. Every foot of line had to be hewn with ax and machete, the men often standing waist-deep in muck and water. And no breath of air stirs to relieve the sun's intensity. Observations with the theodolite could not be made without an umbrella. A scene near Cucuy on the Rio Negro.

ornamented with tiny white stars of minute feathers. It is the bell bird.

Farther on, a lump in another tree-top is resolved by the binoculars into a bird the very antithesis of the last. It is wholly a lustrous black, about as big as a crow, and is aptly called the umbrella bird. From the top of its head springs a crest that falls over its eyes and bill like a parasol. Quite a convenience up there in the tropical sun! From the lower throat a bib or apron hangs down over the breast.

But over-dressing is not always the rule. One bird—a close relative of the last two—is as bald as if its head had been plucked. Because of its monkish appearance it is called capuchin bird.

Birds, birds, no end of them! Tiny manakins, whose heads shine as brilliant spots of color in the shadows; jacamars, like giant humming birds, burnished bronze

and green; diminutive kingfishers, that, like the darling daughter who hung her clothes on a hickory limb, don't go nigh the water, but catch insects in the forest; puff birds, with the ends of their bills notched to fit one within the other like a surgeon's artery forceps; miner birds, said to lead prospectors to the precious lode; parrots, with tails a yard long; bush turkeys—

But I am not writing a book, and volumes would be required to tell the histories of them all. Suffice it to say, that many that we collected were the first of their kind ever to reach Washington. They now repose in the cabinets of the United States National Museum, carefully preserved against the ravages of time and insects, but available for study by the ornithologists not only of this, but of many generations to come.



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TO carry out the purposes for which it was founded forty-three years ago the National Geographic Society publishes this Magazine monthly. All receipts are invested in the Magazine itself or expended directly to promote geographic knowledge.

**ARTICLES** and photographs are desired. For material which the Magazine can use, generous remuneration is made. Contributions should be accompanied by addressed return envelope and postage.

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

**AT** an expense of over \$50,000 The Society sent a notable series of expeditions into Peru to investigate the traces of the Inca race. Their discoveries form a large share of our knowledge of a civilization waning when Pizarro first set foot in Peru.

THE Society also had the honor of subscribing a substantial sum to the expedition of Admiral Peary, who discovered the North Pole, and contributed \$55,000 to Admiral Byrd's Antarctic Expedition.

**NOT** long ago The Society granted \$25,000, and in addition \$75,000 was given by individual members to the Government when the congressional appropriation for the purpose was insufficient, and the finest of the giant sequoia trees of California were thereby saved for the American people.

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

**TO** further the study of solar radiation in relation to long range weather forecastings, The Society has appropriated \$65,000 to enable the Smithsonian Institution to establish a station for six years on Mt. Brukkaros, in South West Africa.

# The FIFTY DOLLARS you will never regret having spent

**M**EN and women who cannot think beyond the dull arithmetic of life fail to get their share of happiness.

But most of us, happily, know that fifty dollars is more than just forty-nine dollars and one hundred cents.

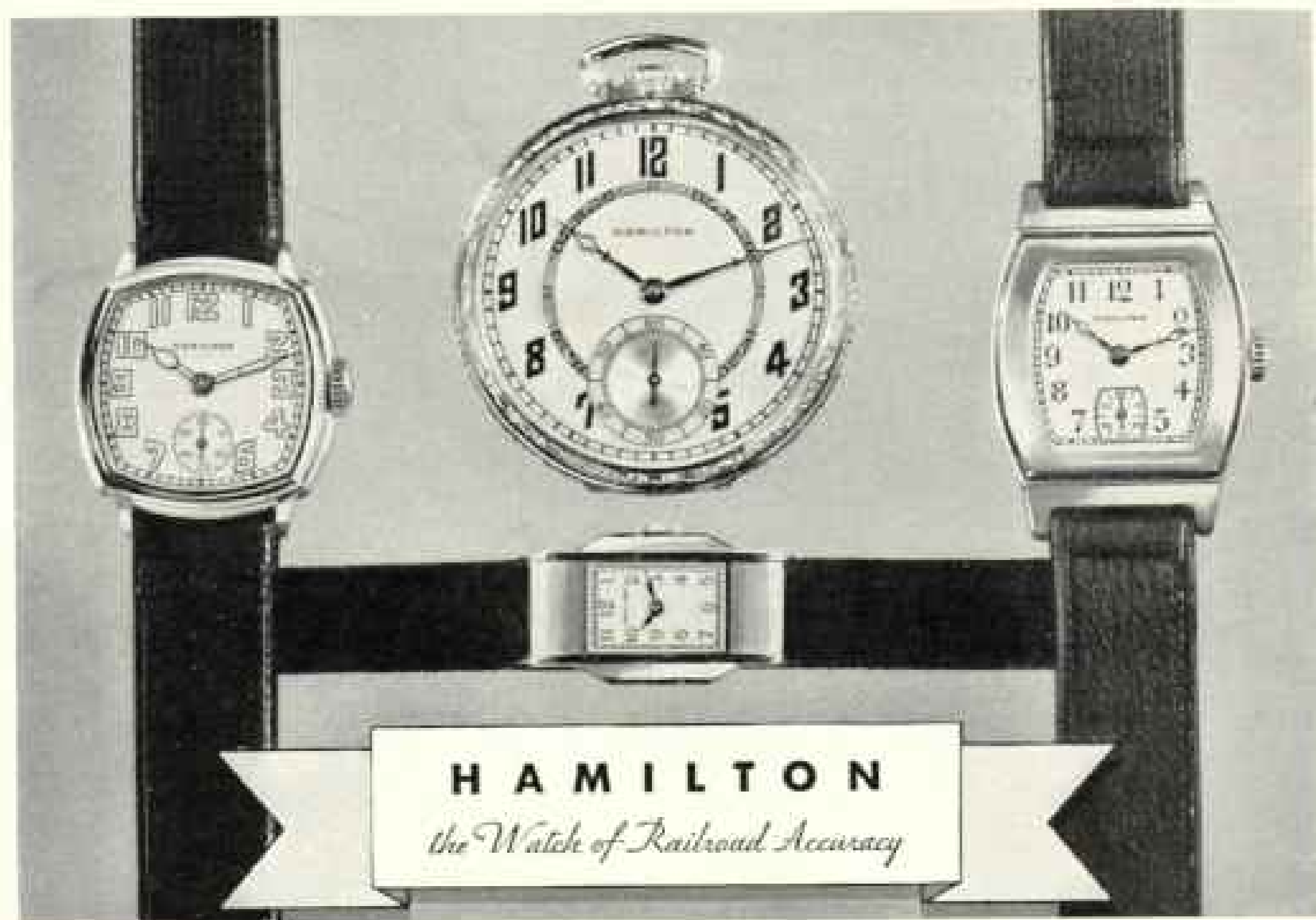
We know that by investing that much in a fine watch like Hamilton, and then giving it to someone for Christmas, we buy something even more precious than just a lifetime of accurate time-telling. Intimate associations, loving memories will follow that watch through the years.

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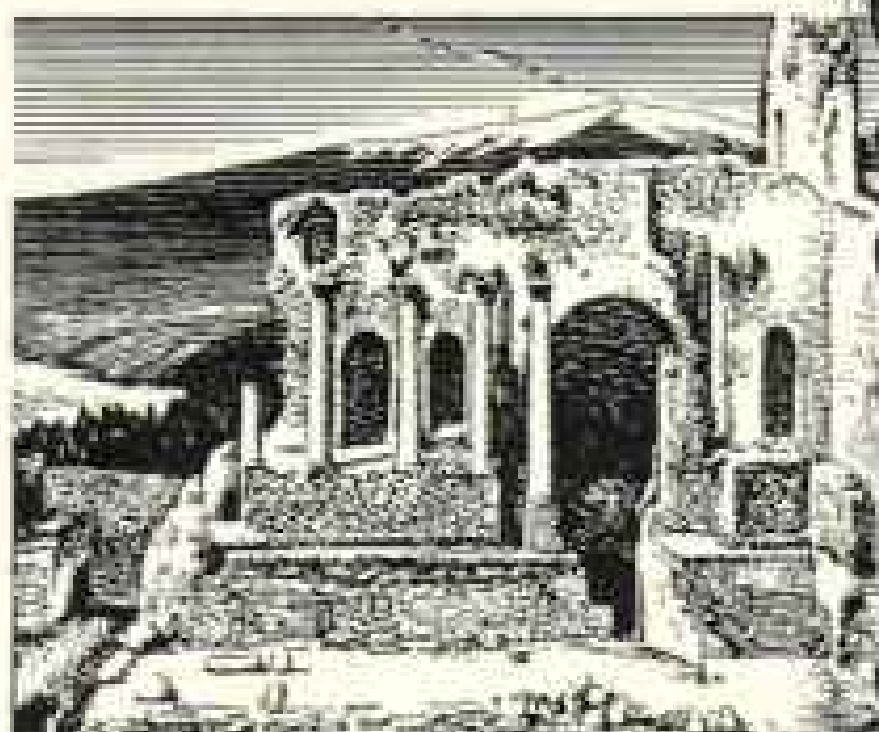


Above, left to right: Cushion. 17 jewels, 14k filled gold, green or white. Plain, \$50; engraved, \$55. Cleveland. 17 jewels, 14k filled gold, green or white, \$100. Raleigh. 17 jewels, 14k filled gold, natural yellow, green or white, with studded dial, plain, \$50; engraved, green or white filled gold, \$55. Below, center: Bancroft. 17 jewels, 14k filled



gold, white or natural yellow, \$50. Other Hamiltons for men and women from \$25 to \$800. Let us send you a copy of "When We Speak of a Watch . . ." Christopher Morley's beautiful story about the making of a Hamilton Watch. Address Hamilton Watch Company, 312 Columbia Avenue, Lancaster, Pennsylvania.

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Let us help you plan an Italian trip with a sojourn in Sicily. This office is operated on a non-commercial basis by the Royal Italian Government, with the sole purpose of aiding visitors, in cooperation with their tourist agents. Feel free to call upon it for detailed advice and recommendations, including hotels, itineraries, routes, localities, etc. Of course the service is gratis. Begin by writing for a large, interesting book on Italy.

**ITALIAN TOURIST INFORMATION OFFICE**  
Scalbo Building, 745 Fifth Avenue, New York City

# Coast down the white crest of Waikiki's surf this winter

A joyous, warm substitute for January's snow



Waikiki! A soft breeze sways the coco palms above you, and shakes a crimson carpet from the royal flame tree . . . Idly you watch a slim outrigger speed in on a foaming roller. The native beach boys clowning in the water. A great ship noses out to sea . . . to the South Seas? What does it matter? A *don't care* laziness steals over you.

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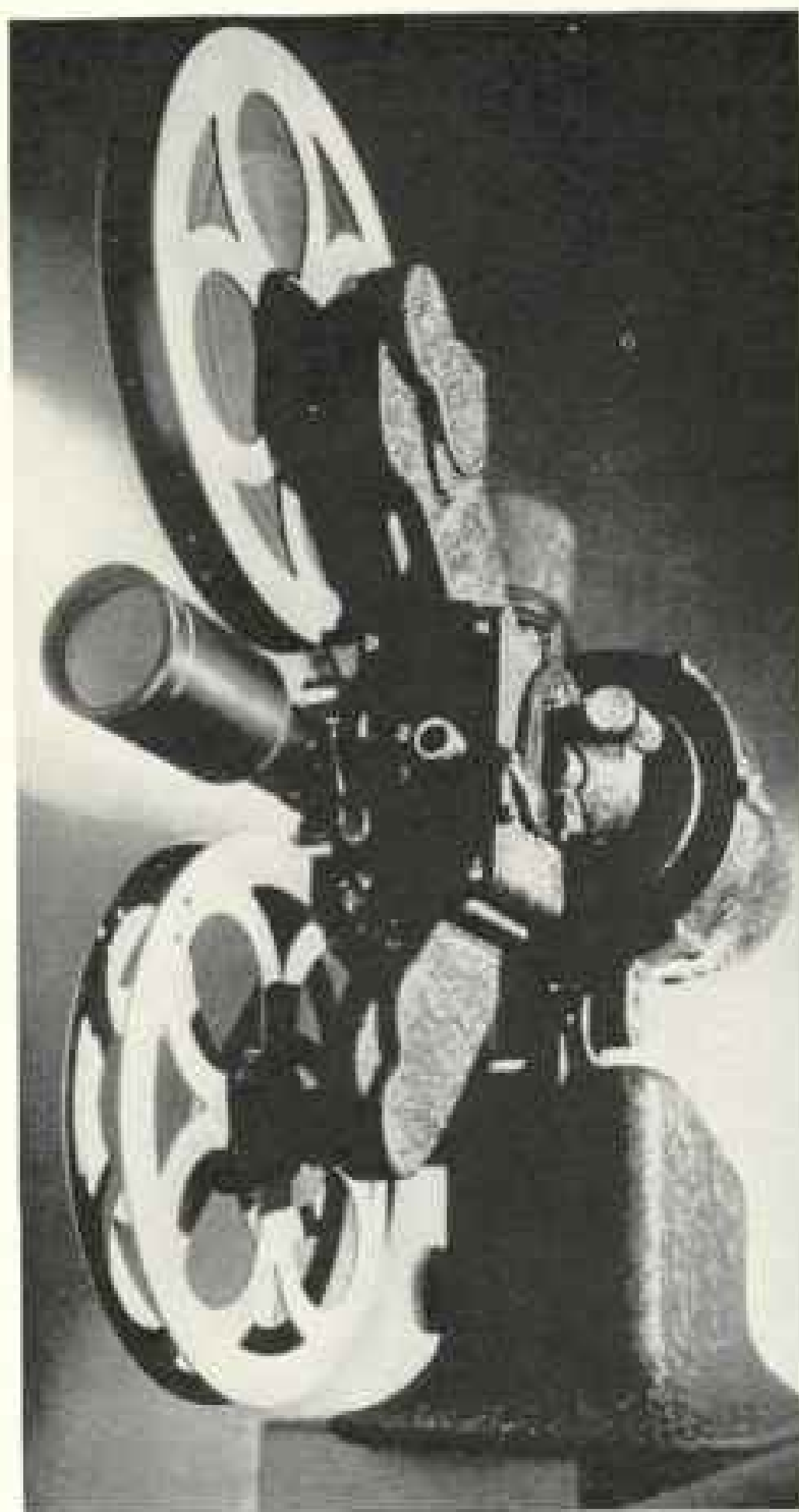
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*Filmo Cameras and Projectors use Eastman Safety Film (16 mm.) in the yellow box, obtainable everywhere. Filmo Cameras and Projectors may be equipped (under license) for use of Kodacolor film for home movies in full color.*



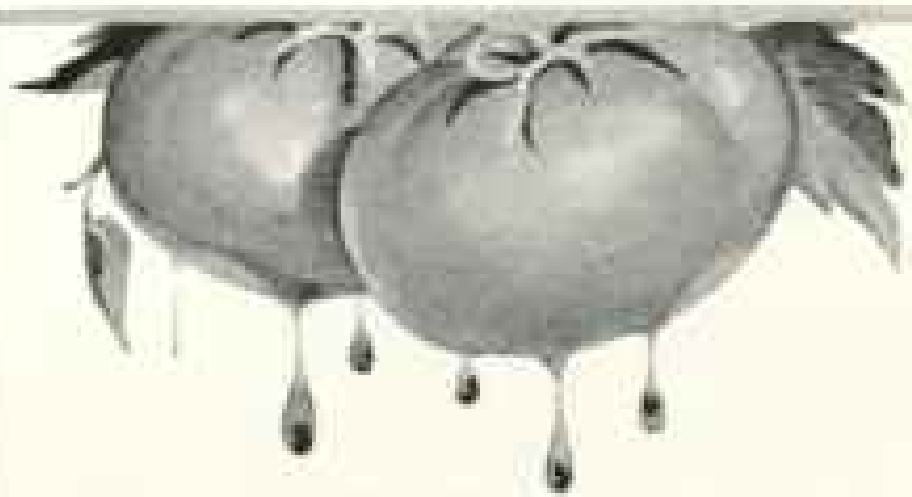
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last year*



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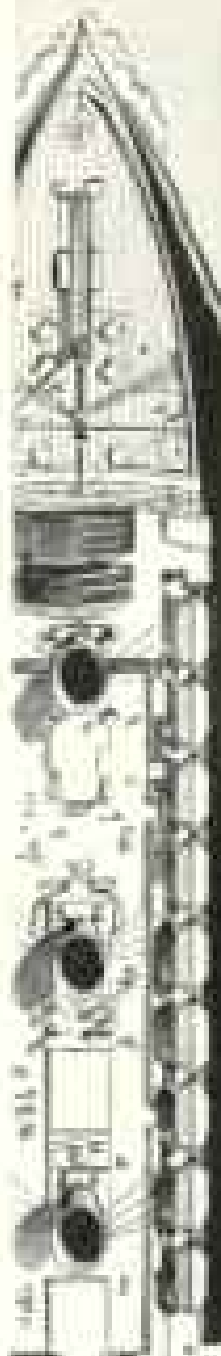
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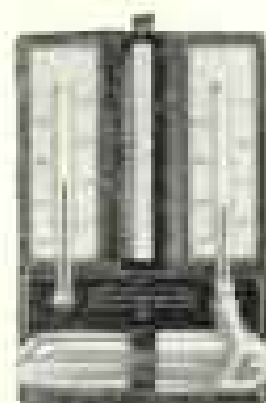
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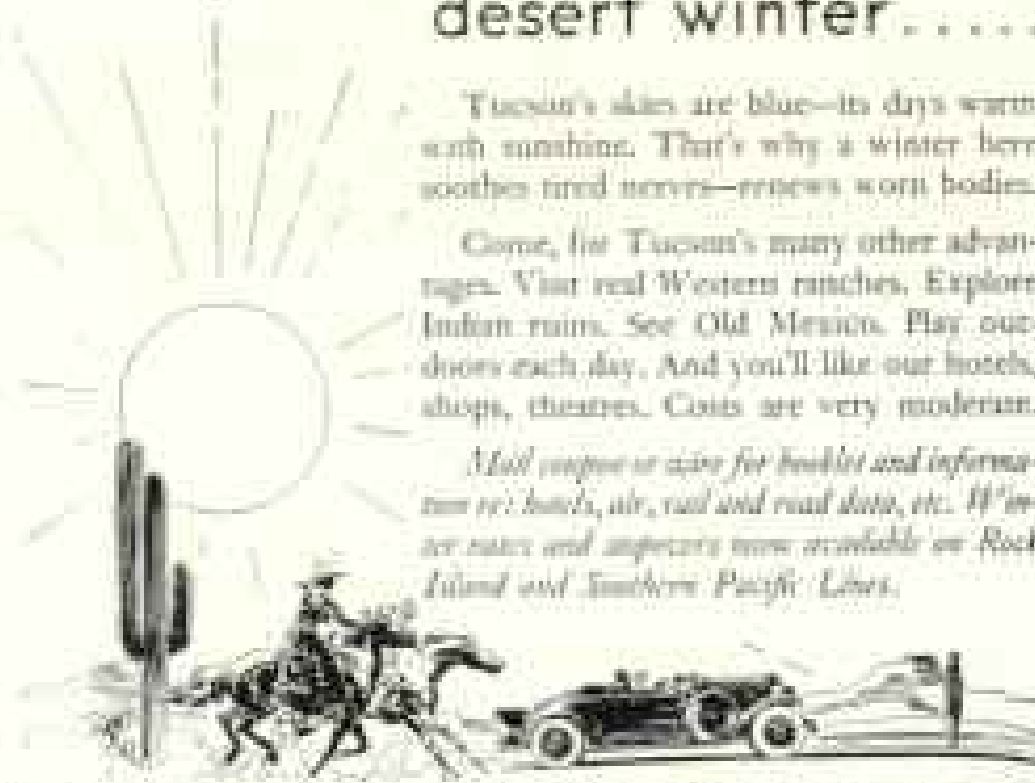
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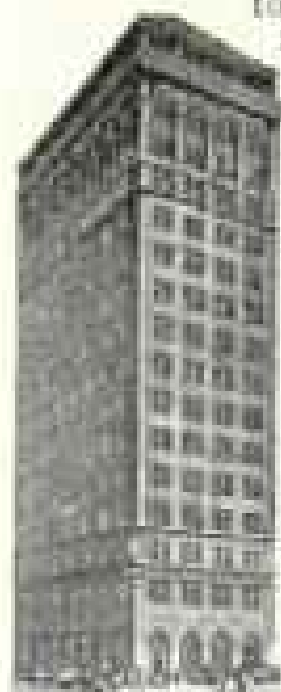
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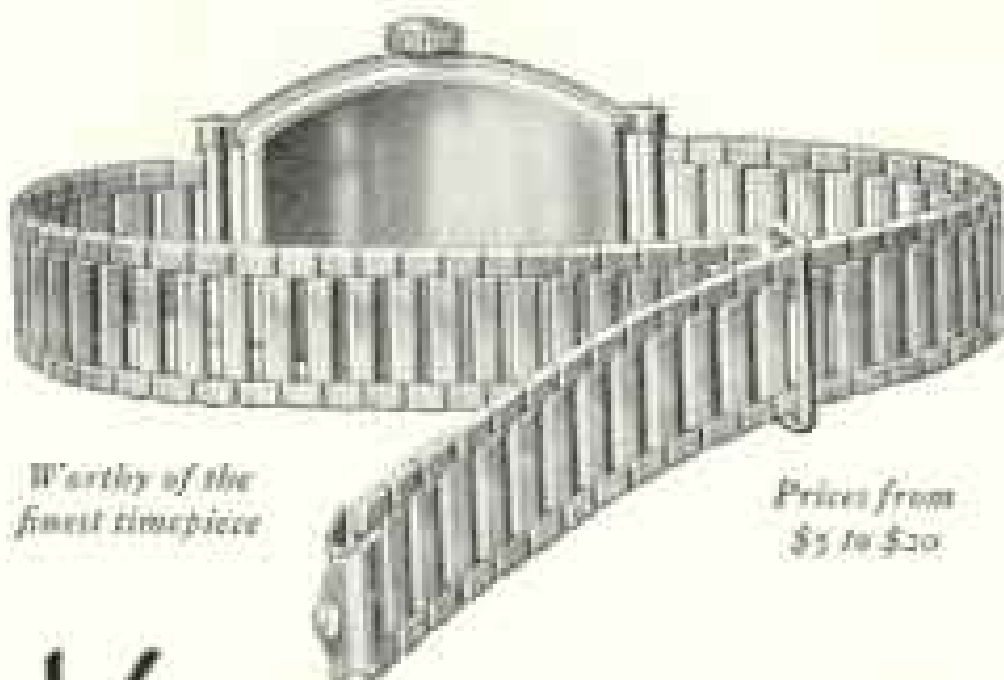
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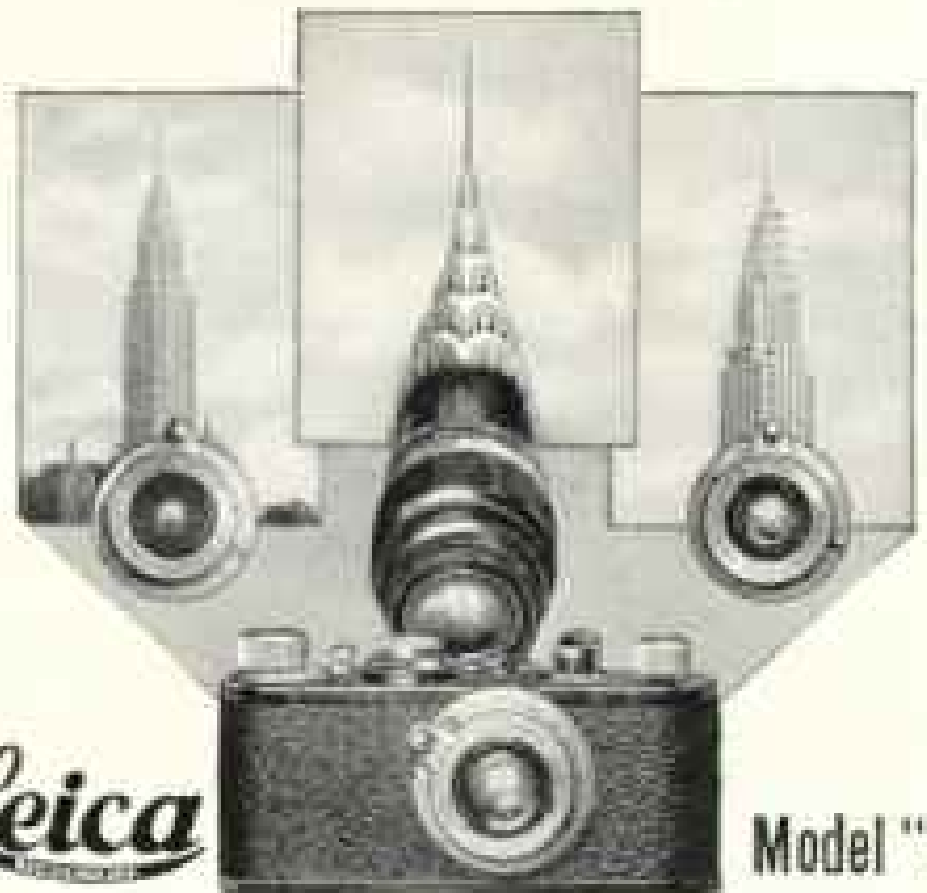
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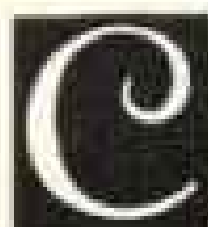
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# The Conquest of Diphtheria



The mother of other days, even with unbounded devotion, was unable to guard against diphtheria. Happy is the mother of today who knows that her child will never have diphtheria after she has had him properly inoculated against it.



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**F**ORTY years ago in this country the annual deathrate from diphtheria was 115 out of every 100,000 persons. Last year fewer than six in every 100,000 died from this disease.

But while one may rejoice in the fact that the dreaded scourge of earlier days is now only one-twentieth as destructive as in years gone by, yet last year in this country there were nearly 7,000 deaths from diphtheria, practically all of which could have been prevented by timely inoculation of toxin-antitoxin or toxoid.

The complete conquest of diphtheria has been blocked year after year by misinformed though well-meaning objectors to inoculation.



Progress has been further hampered by easy-going, optimistic folk who refuse to consider the possibility of tragedy. Science's sweeping conquest of diphtheria will not be complete until all parents have had their children safeguarded against diphtheria. This can be done by any reputable physician.

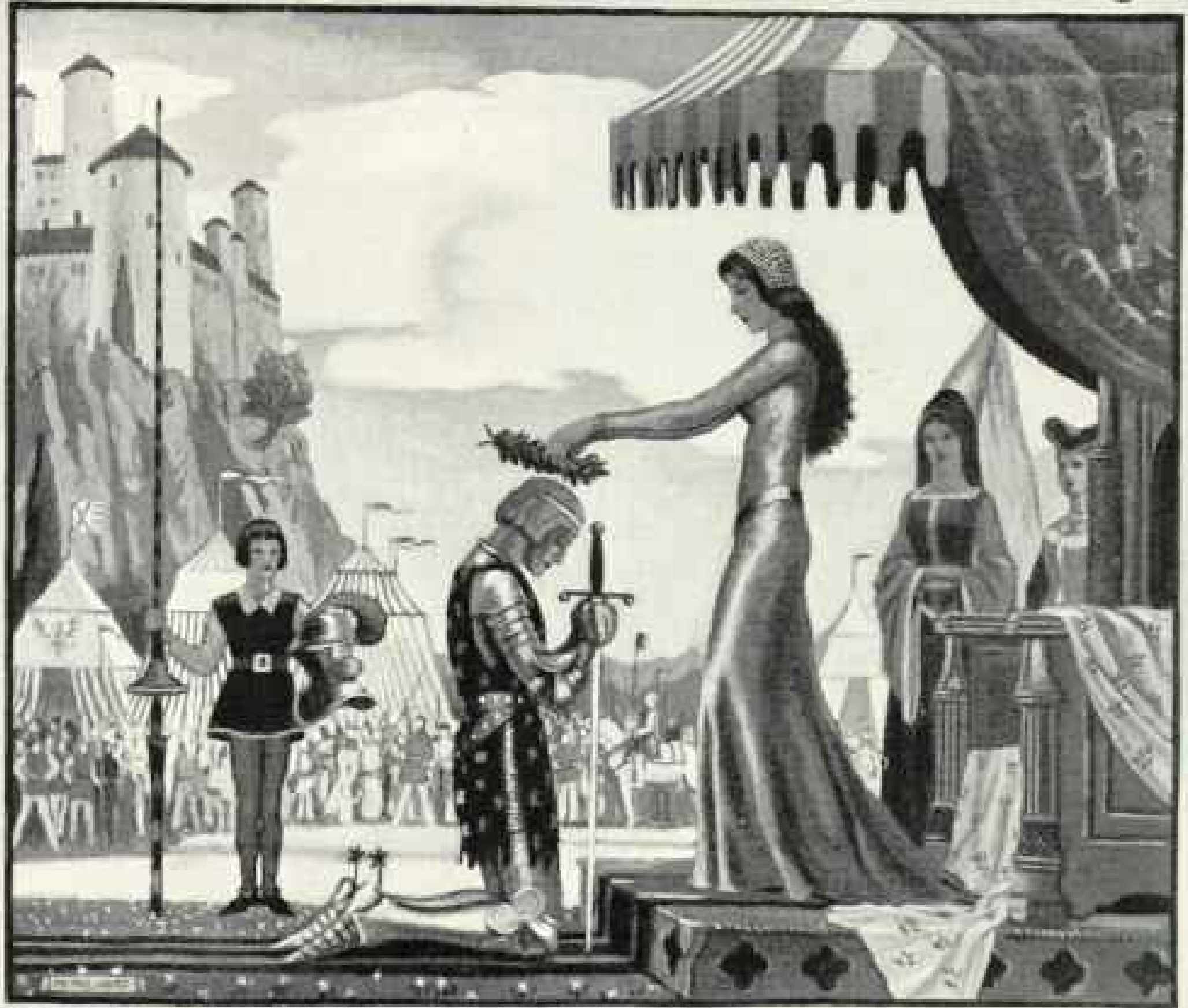
Every child should be inoculated, preferably when but a six months old baby, because more than half of all deaths from diphtheria occur among children between the ages of six months and five years.

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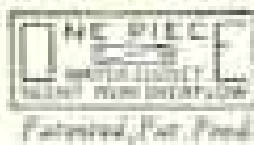
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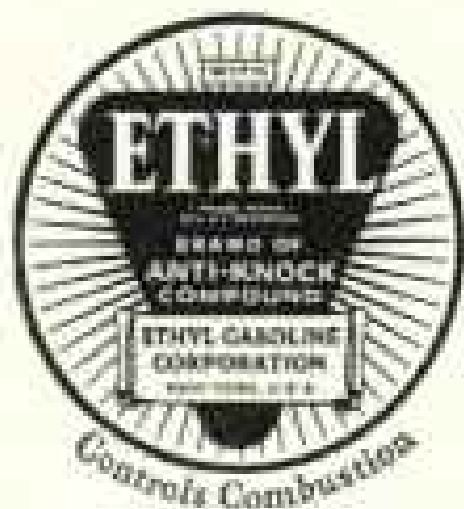
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Drop a line to the United Fruit Company - I forget the address\* - and get the dope on their cruises to the Caribbean and West Indies. Do it before you get any older.

*Bob*

(\*How could he? It's Pier 3, North River, Dept. A, New York, N. Y.)

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Film is found by dental research to play an important part in tooth decay . . . to cause unsightly stains on enamel. It must be removed twice daily.

# Decay begins beneath this Film on Teeth

**COMBAT IT!**—Remove film, eat the right foods, see your dentist—the 3 great rules. Science finds teeth must be protected from “within” and from “without.”

**B**EFORE decay or other troubles can triumph there must be two prime conditions. First: germs of infection must be present—active, vigorous—ready to attack. Second: natural resistance must be low and hence invite attack.

To build natural resistance against decay and gum disorders eat the right foods. (Refer to diet hints on this page.) Eat them to make teeth harder and to make gums firm.

### *Remove film*

And in addition remove the germs associated with tooth troubles. To remove germs from teeth, remove film. For film is their breeding ground. It glues germs against the teeth so tightly ordinary brushing cannot remove them. The stains from food and smoking are ab-

sorbed by film. It fills every tiny crevice in enamel. Film is hard to reach and hard to remove. So to meet this need Pepsodent was developed. Today Pepsodent has become the *special film-removing* tooth paste.

### *Now, a new discovery*

Pepsodent's unique action is due to a revolutionary polishing and cleansing agent. One that is SAFE and gentle. One twice as soft as that commonly used in other tooth pastes. Because of its great safety, Pepsodent is recommended widely for the delicate teeth of children.

Yet with all its softness Pepsodent cleanses teeth and polishes enamel to a degree heretofore unknown.

And besides the proper diet and removing film each day,

one thing remains: See your dentist regularly.

Further than this there is nothing left to do. It's science's own prescription.

### Include these in your diet:



One or two eggs, depending on your age.

Raw fruit and fresh vegetables you like.



Head lettuce, cabbage or celery.



$\frac{1}{2}$  lemon mixed with orange juice to make 1 pint.



Plenty of milk every day.

**USE PEPSODENT TWICE A DAY—SEE YOUR DENTIST TWICE A YEAR**

# Genuine old-fashioned whole-wheat cereal

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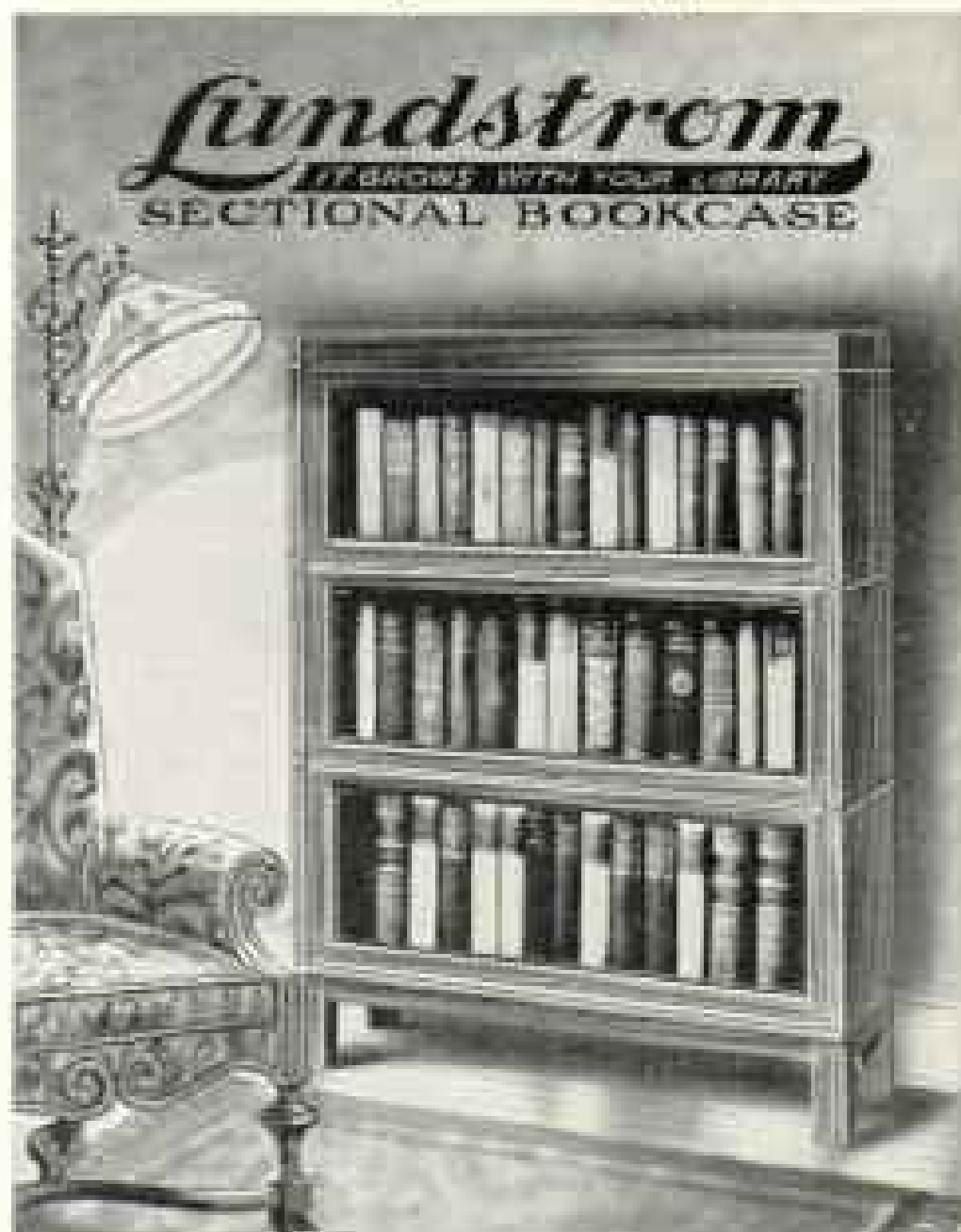
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