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Mr. Jefferson's Charlottesville

With 49 Illustrations
37 in Natural Colors

ANNE REVIS

Japan Tries Freedom's Road

With 42 Illustrations and Map
35 in Natural Colors

FREDERICK G. VOSBURGH
J. BAYLOR ROBERTS

Search for the Scarlet Ibis in Venezuela

With 25 Illustrations and Map
21 in Natural Colors

PAUL A. ZAHL

The Nation's Library

With 19 Illustrations

ALBERT W. ATWOOD

Praying Mantis

15 Illustrations

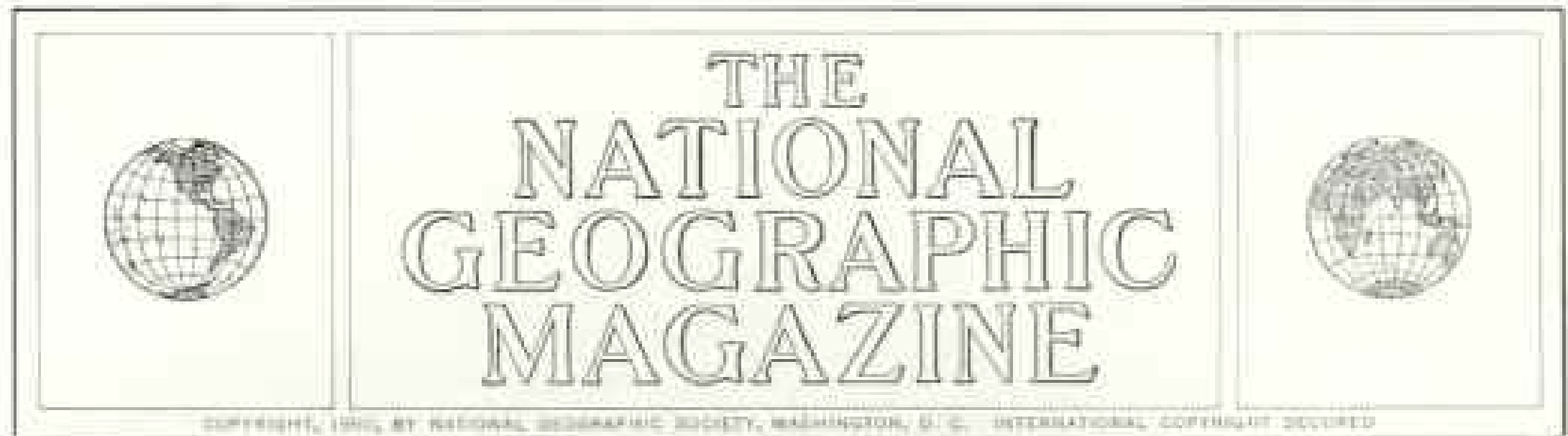
JOHN G. PITKIN

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Mr. Jefferson's Charlottesville

BY ANNE REVIS

LAZILY I watched the cloud shadows race across Carter's Mountain, rearing its green head beyond our whitewashed fences. What stories it could tell of the days of Thomas Jefferson and his friends who early appreciated its beauty and built their homes on its flanks!

Swinging in a hammock beneath our old coffee tree, I reflected how the spell of "Mr. Jefferson" still lingers about the Charlottesville region of Virginia. At every turn some link suggests this extraordinary man.

Just around the corner of Carter's Mountain perches Monticello, his hilltop home.* Through his telescope he could watch the building of his beloved University far below in Charlottesville.

Across a vale, spicy boxwood hedges lead to Ash Lawn, the "cabin castle" he designed for his friend, President James Monroe (page 390).

Redlands, Carter family stronghold still, scans the countryside from the far end of this ridge granted to Secretary John Carter about 1730 by King George II of England.

These and a score of other storied places lie within easy reach of my home, Brookhill, itself nearly a century and a half old (p. 378).

What American has not known since school days of Thomas Jefferson, our country's third President, and author of its Declaration of Independence?

Roundabout Charlottesville one cannot long escape "Mt. Jefferson," as local people respectfully refer to him. Signboards point the way to his mountaintop. He stares at you from the backs of playing cards or framed pictures. He broods in bronze on the West Lawn of the University he founded. From busts and portraits he watches benevolently over "Virginia men."

From near-by Mount Jefferson students gaze at the stars from the University's McCormick Observatory. Jefferson Park Avenue borders the University grounds. Activities of the Jefferson Service Station would astonish him, although he was ahead of his time in attaching a mileage computer to his carriage.

Nor is the name of his home slighted. You may drive down Monticello Road, Street, or Avenue, leave your clothes at Monticello Dry Cleaners, or have your hair waved at Monticello Beauty Shop. Atop Monticello Hotel revolves the powerful Thomas Jefferson Beacon. Products of Monticello Dairy reach the Nation's Capital and beyond. A day's shopping might include toothpaste from Monticello Drugstore, lunch at Monticello Grill, or a car tune-up at Monticello Motors. I counted 19 such namesakes.

With all these reminders about us, we set forth one day to explore Monticello.

Up a wooded road we wound until suddenly Jefferson's famous "sea view" burst upon us, a misty line stretching along the horizon as far as the eye could see (page 563). Across a panorama of hills, valleys, fields, and woods we traced the Rivanna River meandering to Shadwell, Jefferson's birthplace.

Mr. Jefferson Scalped a Mountain to Build His Home

Left fatherless at fourteen, Tom, the eldest son, inherited "Little Mountain," which he named in Italian, "Monticello." Early he began planning the mansion that should one day crown its summit. This was revolutionary in a day when everyone built in the lowlands close to waterways.

But first he had to scalp his mountain to

* See "Jefferson's Little Mountain," by Paul Wiltach, NATIONAL GEOGRAPHIC MAGAZINE, April, 1929.



National Geographic Photographers B. Anthony Stewart and John E. Fletcher

In This Jefferson Pavilion Lived the Famous Author of the McGuffey Readers

Prof. William H. McGuffey taught moral philosophy at the University of Virginia, 1845-73. His school-books, earliest of their kind, tell the stories of boys and girls and their pets and toys, of Washington and his hatchet, Rover the dog, and Tabby the cat. More than 122 million copies have been sold (page 576). On the Lawn, where Jefferson loved to show his guests about the University's new buildings, engineering students practice surveying with the ever-present mascot, Seal, at their feet.

level its crest for lawns, house, and gardens. No mean feat this for his hundred slaves. Though still in his 20's when he laid foundations, he was in the 60's before the house was finished. During all these years he built, tore down, and built again.

"Architecture is my delight, and putting up and pulling down, one of my favorite amusements," he was wont to say.

The young lawyer's political career interfered too. Starting as the representative of Albemarle County in the Virginia House of Burgesses, he rose to be a key delegate to the Second Continental Congress and Governor of Virginia. While writing the Declaration of Independence or serving in Washington's Cabinet as the first Secretary of State, he

found time to "dash" home now and then from Philadelphia or New York—an 8- to 10-day trip—to superintend work on Monticello.

As American Minister to France he lived abroad for five years. But all the time he was constantly thinking of his house, picking up ideas wherever he traveled—his dome from the Hôtel de Salm in Paris, and his classical style from the Pantheon in Rome and the 16th-century Italian architect, Andrea Palladio.

Walking out onto the broad west lawn, we admired the house, as well groomed as if built only yesterday instead of a century and a half ago. Its octagonal dome gleams white and symmetrical against blue sky and copper beeches. Green shutters accent mellow brick (page 561).



National Geographic Photographers H. Arthur Stewart and John E. Fletcher

Only a Brick Wide, Curious Walls Curve About the University of Virginia Grounds

Mr. Jefferson brought serpentine walls from England where meandering hedges, walks, and willows were the landscaping vogue. The undulating design strengthens the walls, provides flower bays, saves bricks. Recently archeologists uncovered foundations of other walls laid by Jefferson but since covered by lawns. Through proceeds from Virginia's Historic Garden Week tours held in April, the "ribbon" walls are being restored to their original plan. The University celebrated its 125th anniversary March 7, 1950.

We noted some windows were floor length, the lowest sashes girded by white frets. Mr. Jefferson installed the wooden grills after a visitor leaned too far back in his chair and tumbled four feet to the ground!

We browsed along the flower-lined paths, painstakingly restored a decade ago. Dr. Edwin M. Betts, botanist at the University, studied Jefferson's own garden sketches and seed lists. Under his guidance ladies of the Garden Club of Virginia duplicated the walks and flower beds.

A Negro gardener looked up as we passed. "That takes a lot of snipping," we observed, as he tussled with some tough stems of Spanish iris.

"You're right there," he grinned. "Time

you get around, it's time to start again. Dis hyah purple irish is an o-rig-inah, and I sho' wish Mr. Jefferson never done planted it."

Across the lawn we spotted Charlottesville, sprawling in the valley below. We could identify buildings of the University, Jefferson's dream come true, and, still farther, the soft jagged line of the Blue Ridge (page 566).

Then we strolled along a terrace to his one-room law office. Without realizing it, we were walking over the icehouse, stables, saddle and harness room, and carriage house. Across the lawn a similar platform leading to the Honeymoon Cottage hid smokehouse, kitchen, dairy, and servants' rooms (page 563).

To this cottage in 1772 Jefferson brought his bride, Martha Wayles Skelton, who at 23



National Geographic Photographer B. Anthony Stewart

Before Sully's "Jefferson," a Future Architect Studies the Master's Plan for the Rotunda

Clearly shown is its circular design, which Jefferson said typifies spherical architecture as the temple Pavilions at its sides illustrate cubical (page 591). On one sketch he notes the Rotunda has a "Diameter $\frac{1}{2}$ that of Pantheon [in Rome], consequently $\frac{1}{4}$ its area, $\frac{1}{8}$ its volume." The University's Alderman Memorial Library treasures a priceless collection of Jeffersonian documents (page 576).

was already a widow. After their wedding at The Forest, 100 miles away, they traveled in falling snow until drifts blocked their carriage. Continuing by horseback, they arrived at Monticello in the dead of night, to find all the slaves fast asleep and the fires out. But this did not daunt the happy pair in their snug retreat 865 feet above the world.

A Pioneer in Meteorology

A stray breeze swayed the weathervane over Monticello's front portico. In the vestibule below I saw its counterpart, a pointer set in a compass rose in the ceiling. By this device the ingenious master could tell accurately the direction of the wind, whether he was rambling over the grounds or looking at the arrow in the ceiling. Mr. Jefferson was one of the earliest meteorologists. He kept careful records of temperature, snow and rainfall, appearance of leaves, fruits, and other useful data.

And he could tell the time, too, as well indoors as out, for the great clock in the front hall is backed by a duplicate outside (page 562).

"If you tilt that ladder we use to wind the clock, it will fold up into a mahogany pole,"

an attendant told us. "Its rungs collapse on little hinges."

As our guide proudly showed us around, I imagined him as one of Jefferson's own stewards, Martin or Caesar.

I could picture him staring at Virginia's Paul Revere galloping up, scratched and breathless after an all-night dash. The countryside was alive with British dragoons, Jack Jouett announced. The Governor and legislators must leave immediately. Tarleton's Raiders were after them.

Jefferson hurriedly dispatched his family by carriage to a friend's house, Enniscorthy. Then he tarried to put away important papers. When a look through his telescope from Carter's Mountain finally convinced him that the soldiers were swarming in the town below, he jumped on his horse and fled. Just in time too, for the clatter of hoofs was soon heard from the other side of the hill.

When the troopers appeared demanding the surrender of Jefferson, Martin was handing the last of his master's silver and valuables to Caesar in a hiding place beneath the porch. Hastily he dropped the plank and with a non-committal air conducted the unwelcome visi-



National Geographic Photographer B. Anthony Stewart

How Teaching Saved Redlands for the Carters Is Told in Silver

Set on an oak-timmed spur at the end of Carter's Mountain, Redlands has sheltered this family for five generations. To forestall its loss in lean years, the Misses Polly and Sally Carter taught school and later founded St. Timothy's in Catonsville, Maryland. Grateful students presented this silver tray, bordered with scenes of the mansion, a post-and-rail fence, and garden gate (page 560).

tors through the house. Faithful Caesar, trapped below, remained in darkness and without food for 18 hours rather than betray the whereabouts of the cache.

Pointing to French doors, today's "Martin" told us, "These work like a streetcar's." He touched one of the big double glass doors and the other swung open simultaneously.

"Remember, they were made in the 18th century. No one knows how they operate, because they've never been taken down, and the works are hidden in the panel above."

We smoothed our hair in one of two large gilt mirrors of Louis XVI style which Jefferson brought from Paris (p. 565), and walked across a beautiful floor laid in ten-inch squares of dark cherry with frames of beech.

Gadgets Made Life Easier

Studying two tiny dumbwaiters cleverly built into the side of the dining-room mantelpiece, we saw that one descended as the other rose (page 564).

"There's a neat trick," exclaimed a bystander. "I'd like to see Jefferson pulling up a bottle from the wine cellar—perhaps to drink a toast to his guest James Monroe!"

In a lateral passage a doll-sized stairway rose unobtrusively.

"Goodness," exclaimed a stout lady, looking at the 24-inch-wide treads. "I'd have to stay downstairs!" (Page 568.)

We wandered through bedrooms used by Monroe and Madison on frequent visits to the old master. But there were no beds as we know them today. Instead, three-sided alcoves contained hooks and rope-supported mattresses.

On one wall a rough sketch penned by Jefferson himself showed the shirred pattern of the curtains—a thoughtful touch for the future. Amazing the great man could find time for such a trifle—a design for window hangings! Perhaps if Mrs. Jefferson had lived longer than ten years after their marriage, she would have managed this department.

Jefferson's bed, in contrast to the others, was built in an open alcove between his bedroom and study. On awakening, he could roll out into whichever room he chose, hoist his bed to the ceiling, and then walk under it! (Page 567.)

Handy gadgets show his inventive genius. He could sit or stand to his reading and

drawing by adjusting a table's height and angle. And he filed his letters in an octagonal table, some of its drawers shaped like pieces of pie.

Jefferson put his ingenuity to good use in farming, too. For improving a plow he won the gold medal of the Agriculture Society at Paris. He added ideas of his own to better a threshing machine imported from Scotland.

As did other plantation owners, he had to teach his slaves almost every trade—to make tools, forge nails, mold brick, hew timber, trim woodwork.

Gadgeteer Jefferson would be intrigued by the stream of photographic equipment brought to Monticello today. Every possible angle of his beloved home is recorded by swarms of camera fans.

Children are taken on his steps and terraces; newly married couples pose before his Honeymoon Cottage. Even "his" gardeners are snapped frequently.

Jefferson played with an early "Brownie," a camera obscura purchased from David Rittenhouse in 1794. From shadows his model cast on paper, he traced an exact silhouette. We saw several of these drawings, as well as the contrivance itself.

Visitors' photographs would be widely scattered, we realized, when we counted automobile licenses from 21 States in the parking lot.

Edgehill, Where Martha Jefferson Lived

"Mr. Jefferson is quite a remarkable man," said Mr. Edward Dickinson Tayloe, present owner of Edgehill. "Why, only last year he had *me* out building a serpentine wall!"

We had come to the home where Jefferson's daughter, Martha, set up housekeeping as Mrs. Thomas Mann Randolph (page 577).

Sure enough, around the flower beds, fish pond, hedges, and trees a thin wall, only one brick wide, undulated like the ones on the University of Virginia grounds (page 555).

"Come, let me show you Martha Jefferson's vegetable garden," suggested my courtly host. Descending a few steps, we saw five tiers of land in a perfect horseshoe or amphitheater.

"Mr. Jefferson's slaves dug out this forerunner of strip farming," Mr. Tayloe commented. "Aimed to the southeast, the crops get much sun, ripen ten days earlier than neighbors! In the four lower levels we still cultivate vegetables, but this top terrace where Martha grew her flowers was so overgrown that we made it a road to the stables."

Walking back to the mansion, Mr. Tayloe told me about Jefferson's descendants who have formed the Monticello Association.

"They meet at Monticello on the Sunday before Memorial Day—it's quite a ceremony," he said. "This year I went for the first time, having been elected an honorary member. I was fascinated to hear them call each other 'Cousin James' and 'Cousin Lucy.' We were served lunch in Jefferson's dining room, and laid a wreath on his grave."

When Edgehill's brick house was built in 1824, the clapboard-covered one of 1790 was moved to the rear, Mr. Tayloe explained. Later Martha's daughter-in-law turned the older one into Edgehill School for young ladies. Former students, now in their late 70's, often come on sentimental pilgrimages to see their old school building.

"One lady arrived last year and said she wanted to look for her initials in a window," Mr. Tayloe said. "She had scratched them on the glass with her engagement solitaire. Sure enough, she found them!"

Scion of an illustrious old Virginia family, Mr. Tayloe has lived at Edgehill for a quarter of a century or so.

"Was Edgehill named for its nearness to a mountain?" I asked.

"No, nothing to do with topography," he replied, "but for Edgehill in England, where the Cavaliers of unlucky Charles I opened war on the Roundheads. That was in October, 1642, about thirty years before William Randolph came to this country.

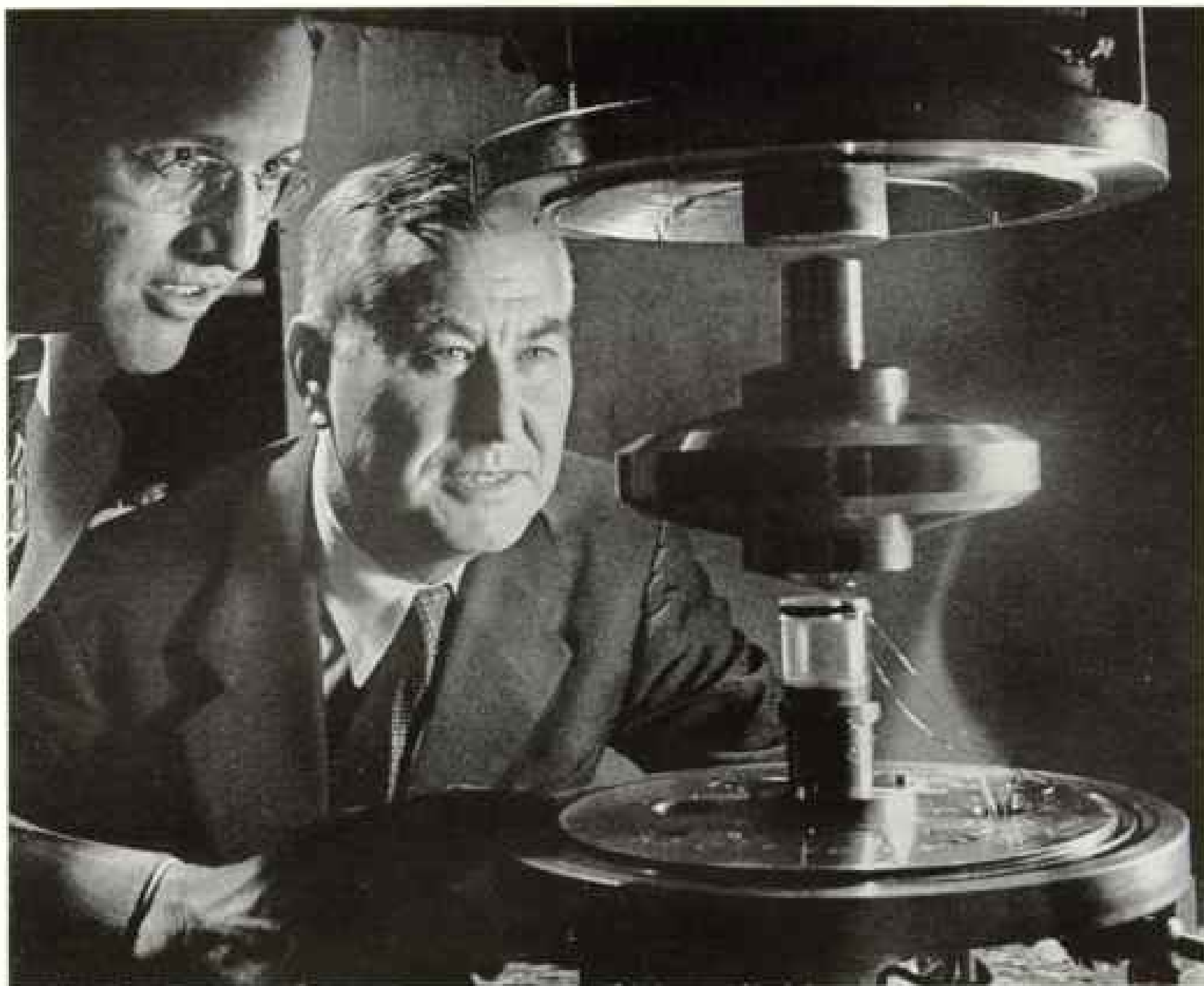
"Here's an interesting incident of the battle," Mr. Tayloe said, pointing to an old engraving. Between two lines of waving soldiers on Edgehill common stands a rider, Charles James Fox, and his pack of hounds.

"A true sportsman was Fox. Not even a civil war could interrupt his hunting!" Mr. Tayloe chuckled. "Here he asks for an armistice so he can continue the hunt. The soldiers grant his request and wish him a good day's sport. We still say, when we break a fox out of covert, 'Halloo and away, there goes Charlie!'"

We paused before an engraving of Edward Troye's painting of a thoroughbred named Sir Archy. "When I went to the University, Archibald Cary Randolph suggested our possible kinship. We looked into it, but concluded it must be through Sir Archy! We Virginians are indeed a race of horse fanciers.

"Sports, like batter bread and roe herring, are placed before us most of our lives, and we partake of all with the same relish," he continued. "In the tradition set us, it is rather natural that we do a little breeding, showing, racing—all too local to mention!

"But don't let me start on that," he warned. "One author came to talk about a three-page



National Geographic Photographers B. Anthony Stewart and John E. Fletcher

Spinning 1,000 Times a Second, the Ultra-Centrifuge Operates Like a Cream Separator

Developed by Prof. Jesse W. Beams and student John Ross in the University's Rouse Physical Laboratory, this scientific top measures molecular weights of proteins. Supported magnetically, it appears to "hang" in the air. Under operating conditions a chamber is fitted over it and the air pumped out to make a vacuum. Dr. Beams has also developed a rotor only $\frac{1}{8}$ th of an inch in diameter which has spun 50 million times a minute! Centrifugal force concentrates viruses such as those of influenza and yellow fever (page 576).

article on 'Equine First Families of Virginia.' Here are the seven volumes he ended up by writing!"

Mint Juleps for Breakfast Held Tarleton at Castle Hill

Eight miles down the road we stopped at Castle Hill, where lived Dr. Thomas Walker, good friend of Jefferson's. There we recalled that exciting dawn in 1781 when Jack Jouett galloped up on his way to warn Jefferson at Monticello of the British advance.

From his stables, Dr. Walker furnished Jouett with a fresh mount. Then he detained the ensuing Tarleton and his troopers with mint juleps for breakfast, so the story goes, enabling the illustrious prey to escape!

The name "Castle Hill" misled us, for the house was unpretentious and lay near the foot of a mountain. Driving in, we swung around

a tree-bordered lawn shaped like an hourglass—800 feet long.

The unusual mansion is actually two houses in one, connected back-to-back by a wide passage. A dormered story-and-a-half white clapboard house built by Dr. Walker in 1765 (page 588) hides behind a colonnaded red-brick home.

Many stories about Castle Hill recall such famous guests as Washington, Lafayette, Jefferson, Madison, and in later years Andrew Jackson, Martin Van Buren, and John Tyler.

Blessing the Hounds at Cismont

On the way home we passed pretty little Grace Episcopal Church set in a grove. Here on a crisp Thanksgiving morning pink-coated riders and spectators gathered to give thanks in a service that emulated a quaint French custom, Blessing the Hounds (page 581).

On a near-by hillock where the fox had been loosed earlier, the hunt began. We watched the riders put fields between us, rising over fences as if there were nothing to it. At the hunt breakfast later, we learned Reynard was "treed" in the upstairs of an abandoned shack!

So cherished are thoroughbreds in Virginia that we went to Morven to see its thriving stud farm. Snow-white barns stand here and there in lush green fields crisscrossed with painted white fences (page 589).

Brood mares and foals were being let out to pasture when I arrived, long-legged colts frisking beside their sedate elders.

Showing off a yearling, one of the handlers said, "Soon we'll take this bay filly and eight others on the road to the auctions at Saratoga Springs, New York. It's no pleasure trip, that 17-hour ride by truck and train. The horses often kick up. Three or four of us ride in the car with them. Last summer it was so cold we wrapped up in horse blankets at night!"

Morven itself is beautiful. It was begun by William Short, Jefferson's "adopted son" and private secretary in Paris. No doubt neighbor Jefferson took an active interest in its planning. A Carrara marble mantel he procured from Paris still adorns one of the rooms.

Through a picturesque gate we roamed grassy aisles between carefully tended beds. Two little girls, good as gold in spite of a scorching summer day, patiently posed for my camera in this lovely setting (page 591).

Beauty Treatment for Herefords

Virginia is known not only for graceful horses but also fine beef cattle—mostly Hereford and Aberdeen-Angus.

I drove through a gate with old-fashioned latchstrings to Birdwood. Built in 1818, this mansion in the Jefferson style is owned by Cornelius W. Middleton and his son, Dick, who moved here in 1940.

Dick, dressed in khaki and army boots, escorted me to a red barn shaped like a huge Quonset hut. From the stalls ponderous Hereford bulls regarded us gravely.

"Here comes Birdwood R. Domino, our grand champion," said Dick. "He's going to get a scrubbing to dress him up for the show ring."

While I watched in fascination, Domino was given a shampoo.

First he was hosed and rubbed with a spray, then soaped and rinsed. After a careful brushing, his coat shone and rippled. He looked as immaculately turned out as if he had had a permanent! (Pages 570, 571, 583.)

"I should think all this fuss would frighten him," I commented.

"It does at first, but they get used to it. We wash each animal once a month. But now, just before show time, we shampoo them three times a week."

Outside the barn stood a long red truck embellished with "Birdwood Farms" and a bull's head.

"About the middle of August we'll pile in our best animals and drive to livestock shows all over the country. For example, we'll cover the Great Southeastern Fair at Atlanta; Eastern States Exposition at Springfield, Massachusetts; Atlantic Rural Exposition at Richmond; and the International Live Stock Exposition at Chicago.

"A good showing on the road is important. If we win many ribbons, our stock goes well and for good prices.

"How'd you like to explore our pastures?" he continued. "Ever ride in a jeep?"

"No, but I'll try," and off we bounced, a little boy going along to open gates.

Topping a hill, we could see most of the 1,000-acre farm. Cows and a couple of cute two-day-old calves were lying in the shade of a tree.

"They certainly stare you down," I said, shying away from the bovine mothers who were eying me suspiciously.

"Oh, they're not used to seeing skirts," Dick explained.

"These hayfields used to be wasteland, covered with broom sedge. We knocked the junglelike growth down last year with a bulldozer. The hollows were washed out, three times as deep as they are now. We filled them with cornstalks, and grass finally grew.

"It took thousands of dollars to bring the fields back, putting in lime and different fertilizers. But it was worth all the trouble. Now Birdwood blooms, and pays its way."

"How did you get interested in farming?" I asked. "Didn't you come from Greenwich, Connecticut?"

"Yes, Dad was in business up North, making boilers for battleships and such. But he always wanted a farm.

"Birdwood was the answer. It was close to Charlottesville, a nice little town with good transportation to New York and Washington."

We passed a tiny hut with a low fence around it. "A calf creep," Dick explained. "In it we put a little extra feed—corn, barley, oats, and bran. Only the calves can crawl under the railing to reach it."

Down a 45-degree slope we rattled, while I clutched my notebook, pencils, and camera case.



"All My Wishes End Where I Hope My Days Will End, at Monticello," Wrote Mr. Jefferson

As a boy he planned this lovely home near Charlottesville, but he was in his 60's before it was finished. His architecture set a new fashion in America. Unorthodox was the dome, inspired by the Hôtel de Salm in Paris.



So Might Martha Jefferson Have Welcomed a Guest to Her Father's Home

The life and times of the Sage of Monticello were brought back by these models, who kindly posed especially for the NATIONAL GEOGRAPHIC MAGAZINE in authentic costumes. Students at the College of William and Mary and the University of Virginia, they take part in "The Common Glory," a pageant of Jefferson's war years enacted each summer at Williamsburg, Virginia.

Every piece of furniture in Monticello was there in Jefferson's day. Only originals are accepted as gifts or by purchase. Thus the mansion looks today much as it did when Jefferson entertained the great statesmen of his time.

The ingenious Swiss clock above the entrance has a duplicate face outside. Cannon-ball weights make it run and indicate the day of the week as they descend past the wall placards. On Saturday they drop through the floor, to be hoisted again on Sunday when the clock is wound. Weights on the other side make the clock strike.

Alexander Hamilton's bust crowns a marble pedestal. The antlers, recently installed, were bagged near the upper Missouri River by Lewis and Clark. Jefferson sent these explorers to survey the West.



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551

Kodachrome by Anne Berls

Behind a Fringe of Hollyhocks the Misty Horizon Stretches Oceanlike East of Monticello

Visitors ascend a wooded road and come out suddenly upon this parking lot with the famous "sea view." After Mr. Jefferson had cleared his "Little Mountain," he tucked his utility rooms (below) in the side of the hill beneath a terrace. Thus from the mansion he could not see the servants' rooms, kitchen, and smokehouse; yet they were easily accessible by hidden passageways. A similar deck on the other side covers stables and icehouse.

To the tiny one-room cottage (background), first structure at Monticello, Jefferson brought his bride, Martha Wayles Skelton, on a snowy night in 1772.





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564

Kodachromes by R. Anthony Stewart and John E. Fletcher

△ Open the Panel, Pull the Cord, and Drink a Toast to a Famous Guest

Cleverly concealed in the dining-room mantelpiece, one tiny dumbwaiter brings up a full bottle from the wine cellar, while another lowers an empty. A believer in temperance, Jefferson preferred wine or cider. Clock and statuettes are French; blue medallions Wedgwood.

▽ Instead of Reaching for a Far Book, Jefferson Simply Revolved This Tabletop

For reading or writing, the pivot-topped desk slides over the settee. Jefferson compounded this novel chaise longue by adding a footrest to his pioneer swivel chair. Such convenient gadgets intrigued Monticello's master. The spectacles and quill belonged to him.





How Many Illustrious Guests Have Patted Hair or Peruke in Monticello's Old Mirrors?

Diplomats, Presidents, and pilgrims flocked to Monticello to see the Sage. Sometimes 50 guests and their horses stayed overnight! This Louis XVI gem is one of two Jefferson bought in Paris while he was American Minister.



From His Mountaintop Home Mr. Jefferson Looked West Across the Valley to His Beloved Blue Ridge

Monticello commands beautiful vistas on every side. Here Charlottesville suburbs lie below. When he did not wish to undertake the long horseback ride to town and back, the master could watch through a spyglass the construction of the University of Virginia he designed and founded.

Mr. Jefferson, Awakening
in His Unique Bed,
Could Step Out into
Either Room

In contrast to other beds in Monticello, which are set in 3-sided niches, the master's occupied an open alcove between his bedroom and study. After it was made up in the morning, it was hoisted to the ceiling out of the way, tradition says, and Jefferson could walk beneath it! Guard ropes are later additions.

The pillows pictured were under his head when he died here July 4, 1826—exactly 50 years after he wrote the Declaration of Independence.

On his mother's candlestand to the right rests his shaving mirror. To get a closer shave he installed a magnifying glass in front of it—a forerunner of the enlarger used with television sets today.

A midjet staircase leads to a tiny boxlike room above the bed, perhaps for a body-guard. Three oval "port-holes" provided its only ventilation.

Monticello is pronounced Italian fashion, "Monticello."

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Reprinted by William H. Carter





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568

Kodachromes by H. Arthur Smart and John E. Fletcher

♣ **With Hoop Skirts, Not Even a Sylph
Could Run Up These Narrow Stairs!**

Why Jefferson built the steps only 24 inches wide is not clear. Twin staircases leading up to the vacant third floor are squeezed in passages off the front hall. He substituted these for the original central stairs when he remodeled the house in 1796.

♣ **At Monticello a Quartet of Songsters Set
Music Sheets on This Four-sided Rack**

When props are collapsed in Jefferson's trick stand, it looks like an ordinary box. Its music-loving owner played the violin in his youth. University of Virginia recently acquired Francesco Geminiani's *Art of Playing the Violin*, from which Jefferson learned his skill.



"Our quarantine pasture," said Dick, pointing over a fence, "where we keep new cattle until they've been tested for tuberculosis, Bang's disease, and such. We've won a State gold seal every year for a clean herd."

Back at the barn, he showed me a dispensary. Neatly lined up were bottles marked "inoculant," "castor oil," and "fly spray."

From a closet he brought out a big panel of colored ribbons. I counted 136 prizes, 19 purples for champions, and 62 blues for best in age group. The covering glass in the frame was broken.

"One of the bulls took a look and put his horns through it!" explained Dick.

Only Indians and Carters Have Owned Redlands

Capping a knoll on the southern tip of Carter's Mountain stands Redlands, a charming old home that has sheltered the Carter family for five generations.

"Redlands has never been owned by anyone but the Indians and ourselves," Robert Hill Carter told me. Mr. Carter himself is the fourth Robert to preside over Redlands.

Knowing that the Carters live also in Richmond, I asked which place they consider home. With a lively smile Mrs. Carter answered, "Deed, I'm living on the road between!"

Redlands too reveals Jefferson touches. As we passed from its square center hall into the oval drawing room, we saw tiny concealed stairways like Monticello's squeezed in the corners between. Beyond the windows, so tall they dwarfed us, wooded hillsides and green pastures wavered in the antique glass.

In each tremendous room, with its lofty ceiling, stands a big fireplace, its mantel adorned with tobacco-leaf motif. Carter ancestors peer from the walls. Priceless heirlooms fill the rooms, some of them originals from Jefferson's home.

"Monticello would like to have back Mr. Jefferson's marble-topped table, his French mirror, and a shield-back chair he ordered for the White House. We plan to present them soon, after we have had duplicates made.

"But most of our finest pieces came from Margaret Smith, who married the second Robert Carter," Mrs. Carter told me. "She was the daughter of Gen. John Spear Smith of Baltimore.

"Many of her brothers' friends stopped at Redlands towards the end of the Civil War; she fed as many as 60 Confederate soldiers at one time! In a battered trunk we found twenty swords with such inscriptions as 'First Maryland Regiment.' We gave some to the Maryland Historical Society, and others to the

Confederate Museum in Richmond. My sons kept a couple to decorate their college rooms.

"In the lean postwar years, it looked as if the family might lose Redlands. Two of my husband's aunts, the Misses Polly and Sally Carter, resolved not to let this happen. While their mother took in boarders, they taught classes and later founded fashionable St. Timothy's School in Catonsville, Maryland. With money saved from teaching, they clung to the house" (page 557).

From a mahogany highboy Mr. Carter pulled out a yellowed parchment. It was one of the three original land patents deeded by George II of England to Secretary John Carter in the 1730's. The 10,000-acre grant comprised most of Carter's Mountain and bordered Monticello.

We walked through the garden laid out in its original plan. Petunias, four-o'clocks, and ageratum filled the beds.

"We've had a family of displaced Estonians as gardeners since the last war," said Mrs. Carter. "The man doesn't understand English too well. So we brought out old sketches showing beds of Maltese cross design. He got the idea right away, and now our gardens look much as they did.

"Last year some architectural students at the University came out to study Redlands. They noticed its massive masonry—the roof is so strong it would hold another floor. One remarked, 'Why, these rafters look like the deck beams of a ship.' That was interesting, I thought, because the father of Redlands' builder was a sailing captain. He visited his son between voyages. No doubt he gave the 22-year-old boy shipbuilding pointers.

"Incidentally, when the University opened for classes in 1825, Robert Hill Carter, my husband's grandfather, meant to be the first student to matriculate. But he woke up too late and got there second!"

Red Mud to Bricks

After several days of steady rain we woke one morning to find the fields shining emerald in the sunlight. I walked down to the brook, rushing at twice its normal speed. Our road to the barn was furrowed with watery ruts where the truck was stuck a couple of days before.

A small boy and girl were sliding barefoot in the slippery ooze. Intrigued, I doffed my own shoes and joined them. We floundered pleasantly in the sticky mass, then rinsed off the red clay in the brook (page 583).

From this sparkling red mud were baked the bricks for Monticello, Brookhill, and other old Albemarle County houses. Even today



National Geographic Photographers B. Anthony Stewart
and John E. Fletcher

Pedure, Haircut, Brush, and Curl: Champion Gets a Beauty Treatment

Manager Jim Stock smooths Birdwood B. Triumph's dainty hoofs with chisel and hammer; clips the base of the fluffy combed tail; brushes his wet silky locks after shampoo; then brings out the natural curl with a quick twist of the currycomb. For a final touch he waxes and polishes the Hereford's horns to a high shine (page 500).



most homes and stores in Charlottesville are made of durable brick.

Monticola, Set for Movie "Virginia"

Seeing heavy traffic on Scottsville Road one day, Mother remarked, "In 1940 when Paramount was filming 'Virginia' at Monticola, south of here, I saw a safari of cars and trucks rumble past Brookhill every day. Actors, cameramen, and directors off for the day's shooting.

"People remember Monticola now for the movie more than because General Sheridan billeted there during the Civil War."

To see historic Monticola, we drove through Howardsville to a wooded hill overlooking the valley of the James.

The aging mansion stood in an uncut lawn. Shutters were fast; it seemed a haunted house. Soon a red setter barked, and an 80-year-old lady appeared, spryly brandishing a yardstick.

"Madeleine Carroll in the movie 'Virginia' inherits an old mansion she has never seen," Miss Emily Nolting told me. "Mr. Edward H. Griffith, the director, was searching for background. When he saw Monticola, decadent but proud, he said, 'This is it.'

"The movie people built these beautiful curving stairs to the porch," she continued. "After they laid the cement, I caught a man pounding and hammering cracks. 'What are you doing, ruining my steps when they're fixed so nice?' I asked.

"I got orders," he said. "Everything's supposed to look old!"

"I used to have a bird bath here," she chuckled. "They filled it with flowers and photographed Fred MacMurray making love to Madeleine beside it. Before returning to



National Geographic Photographers B. Anthony Stewart and John K. Funtler

All in a Lather! But He Enjoys the Attention

Meticulously as a lady in a beauty parlor, this grand champion yearling Hereford is shampooed at Birdwood Farms. After scrubbing with Castile soap until his face is snow-white and his coat glinting red, Birdwood B. Triumph is sprayed with stock dip and holed before his grooming (opposite and page 583).

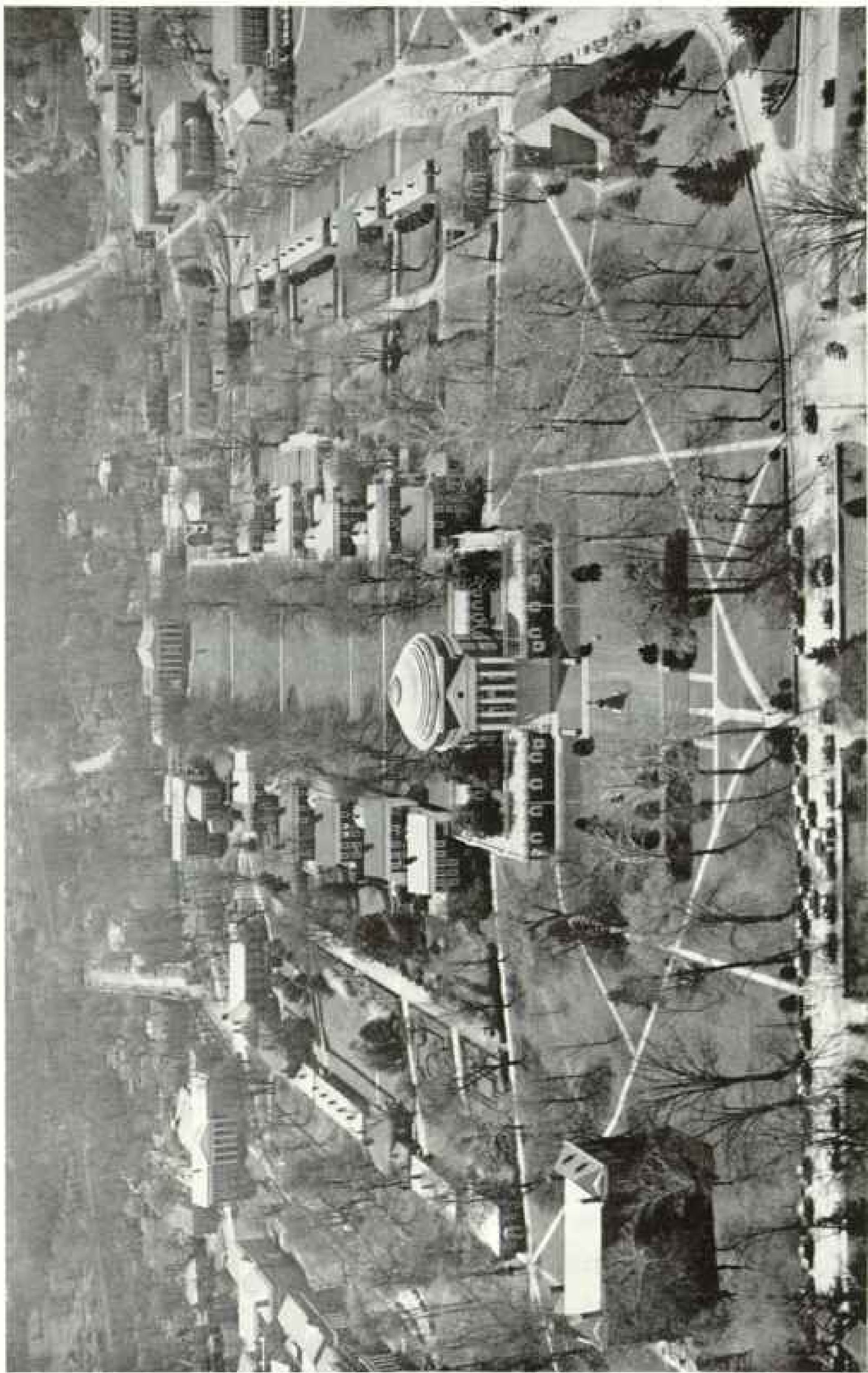
Hollywood. Miss Carroll asked if she might take it with her, and I said 'Certainly.' So they carried it, tree stump and all, back to California!"

Bremo, Architects' Delight

From mellow Monticola we went down along the James River to Bremo, one of the loveliest mansions in Virginia (page 582).

"Bremo is a sweet old place," said Mrs. Forney Johnston, the present owner. "My great-grandfather, Gen. John Hartwell Cocke, built the house from a simple classic design about which he consulted his friend Jefferson."

Architects say they don't know another



Robert Thompson, University News Service

From the Air the University of Virginia Appears Today Much as Jefferson Dreamed and Planned It

At the head of a green quadrangle, the Lawn, stands his magnificent Rotunda. Flanking it on either side, five Pavilions house professors or classrooms; between them student rooms open onto colonnaded corridors. Paralleling these but separated by tiny gardens hidden behind serpentine walls are the Ranges, arcaded rooms for students (page 584). Modern buildings to far left are the medical and nursing schools; Cabell Hall completes the classic rectangle, and the law school rises at right.

house like Breemo. They come from far and near to see its symmetrical layout and sturdy build.

"Stately as the mansion is, it succumbed to electricity only last year," Mrs. Johnston added. "My father used to say Breemo had 24 rooms but just one bath! Beds were hung in alcoves, as in Monticello; so we converted six of these recesses into bathrooms. Thus Breemo was modernized without spoiling its old-time charm.

"When the plumber was trying to put a pipe in the outside corner, he found the walls were four feet thick."

So solidly built is Breemo that in its 130 years the inside walls have never been replastered! Beams were hewn from solid oak. Marble for downstairs floors came from Italy.

"We realized how long Breemo has been in our family," Mrs. Johnston said, "when we found a stone in the woods dated 1725. Inscribed were the initials 'RHC' for Richard Hartwell Cocke and the words, 'Remove not the landmarks which thy forefathers have set.'"

When General Cocke was a student at the College of William and Mary, he fell under the spell of Thomas Jefferson, and came to Breemo in 1803. Before his new house was finished, his wife, beautiful Ann Barraud, died. He was heartbroken, but as it had been planned for her, he completed it.

Next to Monticello, it has one of the most magnificent views of any house in Virginia. We went out onto the balcony to see the vista.

Below us spread the sparkling fields of fertile James River Valley. Breemo's old stone barn, massive as the manor, blended into the rustic scene. Pillars adorn its river side. Box stalls of hand-carved walnut harbored the thoroughbreds in style, Mrs. Johnston told me.

Then she showed me some of her heirlooms. Most prized is Ann Barraud's silk quilt, under which Gen. Robert E. Lee slept on his last visit there. His family "refugeed" at Breemo for a time during the war.

General Cocke was a prolific letter writer. In the attic Mrs. Johnston came across trunks of his correspondence, including originals from several Presidents of the United States, among them, of course, Jefferson, who signed himself "Yours with sincere affection." The family donated 15,000 of them to the University of Virginia, for the General was a member of its first Board of Visitors, and Cocke Hall is named for him.

"What's this?" I asked, as she revolved a dining-room door with four semicircular shelves on its reverse side.

"It's a trick pantry for staples," she said. "In the old days everything came from Richmond and beyond. The housewife couldn't go down to the corner store when she ran out of sugar, tea, coffee, or spices.

"As a girl, I saw my grandmother, dressed in satin with a lace fichu around her neck, draw out a huge ring of keys. When she unlocked this door, spun it, and brought out gingerbread and lemonade, we thought it magic."

Storied Mansions Abound

I visited many other old homes, each with its own charm and fascinating story. Like Patrick Henry and James Madison, I rested in the shade of beautiful old trees rimming Enniscorthy's lawn. Sunlight filtered through a gorgeous holly tree and cast its lacy shadows. I skirted a glossy magnolia and watched hummingbirds darting in and out of a mimosa.

To Enniscorthy, home of Col. John Coles II, fled Thomas Jefferson and his family, even as Tarleton's Raiders were climbing to Monticello.

Near by, beautiful Estouteville's white columns rise at the crest of a winding driveway. Foliage hides the wings, so that we did not realize at first the house is over 130 feet wide!

As we circled Estouteville, we saw its other side had a duplicate portico and rows of green-shuttered windows against the weathered brick. Like so many Virginia mansions, it had no "back door." Built in 1827, this gem was named for Baron Robert d'Estouteville of France.

Wandering through the arching boxwood, we came to a veritable outdoor room.

"What a perfect retreat!" we exclaimed.

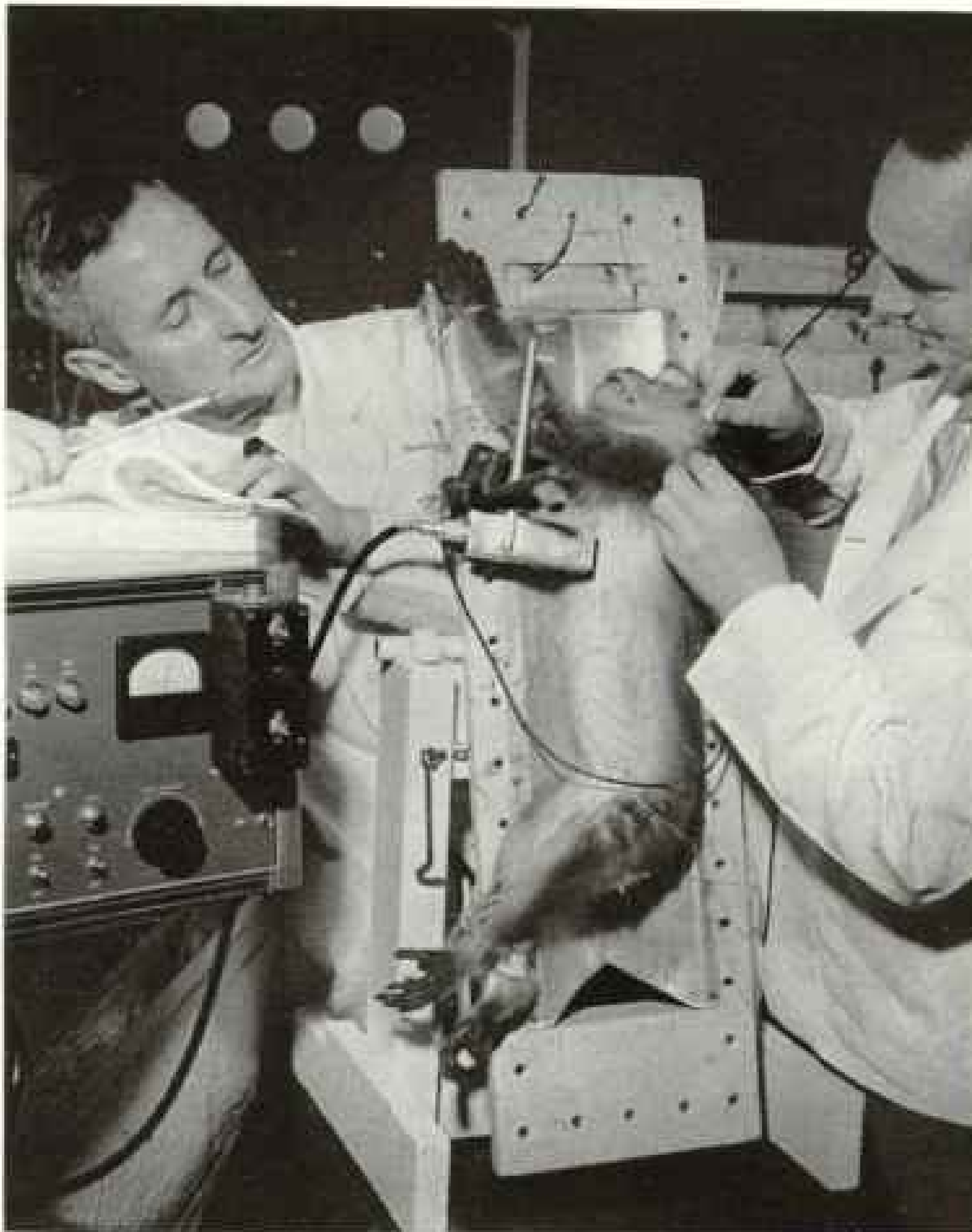
"Yes," agreed Mrs. Prescott Carter of Habana, Cuba, the present owner, "it was used for just that when unwanted visitors arrived! The spicy aroma of the boxwood seems to repel insects, and it's delightfully cool on a summer day."

At Blenheim we saw curious English Gothic windows set in clapboard. Their pointed tops were repeated in the green shutters. Two rooms and a hall in the center of the L-shaped home originally comprised the loom house of the Carter estate.

Andrew Stevenson, former Speaker of the U. S. House of Representatives, bought Blenheim in 1836 and added the wings.

When he was Minister to England, his wife received from home a barrel of Albemarle pippins. She presented two dozen of the apples to Queen Victoria, who liked them so well she exempted them from import duty!

Lovely Farmington Country Club grew



National Geographic Photographers R. Arthur Stewart and John E. Fletcher

So Accustomed Is "Louis" to Tilt-table Tests, He Falls Asleep!

The Javanese monkey is held lightly in position to compare his reactions with those of a man similarly placed. Dr. Sydney W. Britton, professor of physiology in the medical school, watches his assistant apply a lead to an ear lobe for recording heart action. After two years of such observations in the laboratory, the monkey seems quite at home. Human "guinea pigs" are tilted upside down to study the effects on the pilot of gravitational forces in airplane, parachute, or other military maneuvers (page 576).

from the house which Thomas Jefferson planned for his friend George Divers. Modified Doric pillars and little round windows echo those of Monticello. Club members like best to stay in the refurbished slave quarters. Its terrace offers a magnificent panorama of the Blue Ridge, and in the pretty valley between nestle inviting homes and green fairways.

Between country estates all around Charlottesville are cabins folded in the hills. Some are visible from the road; many more are tucked away in inaccessible wooded crannies (page 579).

Saturday mornings the countryfolk come to

town to repair machinery, buy supplies, or discuss peach and apple crops. Overalled groups "hold up" the bank, lining walls to gape and gossip. Up and down Main Street flows a colorful stream.

When you see West Point cadets or Annapolis midshipmen on parade, remember that cloth for their gray or blue uniforms very likely came from Charlottesville.

"Ninety percent of the country's military schools use our cloth," Mr. George W. Summers told me at the Charlottesville Woolen Mills. "We've supplied the United States Military Academy off and on for 40 years. And we clothe police and fire departments in many large cities.

"This piece," he continued, handing me a sky-blue sample, "will become dress trousers for the Marine Corps. During the war we operated on a three-shift basis making Navy flannel and coat material for enlisted men.

"We buy the wool in the grease state, just as it comes off the sheep—cockleburs, leaves,

and all. If a sandstorm blew just before shearing, we buy sand! After sorting and scouring, the wool may weigh only 40 percent as much as before.

"The fiber is literally 'dyed in the wool.' After dunking in a vat of indigo, it's cooked in an oven to set the color. Then it is combed on a carding machine before the spinning, weaving, and finishing."

Dressmaking in Monticello's Shadow

"That's a pretty blue dress you are wearing," I remarked to one of my models.

"I'm glad you like it," she answered with a smile. "It's a 'Rockinchair.'"

"Heavens, you're not ready for that yet," I protested.

"It does have a settled sound," she agreed, "but it's the trade name of dresses made in Charlottesville. And are they sturdy! I'm afraid I'll have this for years."

Almost daily I had driven by a trim brick building set on the hilly road to Monticello, and resolved one day to visit it. More like a school than a factory, it follows Jeffersonian architecture. Striped curtains frame the windows, and a brass silhouette of a rocking chair caps the flagpole.

"At peak production we can make 160 dozen cottons a day," Mr. John R. Frizzell, Jr., told me. "During the war we worked full tilt, turning out Nurse's Aide and Gray Lady outfits for the American Red Cross, as well as some Wac uniforms."

Downstairs I watched a cutter guide an electric blade through some 250 layers of cloth like a knife through butter.

Busy seamstresses were sewing dresses on machines arranged diagonally like a vast herringbone. Their tables tilted so that their stitching slipped back to be picked up by the next one. Thus the dresses seesawed down the long "assembly" line with no backtracking.

Near Charlottesville was born Meriwether Lewis, who with William Clark commanded the famous expedition to the great Northwest. Sent by Thomas Jefferson soon after he had negotiated the Louisiana Purchase, Lewis and Clark explored that vast area stretching from the Mississippi River to the Pacific Ocean. They crossed the Rocky Mountains and followed the Columbia River to its mouth, traveling 4,000 miles through unknown wilderness.

University of Virginia, Jefferson's Crowning Creation

To scholars everywhere and to the bevy of bright-eyed prom-trotters who flock to the town on Friday evenings, Charlottesville means the University of Virginia. From all over the country come each fall 5,000 young men to enroll in its College of Arts and Sciences and in its Departments of Law, Medicine, Engineering, Education, and Graduate Studies.

For beauty of setting alone the University is hard to surpass. At the head of a terraced greensward stands the lofty Rotunda Jefferson modeled after the Roman Pantheon. Colonnaded corridors fringe the 1,000-foot Lawn.

What more impressive setting for an academic procession, I thought, as I watched commencement ceremonies last June. Led by the scarlet-robed marshal, Robert Kent Gooch,

the professors in colorful hoods strolled down the steps of the Rotunda. Behind them followed cap-and-gowned students parading down the grassy carpet of the lawn (585, 586).

Wandering around the grounds, I marveled how Jefferson chose the site and worked out the plans, even made the detailed drawings. Then he supervised their execution, keeping an eye on stonecutters, bricklayers, plasterers, and carpenters.

And he tried in every way to hold down costs. "If we make the attic of wood, instead of brick," he figured, "it deducts 79,920 [bricks], leaving the corrected estimate for the whole Rotunda 1,171,457."

When Mr. Jefferson did not feel up to riding horseback ten miles to and from Monticello—he was then nearly 80 years old—he followed construction through his spyglass from his mountaintop.

Stanford White deemed Jefferson's masterpiece the most exquisite group of collegiate buildings in the world. But such praise by one of America's leading architects of the 20th century would not disconcert Jefferson.

"Had we built a barn for a college, and log huts for accommodations, should we ever have had the assurance to propose to [invite] an European professor?" he wrote. And again: "We owed it to do, not what was to perish with ourselves, but what would remain, be respected and preserved thro other ages."

Research Carries on Founder's Vision

But graceful buildings were not Jefferson's only concern for his University. He outlined the courses of study, selected the first professors, and even wrote part of a textbook!

His vision and intellectual curiosity are still manifest in the University's sound liberal arts course, graduate schools, and many-sided research programs.

The law school is among the Nation's finest. Former students include President Woodrow Wilson, Vice President Alben W. Barkley, Secretary of Defense Louis A. Johnson, Supreme Court Justices Stanley F. Reed and the late James C. McReynolds, and many other famous men.

Doctors all over the country are proud of the training received at Virginia's school of medicine. Alumni ranks number such "greats" in the profession as Walter Reed, who proved that yellow fever is transmitted by the *Aedes aegypti* mosquito,* and John Fisher Anderson, noted for his work on immunity to diseases.

* See, in the NATIONAL GEOGRAPHIC for February, 1944: "Saboteur Mosquitoes," by Harry H. Stage, and "Life Story of the Mosquito," by Graham Fairchild.

In many other fields, too, the University is carrying on advanced research vital to the United States in war and peace.

Dr. Sydney W. Britton, physiologist, is studying such aviation medicine problems as the stresses affecting heart, lungs, and brain when living beings oppose gravity—as in jet-plane take-offs or sudden changes of direction. Also, what happens to a pilot when his pressurized cabin is shattered by gunfire at high altitudes, causing explosive decompression (page 574).

Watching the tail of a tadpole with natural and polarized light, Dr. Carl C. Speidel, anatomist, has developed a technique to show the growth and development of living tissues. With motion pictures taken through a microscope he can show the circulation of the blood stream, what happens to nerve and muscle fibers in the case of burns or electric shock, or the effect of poisons on living substance.

Probably the highest man-made rotary speed in the world has been developed by physics professor Jesse W. Beams with his ultra-centrifuges. Spinning 50 million times a minute in a vacuum, one scientific top isolates substances that could not otherwise be separated from their impurities. With it viruses such as influenza and yellow fever can be concentrated and their molecular weights measured (page 559).

In the chemical laboratories Dr. Allan T. Gwathmey "grows" large crystals of metal, and tests them for effects of corrosion, acids, and tarnishes.

The McGuffey Reading Clinic, named for Prof. William Holmes McGuffey, author of the famous *Readers* (page 554), aims to diagnose and correct faults of reading. Another new clinic studies speech difficulties.

The Extension Division brings education within the reach of rural, town, and mountain folk in some 50 adult-teaching centers throughout the State.

So in numberless ways the University is reaching beyond its "academical village" to benefit all the residents of the Commonwealth.

Alderman Treasures Priceless Papers

I visited the Alderman Memorial Library, built in the side of a hill. Although its front is only two stories high, I entered on its fourth floor! Famous for its collections of manuscripts, the library is named for Edwin Anderson Alderman, once president of the University. During his 27 years in office, he endeared himself to students and constantly upheld Jefferson's democratic ideas.

Librarian Ruth Evelyn Byrd showed me

sheaves of drawings and specifications inked in Jefferson's own hand, and minutes of the Board of Visitors, sprinkled with signatures of Jefferson, Madison, and Monroe.

When I expressed amazement that I was permitted to handle such priceless documents, she explained: "You're not touching the drawings themselves. They're mounted between transparent sheets of cellulose acetate 'welded' together.

"We have also Cornwallis's personal parole papers," Miss Byrd continued. "His capitulation at Yorktown was called a 'parole' rather than a surrender.

"Our collections of Charles Darwin and Cotton Mather are among the finest anywhere. Though Edgar Allan Poe was a student here, we have only one letter and a note that he signed as a student, borrowing from a local tailor. He outfitted himself elegantly before going home, but his unsympathetic foster father frowned on his extravagance and later threw him out of the house."

Mr. Jefferson Compiles an Almanac

But to me the outstanding work in the library was Thomas Jefferson's own annotated copy of his *Notes on the State of Virginia*, a veritable encyclopedia of his native State, then much larger in area than now. Indeed, this volume, written 168 years ago, is so interesting and accurate that it could serve as the basis for an article for the NATIONAL GEOGRAPHIC MAGAZINE!

The *Notes* describe the beauties of the Shenandoah Valley and the features of Natural Bridge; catalogue Virginia's rivers, hot springs, and caverns; discuss its climate and Indians; offer copious information on trees, fruits, and vegetables; classify animals, even to the comparative weights of gray, black, and red squirrels; and give the popular and Latin names of many a Virginia bird from goldfinch to turkey buzzard.

Integral part of student life at Virginia is the honor system. From the day he enters, a man's pledged word is accepted as truth. The atmosphere of freedom resulting from individual and collective responsibility is Virginia's most cherished living heritage.

Tradition runs strong. Charlottesville people say President Colgate Whitehead Darden, Jr., a former Governor of Virginia, helps Thomas Jefferson run the University.

With roots in the past, the University faces the future. No one would have approved more than Mr. Jefferson himself.*

* For additional articles on Virginia, see "NATIONAL GEOGRAPHIC MAGAZINE Cumulative Index, 1899-1949."



At Edgehill a Virginia Squire Shows the Author His Family Heirlooms

Sharing Virginians' love of riding and hunting, Edward D. Tayloe now owns the estate to which Jefferson's daughter Martha came to live as a bride. Here he holds a silver tray awarded to an ancestor's horse, Calypso, at the Virginia Jockey Club races in October, 1796. On the mantelpiece gleam a cup (right) awarded to John Tayloe for the "finest tup lamb of one year old at the Arlington Sheep Shearing in 1808," and (left) a cup sporting the then newly popular motif, an American eagle with wings dropped, won by Mendoza on June 10, 1800. Portrait is Thomas Hunt, ancestor of Mrs. Tayloe, by the noted 18th-century artist Allan Ramsay.



Like Many Another Albemarle Home, Brookhill Crowns a Knoll on the Slopes of Carter's Mountain.

Set amid redbud and dogwood, shaded by leafy coffee trees, this home near Charlottesville was built by William, one of the Dyakum brothers who came from England to help Jefferson with Monticello. Beyond it rises the 9-mile-long ridge which extends from the gates of Monticello to the Carter family home, Redlands.

In Front of Their Clapboard Cabin, a Hard-working Country Couple Rest in Albemarle County Sunshine

Such farm homes are tucked in every roll and cranny of Charlottesville's hilly environs. Eighty-year-old John Wesley Hensley owns 260 acres; now his sons lime pastures, tend cows, feed turkeys, cut hay. On Sundays when the clan gathers—they had 11 children—their table groans with plentiful southern cooking: hot biscuits and gravy, ham, fat back and sausage, spoonbread, and pie. Mallhoves abound in old English names—Bryant, Coles, Kidd, Durham, Dudley, Gibson, Sadler, or Roberts.

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179

Photographs by Anne Beale





On a Crisp Fall Afternoon, Farmington Hunt Gathers to Chase the Fox over Virginia's Hills and Dales

Mounted on their handsome hunters, the riders are moving off to their first covert at Red Acres near Charlottesville (above). Following the hounds at full cry across rolling fields, they take jumps over fences with ease.

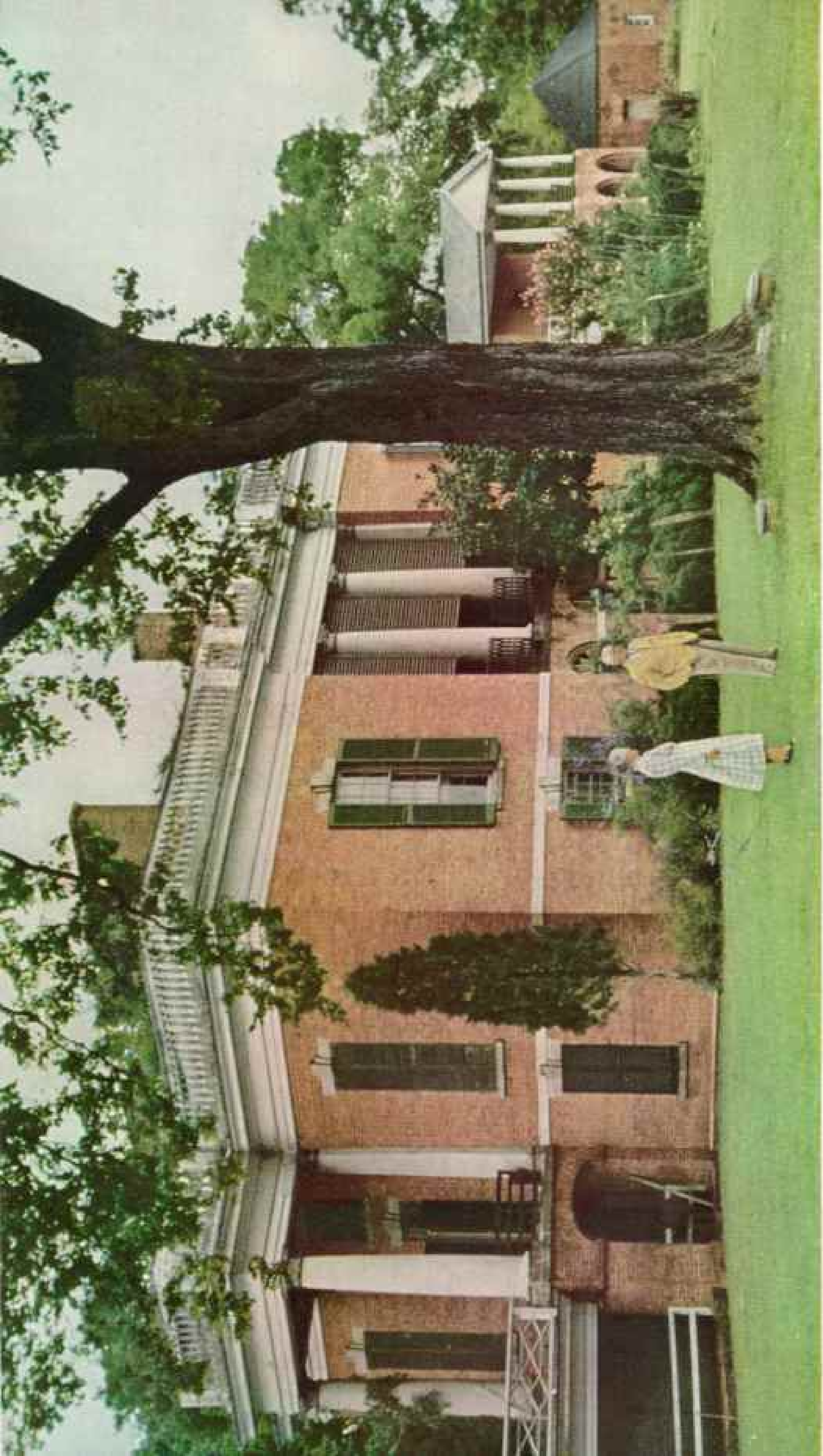
Thanksgiving morning, Grace Episcopal Church (below) holds services that emulate the quaint French custom, Blessing the Hounds. Flanked with corn shocks, rector and choir face the outdoor congregation at Cismont. On the outskirts cluster the hounds, being fed tidbits to keep them quiet. Pink-coated riders of Keswick Hunt dismount and pass their velvet hunting caps to receive an offering for the Blue Ridge School.

(l) National Geographic Society

551

Reproduction by H. Anthony Stewart





Classic Bremon, Overlooking the James, Reflects Jefferson's Mature Talent, Whereas Monticello Was Conceived in His Youth

The lovely 140-year-old mansion is still owned by descendants of its builder, Gen. John Hartwell Cocke, Jefferson's friend and a co-founder of the University of Virginia. Only recently has it succumbed to electricity and plumbing. Slate decks leading to identical pavilions at either side hide utility rooms below, as at Monticello (page 253). Loving care was lavished on its building; even the mortar between the bricks is hand-tooled with two fine lines.

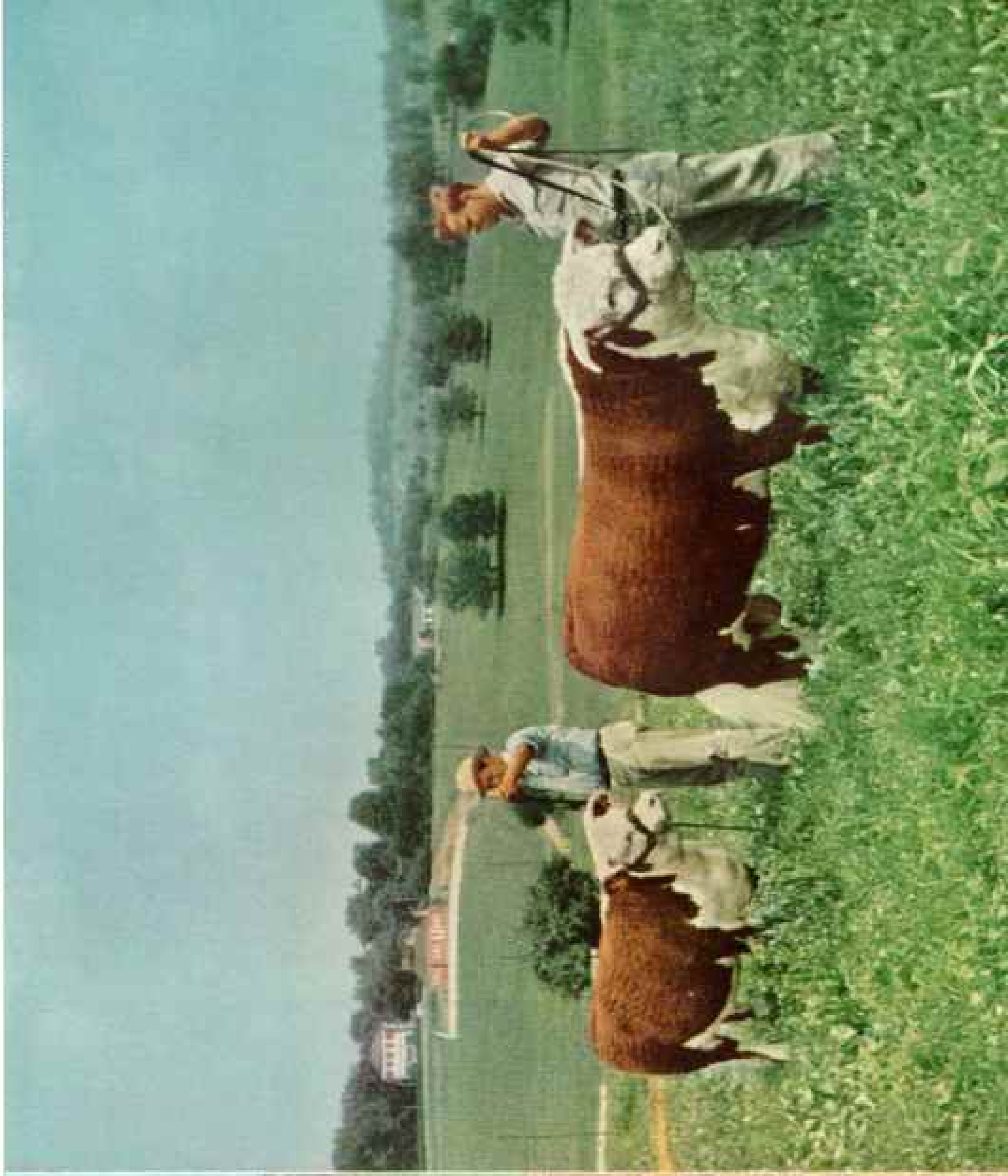
Albemarle's Red Clay Yields Durable Brick, Produces the Rich Rolling Pastures That Nourish Prize-winning Herefords

From such sparkling mud came the bricks that built most of Charlottesville, old and new. At Birdwood Farms, well-groomed Herefords display their curly locks. In background, the rear of the mansion peeps through trees. At right, Dick Middleton shows fine points of Birdwood R. Domino, yearling bull that won six blue ribbons in five States; Manager Jim Stork holds the heifer, Birdwood Proud Lady, which captured four grand championships.

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511

Illustrations by Anna Heels





♣ **On the University's Sun-flecked Range
a Student Wrestles with Tough French Verbs**

Most highly coveted of student quarters are rooms in the Jefferson-designed Ranges (background) and the Lawn facing the Rotunda (page 586). Until recently only Virginians occupied them, but now they are allotted by scholastic standing and leadership.

♣ **West Range Sheltered Noted Students
Edgar Allan Poe and Woodrow Wilson**

Appropriately, the University's Raven Society meets in the gifted writer's room, No. 13, behind the men in the rocking chairs. In the arcaded corridor, outside No. 31's green shutters, a plaque reads, "In this room lived Woodrow Wilson, 1879 to 1881."





On the Rotunda Steps Virginia's Largest Class, 1949, Bids Farewell

In jovial mood graduates hear their class history and present a gift to the University. Families and friends throng the Lawn. At next day's final exercises, when British Ambassador Sir Oliver Franks spoke, 776 degrees were awarded.



Starting from the Rotunda, the Marshal, Robert Kent Gooch, Leads Faculty and Graduating Class Down the Colonnaded Lawn at Finals Behind come President Colgate W. Darden, Jr., who students say helps Mr. Jefferson run the University, and Bishop Peter L. Iretton, who delivered the Baccalaureate sermon. Though Virginia was chartered in 1819, classes did not begin till 1825 when professors from England arrived and buildings were ready.

**"Wah-hoo-wah, We'll Sing It O'er and O'er; For the Dear Old U. V-a,"
Yell These Virginia Fans, Proudly Waving Stars and Bars**

When the Cavaliers, affectionate nickname for the University's football team, play home games in commodious Scott Stadium, students and their escorts love to wave the bright red, white, and blue flags and Virginia banners. Prior to last fall's season, the author spied in a Charlottesville shop a stack of Confederate flags, aptly trade-marked "Defiance!"

During the games students don Cavalier regalia (right) and gallop on horseback around the gridiron. When these were photographed at the Keswick Hunt Club, where they stable their steeds, a train leisurely rolled by. One rider galloped over to the tracks, doffed his plumed hat and bowed low, while bewildered passengers watched. Those travelers could testify they were truly in Cavalier country!

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157

Kodachromes by H. Anthony Stewart





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Where Colonials Bowled on the Green, Castle Hill Guests Now Play Croquet—Here Jouett Paused on His Gallop to Warn Jefferson

Dr. Thomas Walker, then the owner, provided Virginia's Paul Revere with a fresh horse and, according to lore, delayed Tarleton's Raiders with mint juleps for breakfast. Castle Hill's 200-year-old box hedge towers 40 feet in place.



Illustration by Anne Barba

Pasture Portrait: Brood Mare and Foal Are Led Out to Frisk in Morven's Billowing Fields, Striped with White Fences

In a valley flanking Cartet's Mountain, Whitney Stone, a past president of the New York Horse Show, maintains this model stud farm (page 591). In immaculate white barns, each pampered thoroughbred has its own box stall. Every summer yearlings are taken to Saratoga Springs for the auctions and then trained to be racers.

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589

Contributed by Anne Harris





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In Glimming Marble, President James Monroe Welcomes Guests to His Box and Yew Garden at Ash Lawn, His Home for 26 Years

Jefferson urged Monroe to become a neighbor, even designed his "cabin castle." One of Virginia's finest stands of boxwood, planted by the fifth President, spikes the air; crape myrtle festoons a balcony. In gratitude for the Monroe Doctrine, Venezuela commissioned Attilio Piccirilli to carve the statue.



Richardson for Anne Berry



**Red Brick, Green Blinds,
Snowy Gates, Columns
Spell Virginia Charm**

← Boxwood, ivy, and crape myrtle frame beautiful Morven, traditionally designed by Jefferson and completed about 1820 by David Higginbotham. Its flower-filled beds and terraces are a mecca for visitors during Virginia's annual Garden Week in April (page 589).
→ University of Virginia stands as a monument to Jefferson's architectural genius. With his own hands the nearly 80-year-old statesman drew its plans. Pavilions flanking the Lawn each depict a different style. They are "models of taste and good architecture . . . no two alike, so as to serve as specimens for architectural lectures."

Two-story Pavilion in background, home of Dean of College Ivey F. Lewis, illustrates for students Ionic columns copied from the Temple of Fortuna Virilis (Goddess of Manhood) in Rome. The colonnade is crowned with Doric capitals.

Other Pavilions simulate Roman buildings Jefferson admired, such as the Theater of Marcellus and the Baths of Diocletian.





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501

Illustration by D. Anthony Stettin

As in Life, Mr. Jefferson Still Watches Over Virginia Men

Here he sits in bronze in a small garden within the grounds. As Father of the University, Jefferson fought for its location in Charlottesville. When someone argued for another site as being more healthful, he drew up a list of all persons in the region over 50! To show his home town was the pivot of Virginia, he cut a card map of the State (including what is now West Virginia) and, marking Charlottesville with a dot, balanced that spot on a point.

In a pasture at Brookhill (below) a friendly little Aberdeen-Angus bull nuzzles an outstretched hand. On a later visit, his gentle ways were gone; the calf had grown up!

Illustration by Anne Davis



Japan Tries Freedom's Road

BY FREDERICK G. VOSBURGH

Illustrations by National Geographic Photographer J. Baylor Roberts

"WE are engaged in a great crusade here."

In his businesslike office in Tokyo's Dai Ichi (Number One) insurance company building, Gen. Douglas MacArthur, Supreme Commander for the Allied Powers, talked with us about what he is trying to do in Japan.

"My hope is that a thousand years from now the history of this period will contain at least a footnote saying that in this era the nobility of the American concept of life brought to the Far East two great pillars of civilization—democracy and Christianity."

Even though China is now in the hands of Communists, General MacArthur said he believes that in time our ideals will be accepted throughout the Orient and will transform the lives of roughly half of the earth's people.

The General mechanically lighted his pipe, but was so absorbed he failed to smoke it. Now 70, he looks a decade younger.

"There's a saying here," he reminded us, "'As goes Japan, so goes the Orient.'"

Roaming through Japan today, even one lacking General MacArthur's acute sense of history sees that here is a unique endeavor, an attempt to turn 82,000,000 heirs of serfdom into self-reliant, free citizens.

"How long will it take?" I asked many people, Japanese and Occidental.

Answers ranged from ten years to three generations. Nearly everyone felt it could be done if given enough time.

Less Bowing Before the Palace Now

Symbolic of the weight of tradition is the Imperial Palace directly across the street from General MacArthur's modern Western-style headquarters. Emperor Hirohito's labyrinthine home is surrounded by a vast park and a granite-walled moat built by a 17th-century Japanese shogun.

People passing the palace of the "Son of Heaven" used to bow low. Now, because of something vaguely understood as "demo-kra-shi," this is not fashionable. Most people go straight on by—office workers in leather shoes, poorer people in wooden clogs that click-clack like a ping-pong game, laborers and farmers in cloven boots that resemble the hoofs of cattle or of Pan.

Some even fish in the imperial moat, ignoring such polite Japanese "No Fishing" signs

as one that reads simply, "Love the fish."

The Emperor, his people understand, is a friend of this "demo-kra-shi." Every few months he calls on General MacArthur—"Makassa Gensui," to the Japanese. The Emperor has publicly disclaimed divinity. Even the humblest may look upon him when he goes forth among his people (page 595). They may even look *down* upon him from windows or roofs without punishment now.*

Though the Son of Heaven has come down to earth, his hold upon his people still is strong. The wild excitement that greets his public appearances surpasses even that accorded a Japanese baseball hero or the world-record-breaking swimmer, Hironoshin Furuhashi. The Emperor—man and institution—still symbolizes and unifies the nation.

"The Emperor shall be the symbol of the state and of the unity of the people, deriving his position from the sovereign will of the people," says Japan's new Constitution, prompted by the Occupation. Lest there be any mistake, it adds that "sovereignty resides in the people." The Constitution renounces all war and preparation for war.

"Family and Friends All Look Forward"

In Japan's sumptuous war-spared capitol, the National Diet Building, we talked with the Japanese elder statesman who had been Minister of State when the new Constitution was adopted in 1946. Formerly Baron Kijuro Shidehara, he is now plain Shidehara-san (Mr.), because that document abolished titles of nobility. His present post is Speaker of the House of Representatives.

"A great democratization movement is going on," said this grandfatherly little man, a pre-war diplomat and onetime ambassador to the United States. "But educating the people is necessary. Full understanding of democracy will take much time, certainly many years."

"Japan is not like person suffering from disease. Our country's pangs are those of childbirth. New Japan is being born."

His wise old eyes crinkled at the corners. "Though I have never been woman in my whole life," he added, "I understand travail is painful. But at such time family and friends all look forward to bright future."

Outside, the streets teemed with people—

* See "Tokyo Today," by William R. Castle, Jr., NATIONAL GEOGRAPHIC MAGAZINE, February, 1952.

shy little women in bright kimonos, and less shy ones in dresses from Sears Roebuck; gray old men in gray old kimonos; younger ones in Western-style suits; schoolgirls in blue-and-white middie uniforms; black-garbed schoolboys; college youths topped by mortarboard caps; workmen in faded shorts, bits of old army uniforms, and shirts so mended they were mostly needlework.

What were Mr. and Mrs. Tanaka, the Smiths and Joneses of Japan, thinking? Mostly, it seemed, about making a living, for more Japanese than ever before are now crammed into these four islands. Since the war 6,241,433 have been brought back here from overseas parts of the lost empire and from foreign territories in Asia and the Pacific isles.

"The big burden lies in getting fine quality of rations and clothes, shoes and clogs because they have burned during the war," said a woman in a Japanese "Man in the Street" broadcast. Its subject was "How Can You Manage Out the Money-tight Situation?"

"My monthly income is around 10,000 yen," said a man. (That's about \$28.) "We have a big sum of deficit."

"I am spending piece by piece," said another. "All sum of income I hand to wife."

"It is the true aim of present Japan," said a third, somewhat grandly, "that we should lead austerity life hand in hand now that we have lost the war, I think."

Several sharply criticized the Government's price policies.

Man in Street Speaks His Mind

The very existence of radio forums, now highly popular, marks a revolutionary change from the days when no one could speak his mind without incurring arrest by the Kempeitai, pre-Occupation Japan's ruthless "thought control" police.

Now Tanaka-san all over Japan can have his say on subjects ranging from "Girls That Are Found Under the Girder Bridge"; "How Is Moral Between Male and Female Lately?"; and "Are Wives Equal to Their Husbands Now?" to "How Do You Build Your Sweet Home?"; "Could We Get Rid of the Black Marketing?"; "How Could We Prevent Political Corruption?"; and "What Is the Bottleneck for the Development of the Working Women?"

Thousands jam around the microphone. Communists often organize cliques and shout the party line at the "mike."

Old people especially find it hard to get used to the new free ways. During a Man in the Street program at Kumamoto on the

subject of the new Constitution, an elderly man suddenly screamed, "What are you talking about, 'new Constitution'? We have Emperor, and we cannot talk about him."

Some applauded. Others shouted dissent.

Woman Finds Kissing "Too Exciting"

In a broadcast from Tokyo's main shopping street, the Ginza, a woman objected to Western movies on osculatory grounds.

"A kissing scene is too exciting," she said, "and I can't look at the screen."

"Since kissing is unfamiliar with us, the scene seems unnatural," the announcer agreed soothingly.

"The good picture which I saw last year was *The Life of Bees*," said another woman. "I like that kind of picture."

Brides rebelling against the old traditional subjection to husband and in-laws occasionally voice their grievance on the air, as in this rural lament:

"Brides have to get up early in the morning while it is still dark outside in winter. They fix breakfast for the whole family. Without any rest they must go out into the field and work like slaves. After a hard day's work is over, they have no time to relax. They must mend things. . . ."

"I told my ideas to some of the influential women of the village. They said it is too early to materialize what I thought. I was told that I would be treated like a pagan. . . ."

"If they insist that it is premature, nothing will make any progress. There will be no improvement."

"Wives," asserted a city woman, "should be allowed to go out at least once a month."

Slowly these gentle little women are beginning to see themselves as something more than serfs or chattels.*

Commented an American GI: "The Japs really had their women trained. We're spoiling the best setup a husband ever had."

Love matches are becoming more frequent, though a Tokyo judge maintains that they end in divorce more often than do the old-fashioned marriages arranged by families and go-between.

"A bride is not for my parents but for me," pointed out a young man in a radio discussion, "so I want my views to be respected to some extent."

Deep social change comes slowly, but in this fifth year of Allied occupation Japan shows many such results of the impact of American ways on a people who have never

* See "Women's Work in Japan," by Mary A. Nourse, NATIONAL GEOGRAPHIC MAGAZINE, January, 1938.



Japanese Today Can Look at Their Emperor, Even Pursue Him with Cameras

Having disclaimed divinity, Emperor Hirohito (right foreground) makes frequent trips among his people. Here he inspects a hospital in atom-bombed Nagasaki. Said a city official: "No wonder the people are excited and happy. This is the first time they have really seen the Emperor. Before we had to bow deeply when he passed. By the time we looked up he was already gone." Nodding and waving his unpretentious gray hat, he looks more like a veteran political campaigner than the sacred sovereign he was before the Occupation.

known anything but feudalistic, autocratic power. Whether they are temporary or permanent, only the future can show.*

"Fire-looking Towers" Guard Tokyo

At first Japan seemed to me as strange as a world turned upside down (map, page 397).

Our Northwest Airlines DC-4 was only 36 hours out of Minneapolis when high white peaks punctured the clouds; these were the Kurils, once Japan's, but turned over to Russia by the 1945 Yalta agreement.

Then we saw the green land of Japan, a Lilliput of tiny fields and glinting, glasslike paddies. The scene was so different from the great grainfields of Minnesota and Alberta that we might have been looking down on another planet.

Steel ribs of burned-out industrial plants appeared as we landed at Tokyo's Haneda

Field, but the little wooden gray-tile-roofed houses of the world's third largest city spread as far as I could see. Such houses weather fast, and even when we drove among them I could hardly realize that nearly all had been erected since the war, like mushrooms sprouting from rubble left by fire-spreading B-29's.

Here and there stood scarred survivors, windowless structures of stone, concrete, or brick. These were the *kura*, or treasure houses, built by the well-to-do as repositories for prized possessions in case of fire or earthquake. With oriental fatalism, they are thus "insured" against the ever-present hazard.

Steel fire towers like those in our forests jut above the close-packed wood-and-paper houses. If smoke appears, the watchman telephones the fire department.

* See "Unknown Japan," by Willard Price, NATIONAL GEOGRAPHIC MAGAZINE, August 1947.

"The fire-looking tower," said a Japanese, "is remnant of feudalistic system. In samurai days they had such towers.

"If the day is windy and dry, the fire-looker rings his bell and we make ourselves more watchful for fire."

Japan Seems a Nation of Jaywalkers

"Watch out!" The exclamation was wrenched from me as a Japanese walked calmly across the street without looking to left or right. A blast from the horn got no results; the driver had to swerve to avoid him. Several times the same thing happened. To an American, Japan seems a nation of jaywalkers.

"They don't interpret a horn the same way we do," a Japan-wise fellow American explained later. "The way they figure it, if you blow your horn that means you have seen them and will avoid them."

Although Japan makes automobiles, the country has few by American standards, and its people generally are not yet traffic-conscious.

Muscle, not motors, propels many loads. This human anthill seemed alive with people pushing or pulling something on foot or hauling little trailers hitched to some of Japan's 6,000,000 bicycles. Traffic flows on the left, as in England.

A mountain of wastepaper on a crude cart inched past the Supreme Commander's headquarters, dwarfing the little plodding coolie who pulled it with all the determination of an ant lugging home a fat caterpillar. Others hauled matting-wrapped farm produce, crockery, tin pots and pans, even babies (page 626).

Some carts served notice to the nose that their cargo consisted of "honey buckets." Human waste collected from city dwellings goes to fertilize age-old fields jaded by the task of feeding Japan's dense population. Occupation authorities point out that fertilizer is scarce, and without the night soil fields would grow far less food.

In an alley off the Ginza a professional storyteller had attracted a knot of big-eyed, black-haired children and was illustrating his tale by exhibiting brightly painted pictures. In Japan's militaristic days, even these yarn spinners were used to implant jingoistic ideas. Now the theme of this one was the evils of drinking *sake*, rice wine.

Powdered Viper Sold as Medicine

"Need a rabbit, chicken, duck, or goldfish?" asked Joe Roberts, NATIONAL GEOGRAPHIC photographer, as we walked past the sidewalk stalls of the Ginza. "How about a white

mouse and treadmill? They've got everything here."

One stall was selling powdered snake. Explained a little handbill in English: "The viper a kind of snakes is highly appreciated in Japan from olden times as a naturally gifted nourishment. This is made from the viper so as to be taken comfortably without losing its nourishing elements."

The little proprietor stuck out his thin chest and thumped it.

"Medicine," he explained. "Make strong!"

He exhibited his ugly little dried snakes and the brown dust their ground-up bodies yielded. Translation of the Japanese characters on the envelope revealed a gem of uninhibited advertising. It read:

"Good for tuberculosis, pleurisy, disease of digesting organs, neuralgia, heart diseases, asthma, colds, piles, beriberi, liver diseases, female diseases, pneumonia, kidney diseases, hypertension, anemia, nervous prostration, bronchitis, eye diseases, bed wetting, before and after childbirth, poor lactation, weak physique, nutritional deficiencies, hard labor, others for which there has been no cure."

Characteristic of the changes afoot in Japan is the fact that a few weeks later this magnificently all-inclusive advertising had fallen afoul of new laws, like our own, designed to protect the public.

But sale of powdered viper was not banned. After laboratory tests, medics reported: "No alkaloids could be detected; and, when fed to mice, no visible effects, either harmful or beneficial, were produced."

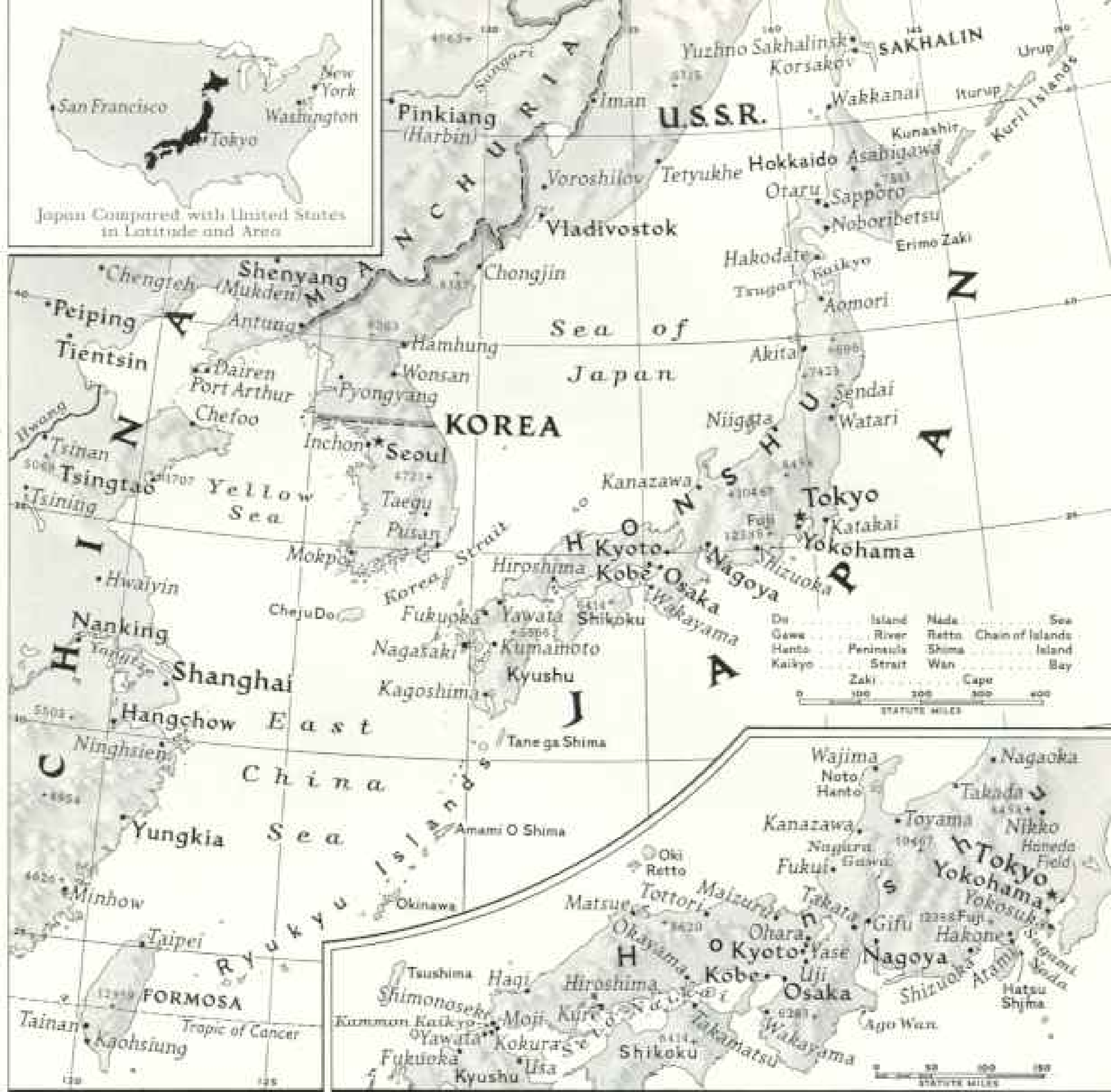
It is part of the paradox of modern Japan that some people take a little spoonful of viper dust, night and morning, in the capital of a country which makes and uses streptomycin and penicillin, and which has produced an atomic scientist, Dr. Hideki Yukawa, 42, who recently won the Nobel prize for physics.

"Naming of Streets Will Stay . . ."

Yellow signs put up by the Occupation label the streets with such names as "A Avenue," "B Street," and "Ginza Avenue." Without them Americans would be lost.

Japanese generally have names for sections or blocks, instead of streets. Imagine having to memorize the names of hundreds of blocks, or groups of blocks, in a city like New York, Chicago, or Philadelphia!

But this isn't all. Houses in a section are not numbered in the order in which they stand, but in the order in which they were built. The first house erected would be number one, but its next-door neighbors might be numbers 25 and 30.



Drawn by Theodore P. Thurston and Ervo K. Allman

One-twentieth the Size of the United States, Japan Contains 82,000,000 People

Stripped of Manchuria, Korea, Formosa, and other parts of its former empire, postwar Japan comprises only four main islands with adjacent islets. They total 147,000 square miles compared to 121,000 for the British Isles, including Ireland. Like its European geographical twin, Japan cannot feed itself without selling large quantities of industrial goods abroad. Its new Constitution renounces war, and its only defense forces consist of Americans and a few Australians.

Though street numbers still are missing, the names are a big help.

"Naming of streets will stay after Occupation, I think," said one of our interpreters. "It is much more convenient, *ne?*"

This word *ne*, which rhymes with "heh," jerks forth at least once in almost every Japanese sentence.

When I asked what it meant, I was told, "Nothing. It isn't really a word at all." But take *ne* out of the language and a Japanese would be as speechless as a Latin with his hands tied.

Ne may mean nothing, but it also means everything—interrogation, exclamation, emphasis, a spur to action, a prod to make sure the hearer's attention isn't wandering. At each *ne* the listener gives a sort of grunt.

Men often use *na* instead of *ne*, for the speech of the two sexes differs slightly.

"Your American GI's usually speak women's Japanese," observed our interpreter with a grin.

At an Army mess a newcomer who was trying to learn the language from books asked the Japanese waitress for some milk,



On Tokyo's Bamboo-shaded Shopping Streets, One Can Buy Everything from Binoculars to White Mice and Powdered Snake

Stores and little sidewalk stalls lure Americans with signs in English. On the main shopping street, the Ginza, the author found viper dust being sold as "medicine for strength" (page 396). Western-style clothing predominates in this scene on Z-Avenue, but the bobby-soled young mother carries her baby in the old Japanese way.



Albert Querquet Corilla

Earthquake Survivors Scan a Bulletin Board for Information About the Disaster Which Killed or Injured More than 13,000

Silent and saddened, they read official notices inquiring about missing relatives. "Citizens News Board. For the Exclusive Use of the Fukui City Office," say the characters at the top of the sign in this debris-fittered city of 85,000. The Fukui quake, June 28, 1948, killed 3,238 persons and injured 10,157.

using the word *chichi*. She blushed, suppressed a smile, and fled in confusion. Soon the other waitresses were also blushing and suppressing smiles.

"It turned out," related the American, ruefully, "that *chichi* is milk all right, but it's breast milk, or even the breasts. Was my face red!"

Waitresses, telephone operators, and maids at the Tokyo Correspondents' Club were like little Japanese dolls. The one who tidied up our room was especially pretty, and Joe, with Virginia courtliness, dubbed her "Cutie-san"—"Miss Cutie," or "Honorable Cutie." Later we learned that this sounded to her like "Kiuri-san"—"Miss Cucumber."

"*Moshi-moshi, moshi-moshi.*"

The phrase, which sounded like "mushy-mushy," rose like a constant incantation from the busy switchboard of this efficient and congenial club at No. 1 Shimbun (meaning "Newspaper") Alley, a name bestowed by the correspondents. All the word *moshi* meant was "Hello" or "I say" or "Look here," but it always came two by two, like the animals in Noah's Ark. Often it was followed by *Ao ne*, which also means "Look here."

Japanese words all end with a vowel or with the letter "n." A consonant at the end of a word sounds too abrupt or harsh to the Japanese. Thus they soften English words with a terminal "u" or "o." A present, for instance, becomes a "present-o."

Cigarettes seemed to be the most popular present-o, much more appreciated than money. When we handed two or three to the Japanese youth who drove us in a U. S. Army jeep, they invariably brought a bow or two and a carefully enunciated "Sonk you very much" or a "*Domo arigato gozaimasu*," which means the same thing.

Finding frequent occasion to use this phrase, we tried abbreviating it to "arigato," until we found that this sounds horribly lacking in politeness to Japanese ears. Even a ticket taker in a crowded bus uses all ten syllables to thank each passenger.

Resentment, if Present, Is Well Hidden

Before I came to Japan, my sons had expressed concern.

"Gee, Dad," one had asked, "will you be safe? If the Japs were occupying this country and you had been killed in the war, I know I'd hate them and I might try to do something about it."

Surely some resentment would not be surprising in beaten and occupied Japan.

"There's tremendous anti-white feeling," said an able American woman writer here.

Yet in two and a half months in Japan, Joe and I encountered no hostility. Kindness called forth greater kindness, and the international coin of good will—a smile—circulated at par.

"There's no place in the world where an American is safer," said an Army general on duty in Japan.

In more than four years, reports SCAP (Supreme Commander for the Allied Powers), there have been only two isolated acts of violence against Americans.

One reason may be the Emperor's influence; but another is the considerateness and good will of the Occupation.

Kindness when harshness was expected amazed and touched the Japanese.

"Before the Occupation troops came," recalled postwar Prime Minister Shidehara, "the people had feared rape and looting. Bells were to be rung to summon men with spears or any homemade weapon to defend their women and their homes. They were never needed."

The old statesman paused a moment.

"The quality of mercy is not strained," he said. And he went on to quote the whole great Shakespearean passage.

The present Prime Minister, Shigeru Yoshida, recalls that immediately after the war a big American soldier walked up to his car at Yokohama. The Japanese thought his hour had come. Instead, the soldier handed him cigarettes.

The General and the Carpenter

American troops on duty in Japan are, in general, as disciplined and decent as any I saw in three years of service in Europe during the war. General MacArthur sets the example, and woe to the soldier who is brutal, unkind, or careless of jaywalking Japanese; he gets prompt punishment if caught.

Early in the Occupation, an officer in ordinary sunbans entered an elevator in the Dai Ichi Building. A Japanese carpenter started to board it too.

"Just a minute, please," said the Japanese operator. "This officer is General MacArthur."

The carpenter froze with awe, embarrassment, and the old fear of the military. Japanese generals had considered themselves a caste apart.

But the Supreme Commander for the Allied Powers was beckoning him aboard.

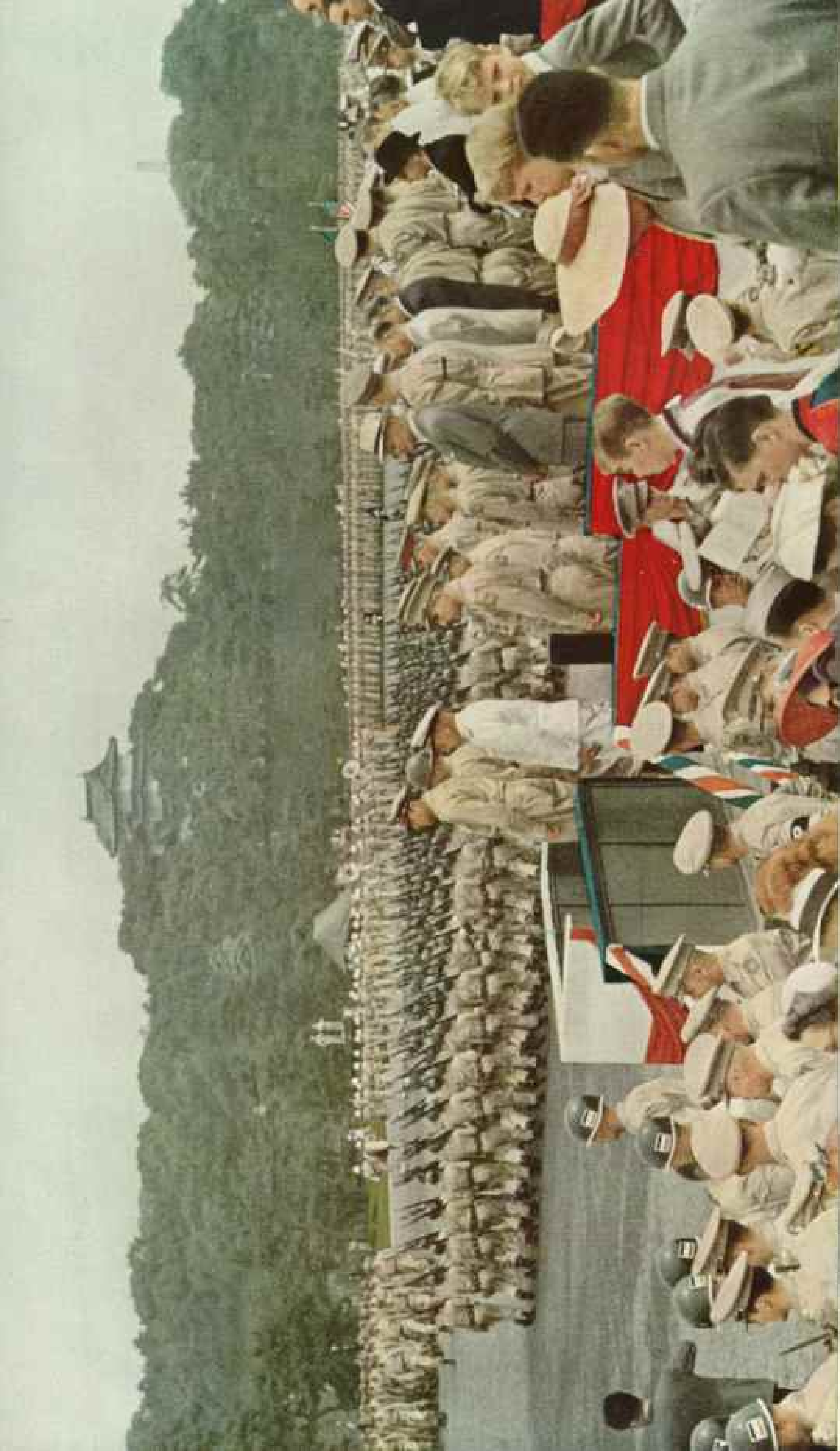
"The elevator will not go up unless you ride in it," he said, smiling.

He inquired the man's errand, told him at what floor to get off, and gave him detailed



Dummy Warriors on Floats Recall a Legend of a Battle Ruse Ten Centuries Ago

"What's this all about?" asks the colonel, puzzled by a huge papier-mâché samurai and arrow bearer in Aomori. Legend says inhabitants frightened away enemies with effigies of fighting men; hence this Dummy Festival.



Sixteen Abreast, Occupation Troops March Past General of the Army Douglas MacArthur in Tokyo's Imperial Palace Plaza

"We stand here abreast of the threatening sweep of Communist forces over the heart of Asia," said the Supreme Commander in a statement on this occasion, Fourth of July, 1949. He declared the Japanese comprehend Communism's threat and form a "bulwark to stem its advance east and discourage its advance south."

In the Same Plaza in the Capital's Heart, Flag-waving Japanese Stage a May Day Demonstration

Participants in this rally on May 1, 1948, carry labor union signs and banners. The lightning placard at lower right is that of an electrical workers' union. In the business section beyond, the Occupation has its headquarters. This part of Tokyo, around the Imperial Palace, was spared bombing.

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603

Kodachrome by Maxnard Green Williams



Signs, Flags, Smiles Greet Soldiers Returning from Russian Prison Camps

Japanese homelike showed mingled emotions as a shipload of repatriated prisoners, heavily indoctrinated with Communism, came ashore at Maizuru, Japan, after four years in Russian hands. Captured in Manchuria, some had been away as long as seven years.

"We have been concerned about you," says the sign at left. "We welcome you from the bottom of our hearts.—United Church of Christ in Japan." The larger one says: "You must have undergone many hard experiences. We sympathize with you. Now you have put your foot on the soft soil of your homeland. Please take new energy. Japan is today making great change in everything. In order to become a democratic, peaceful, cultured nation, let us all together build a land of peace."

This group of welcomers waits on the route from dock to disinfecting and bathing sheds. As the tan-clad column approached, boys waved the "unrizing" sun flag of Japan; mothers, sweethearts, wives, sons, and daughters of long-missing men peered for a sight of a loved one; some women dabbed their eyes with handkerchiefs.

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Kodachrome by J. Baylun Roberts



"American Kitchen Very Convenient, I Think." Kimono-clad Visitors Marvel Most at Electric Stove, Refrigerator, Hot Running Water
Hard-drugging Japanese women thrill at conveniences in the home of Mrs. Keith D. Stidham, wife of a United States Army lieutenant, at one of Occupied Japan's many "little Americas." IX Corps Headquarters, near Sendai. The Japanese housewife at right is lucky; she lives at Atami and cooks by steam from its hot springs.

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605

Continued on p. 606



Three Royal Princesses Get a Graphic Picture of Their Hilly Country's Food-growing Limitations

In the Natural Resources Section of SCAP (Supreme Commander for the Allied Powers), daughters of Emperor Hirohito are shown maps and charts illustrating the fact that only about 16 percent of mountainous Japan can be farmed.

The princesses—Yorinomiya, 19; Takamomiya, 20; Suganomiya, 11—listen attentively as Lt. Col. H. B. Donahoon, of the Natural Resources Section, and a Japanese Government expert point out features of a land utilization map of Japan. It shows that because of topography and soil these four islands cannot possibly grow enough food to feed their 87,000,000 people, with the result that modern Japan must sell large quantities of manufactured goods abroad in order to live. Japan's population per square mile of cultivated land is 2,842.1, compared to 1,281.1 for crowded Italy and only 216.8 for the United States.

Sixty-six percent of Japanese land is forested, but heavy cutting to rebuild bomb-ruined cities has caused denuding, erosion, and silting. Reforestation is being pushed.

"A, so" (meaning Ah, so), murmur the girls.

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Illustration by J. Taylor Roberts



← Silkworms from These Eggs Will Make Enough Silk for Seven Kimonos

Against the rich green of mulberry bushes, an employer of the Mivagi Sericulture Experimental Station at Watarai, near Sendai, displays some of the millions of eggs hatched here in rooms kept at a constant temperature of 78° F. by wood or charcoal fires.

Devouring mulberry leaves spread on bamboo trays, the worms grow rapidly, then weave the cocoons which are unreeled to form silk, long one of Japan's most important products. Competition from nylon and rayon is stiff, but the Japanese silk industry is trying hard to regain foreign markets.

At such experimental stations, scientists cross-breed silkworms to develop better producers, improve their food plants, and educate farmers in ways of controlling disease and increasing production.

→ To a Japanese Girl as Dear as Dog to American Boy
Azalea Plant Is as Dear

This exhibit of home-grown plants, lovingly tended for years, was held in Tokyo's Hibiya Park. Azaleas bloom in late April and early May, white, pink, red, and violet.

© National Geographic Society

Kobuchizawa by J. Bayler Roberts





Art-loving First-graders Sketch an Old Gate of the Nijo Palace in Kyoto

Built by the first Tokugawa shogun, Ieyasu, about 1600, the palace has "nightingale floors" designed to warn of assassins. They still creak tunefully at the lightest tread. American courier planes now land alongside this moat.

directions before continuing to his headquarters on the sixth floor.

To the people of Japan, this was no minor, everyday incident. The man wrote a letter of appreciation, and a Japanese artist painted a picture of the General and the Carpenter. Bound in a little paper-covered book in Japanese, it went all over the islands, together with a description of the incident and such surprised observations as "The General is not accompanied by guards; nor does he carry any pistol."

From the people the General gets stacks of letters, many phrased in quaint high-school English, and such typically Japanese gifts as flowers, and even insects. Listening to "singing" insects and watching the glow of fireflies are popular activities in Nature-loving Japan.

A basket of a thousand fireflies from the Young Men's Association of Takata, Gifu Prefecture, bore a carefully handwritten card headed "Gifts to the Great General" and explaining that "The glow of firefly are natural large spontaneity lights."

U. S. Powdered Milk Aids Growth

Badly needed American food and well-administered public-health measures have also helped endear Americans to the Japanese.

"Living largely on rice, fish, and vegetables, they're deficient in animal protein and calcium. That's one of the reasons they're small," said Brig. Gen. Crawford F. Sams, Chief of the Occupation's Public Health and Welfare Section.

"Powdered milk is a good source of both, and in our school-lunch program we serve it to approximately five million school children—out of 18 million who need it.

"Parents appreciate our efforts. If democracy means doing something for their children, then they're all for it.

"Restricted rations during the war with China and World War II resulted in lowered height and weight. Now the growth curve is going up."

Japanese are so small that an American here feels like Gulliver in Lilliput. The average height of Japanese men is only 5 feet 3 inches. Women average 4 feet 11.05 inches. Nisei (second-generation) Japanese in the United States grow appreciably taller.

At Nagata-cho Primary School in Tokyo we saw a first gradeful of black-eyed, black-haired, broad-faced little Kewpie dolls jumping up and down in their seats for joy at the sight of American milk (made from powder from Eau Claire, Wisconsin). Five mothers and a dietitian served it hot in an international stew containing Japanese-grown potatoes, sea-

weed, cabbage, and American canned meat.

As their bowls were filled, these six- and seven-year-olds politely murmured "*Itadaki-masu*," meaning "Thanks, I will take some"—then dived in. When the dietitian announced, "There is some milk left over," the room was filled with brandished bowls and excited cries of "*Hai*" ("yes").

American influence has brought coeducation, and with Japanese literalness these pupils were seated alternately by sexes—first a boy, then a girl, and so on. As a Japanese interpreter put it, "Coeducation is going very well, with the boys and girls all dovetailing together."

"Goodbye, Sonk you," said the kids in English at the prompting of their teacher as we left.

Because of shortage of powdered milk, this treat was being given only twice a week.

31,000,000 Inoculated Against TB

Meanwhile, these islands get more mouths to feed as the birth rate continues high and the Occupation-supervised health program saves more and more Japanese lives.

In by far the most extensive inoculation attack on tuberculosis in the history of the world, more than 31,000,000 Japanese since the war have been inoculated with BCG (*Bacillus Calmette-Guérin*). This is a strain of bovine tubercle bacilli named for two Frenchmen who developed it more than a quarter of a century ago. It has been used in other countries, including the United States, but nowhere on so many millions.

Since 1945 the death rate from TB, long the leading cause of death in Japan, has dropped from 280 per 100,000 to 181.1.

"The entire reduction," said General Sams, "has come in the age groups immunized with BCG. Within the immunized groups the mortality has been reduced by 88 percent."

In Japan this measure, and similar attacks on typhoid, smallpox, and other killers, have reduced the death rate from the 1938-45 average of 18.3 per thousand and the 1945 high of 29.2 to 11.6 (the U. S. rate is 9.9). Virtually the entire Japanese nation has been vaccinated against smallpox. American-led sanitation teams have greatly reduced such diseases as typhoid, paratyphoid, and dysentery.

One strictly Japanese sanitation measure consists of washbasins in the lobby of the huge palace, patterned after that at Versailles, which houses the National Diet Library. There patrons wash and disinfect their hands before touching the books (page 612).

"They're the readingest people I've ever seen," exclaimed a SCAP official.



America Now Dumps Barley Instead of Bombs on the Docks at Kobe

Grain brought from the United States to help feed Japan pours onto the pier as a winch-operated scoop unloads lighters at this important Inland Sea (Seto Naikai) port near the big industrial city of Osaka. Sweating men bag the 7,500-ton load, using double bags so no grain will be lost; women sew the bags shut. A United States ship (out of sight) brought the grain; the vessel in background is Danish.

Eager, bespectacled Japanese crowd book and magazine stores and throng libraries run by SCAP's Civil Information and Education Section.

This thirst for knowledge is nothing new. It equally impressed visitors to Japan long before the war.

Newspapers such as the Osaka and Tokyo *Mainichi* and *Asahi* circulate millions of copies a day. All literate classes read them, and the average city dweller is well-informed.

One Tokyo street, T Avenue, is lined for blocks with book stores. Out of 28 stores on one side of one block, I counted 21 selling books.

A secondhand English-Japanese dictionary, which sold new for 7 yen (about \$1.65) in the year of the attack on Pearl Harbor, now costs 1,250 yen (about \$3.47 at the present inflated but official rate, 360 yen to the dollar). Our jeep driver was studying English, with the aid of radio-broadcast lessons.

Sporting-goods stores drew crowds to listen to broadcasts of baseball games, and to buy bats bearing such names as "Excellent Happy Hit."

Peasants Now Own Their Tiny Farms

Out in the countryside we found ourselves in a medieval world. It was raining, and farmers wore straw raincoats—one stiff mat over the back, another in front—and a big conical hat on top. To Joe they seemed like insects, with a hard carapace fore and aft. To me they looked like the playing-card characters from *Alice in Wonderland*, or peasants of the Middle Ages.

Yet the country's 6,000,000 drudging peasants, and their equally hard-working wives, sons, and daughters, rank among the world's finest rice farmers, supply most of their country's staff of life, and form the strange medieval backbone of Japan.

Farms are so small (average: 2.49 acres)

that Japanese say they are "like forehead of cat."*

Now, for the first time in history, millions of Japan's farmers own the land they till. For centuries most of them rented their farms, paying rentals averaging half the crop. Some landlords charged ingenious extras, such as a fee for the essential privilege of walking on the footpaths between flooded rice fields.

Today these landlords have been bought out by the farmers at low, long-term rates, under the land reform law passed by the Diet at the instance of the Occupation. By creating millions of capitalists, and thus giving them a stake in the capitalist system, SCAP officials say a strong bulwark has been erected against Communism.

I expected to find farmers wild with joy, but those I talked with weren't. One said, "I can feel easy at present, but I don't know in the future." He feared that the wealthier, better-educated landlords might sometime succeed in reversing the law.

Another farmer complained of his taxes, the cost of fertilizer, and the trouble of marketing his crop, all details formerly taken care of by the landlord. He hadn't done the necessary arithmetic to know whether he was better off.

More intelligent and articulate farmers write letters of thanks to the Japanese Government and to SCAP.

Landlords voice such complaints as this: "I am a 62-year-old Japanese. . . . About 12 years ago I bought some rice fields . . . to make my old age secure. . . . I do not think it is the intention of the American people to deprive an innocent Japanese of the provisions made by him for his declining years. . . ."

More Radios and Permanent Waves

Government-encouraged cooperatives help farmers handle their new responsibilities, and a SCAP agricultural expert reports that the new farm policies have improved their lot. Revisiting farm areas after 18 months, he reported more farmers in positions of leadership, better health, fewer people on relief, more livestock, farm machinery, radios, and "more Western clothes and permanent waves."

Similar laws have been passed to free fishermen from exploitation by boat and net owners.

General MacArthur asserts the conviction that Communism will not win out in Japan, partly because of such measures as these, and partly because Japanese suspect anything that comes from their old enemy, Russia, or from the Chinese, whom they like but consider a bit inferior to themselves.

At Maizuru, on the north coast of Honshu,

we saw hundreds of Japanese prisoners of war being returned to their homeland at last after years in Soviet hands (page 604).

As the Japanese ship entered the hill-girt harbor, its decks were a mass of brown-clad young men waving arms with clenched fists in unison and shouting a Communist "peace" song about uniting the youth of the world against the "bourgeoisie" who "again kindle the torch of war."

Crammed with Communist propaganda, they said they had been told that the reason for the long delay in bringing them home was that the Americans and "the reactionary Japanese Government" wouldn't send the necessary ships. But in the harbor they saw the repatriation fleet, with steam up day and night, constantly ready to sail for Russia as soon as the Soviets gave the word.

Many said they were brought three or four times to a Siberian port, shown an empty harbor, and told, "See, the Americans didn't send the ships!"—an ingenious form of torture to soldiers aching to be home.

Thousands of Russian-captured Japanese are still missing in this fifth year after the end of the war.

City of Hope and Tears

As we watched this shipload come ashore and file silently past waiting civilians, we saw many women mopping their eyes.

Maizuru, once a big naval base, is a city of hope and tears. Families move here from afar to wait for long-missing loved ones.

One family had bought a little "ice-candy" store on the street up which the repatriates pass on their way to the station—hoping that one day they might see again the husband and father. One woman died of what the Japanese call "heart-sickness" after moving here and waiting for years for the man who never came.

After being dusted with DDT, the repatriates stripped and flocked to steaming baths, unabashed by the presence of Japanese nurses, who looked on with equal lack of embarrassment.

Transformed, the prisoners lost their stony-faced sullenness and joked as they dipped from deep concrete tubs, scrubbed each other's backs in unison for photographers, then enjoyed a good old up-to-the-neck Japanese soak in all-but-boiling water. All except one, who was thin and bruised, were bronzed and healthy looking.

Clean clothes and a little Government-

* See, in the NATIONAL GEOGRAPHIC MAGAZINE: "Backwoods Japan During American Occupation," by M. A. Huberman, April, 1947; "Some Aspects of Rural Japan," September, 1922; and "Geography of Japan," July, 1921, both by Walter Weston.



Patrons Wash and Disinfect Hands Before Touching Books in the Diet Library

Germ-conscious Japanese keep wash basins labeled "water" and "disinfectant" in the lobby of the palatial Tokyo building that houses Japan's equivalent of the Congressional Library in Washington, D. C. A sign directs all comers to purify their hands before they read (page 609).

given spending money heightened their sense of well being.

Japanese officials from various prefectures had come here to greet them and help find jobs. Home, love, jobs, and time complete the transformation for many.

Japan's Communist Party tries to head off these men before they can get readjusted. Said its Secretariat in a secret memorandum to all prefectural committees:

"As the families of the repatriates are nearly all anti-Soviet and anti-Communist and as it will be difficult to absorb them into our organization after they settle down, because of the strained condition of their livelihood, efforts must be made this year to absorb them into the Party before they return to their homes."

Big red-flag-waving demonstrations are organized at railroad stations, and at Kyoto, where police protection was weak, the confused repatriates were carted off to Communist headquarters before they could even greet their families.

In beautiful mountain-surrounded Kyoto our guide and interpreter was a 78-year-old

Japanese named Shiro Wilcox Kuroda, an 1895 graduate of Boston University. The "Wilcox," he said proudly, came from a Boston family which adopted him in that year.

"You'll have to run to keep up with Kuroda-san," said a U. S. major of I Corps.

Indeed we did; he was sprier than either of us.

Kyoto, Japan's Old Capital, Unbombed

This old capital of Japan, with its hundreds of shrines and temples and artistic handicraft industries (pages 626-7), was spared bombing in accordance with a promise made by the Americans during the war. But Japanese militarists suspected a trick and evacuated the old and young.

Kuroda-san went to a town near Hiroshima, of all places.

From 12 miles away he saw the explosion of the first atomic bomb—"a blinding flash, a sound like an earthquake, and a cloud that rose three times as high as Fuji."

Six of Kuroda-san's relatives were killed, but he said he thought the bombing was "a good thing" because it ended the war and



Grunting Workmen Grab and Push in Lunchtime Japanese Wrestling Matches

Osaka locomotive plant employees relax by bulling each other around in bouts of *jumo*, literally "horn power" (page 516). A man loses if forced out of the ring, or if any part of his body but his feet touch the ground. Fellow workmen grin at these amateurs. Professionals are giants of enormous girth.

saved many lives that would have been lost on Japanese beaches.

"It disheartened the military people and the Emperor. It made up their minds," said Kuroda-san.

Others who lost relatives at atom-bombed Hiroshima and Nagasaki expressed to us the same view.

Later we visited both cities, now bustling and largely rebuilt, and at Hiroshima I talked with the worst-injured surviving victim of the blast. Though horribly burned, he beamed good will and had the look of a man with a mission; he was writing a book on peace. A Buddhist before, he was studying Christianity and planning to become a Methodist.

Christian Saves War God's Sword

In Japan today Christians are a small but growing minority.

Attendance at shrines of Shintoism, Japan's old, fanatically militaristic religion, has fallen so low that many who formerly lived by selling religious images to pilgrims have had to take to farming. When we visited the gold-adorned, blood-red shrine of Hachiman, God

of War, at Usa, there was not a soul in sight.*

At Kokura we heard the strange story of how Mr. Matsuta Hara, American-educated Japanese president of a Baptist girls' school and junior college, saved the Sword of Hachiman for a Shinto priest who had reviled him bitterly as "half American" during the war.

When the Occupation troops came, they required surrender of all weapons. The Hachiman priest failed to fill out a form which would have enabled him to keep the symbolic sword of his shrine. Despite his long enmity, he came to his Christian rival at last for help.

Christian minister and Shinto priest went together to the American lieutenant.

"The Sword of Hachiman, to Shintoists, is like the Holy Grail to Christians," said Mr. Hara in an earnest plea.

The sword was restored—and the Shinto priest sent his daughter to Mr. Hara's school. She is now a member of the Baptist Church.

Kokura was intended to be the target of the second atomic bomb. The pilot found it cloud-covered and bombed Nagasaki, his alter-

* See "Japan and the Pacific," by Joseph C. Grew, NATIONAL GEOGRAPHIC MAGAZINE, April, 1944.

nate target, instead. The great Yawata Steelworks near Kokura had been hit with ordinary bombs in the first B-29 attack on the Japanese home islands.

From near Moji we walked dry-shod from Japan's southernmost island, Kyushu, to Honshu, the main island, and back, beneath the storm-lashed waters of Kammon, or Shimono-seki, Strait (Kaikyo). Few Americans know of the existence of this footway, pilot tunnel of a big unfinished vehicular tube which the Japanese were secretly trying to complete during the war. Through another tunnel trains pass under the strait (map, p. 597).

Most of Japan's coal comes from the mines of Kyushu, but the one we visited at Fukuoka was so close to the sea and leaking so badly that it had to pump out 53 tons of water for every ton of coal mined.

Typhoons and Earthquakes Harry Japan

A typhoon was whirling up from the south, and in the dark, windy streets bells were tolling ominous warning. In the hotel reserved for Allied personnel, a Catholic Japanese girl servant sang the *Ave Maria* to calm her fears. But in the night the storm veered out to sea.

At Takamatsu, on rustic Shikoku, smallest of the four main Japanese islands, I felt my first of the earthquakes that harry this little land—first a jarring, like heavy tanks passing, then a gentle swaying, as if in a swing.

Everywhere people were working, but, as one American captain put it: "They do things the hard way. If you need a man to repair the water faucet, six come. There's one to hold the tools, one to turn on the water, another to turn it off, a couple to watch, and one to do the work."

Last year the Occupation wrung out 100,000 excess employees from the Japanese railroads. Half a dozen men were being used, for example, simply to uncouple a car.

One theory is that this ganging up arose from the need for spreading the work to give everybody a job in an overpopulated country.

But such Americans as Rear Adm. Benton W. Decker, U. S. Navy commander at Yokosuka (page 632), think this is a static approach. His own efforts reflect the dynamic idea that excess manpower can be put to work at other important jobs. Thousands, for instance, could be used in repairing the nation's bumpy roads.

Yokosuka is a sort of laboratory demonstration of what can be done in and for Japan. Through Admiral Decker's leadership and encouragement of the Japanese, 80 industries have been started in unused buildings of this big naval base.

These new factories include cotton, silk, and woolen mills, and plants making fountain pens, pencils, nails, and paper. Admiral Decker asked the papermaker to make toilet paper for the 2,000 U. S. naval personnel, received two months' supply in a week, and had to shift him quickly to wrapping paper.

Mushrooms Grown in Huge Bomb Shelter

Blasted out of a solid rock hill is a honeycomb of 11 miles of passageways and rooms, including an elaborate air force control room for directing Japanese defense against our war-time bombers. Now this maze is used for growing mushrooms to grace the cold-storage steaks in the Navy mess hall.

Table scraps are collected and given to the poor by a Decker-sponsored Japanese women's club, which now has thousands of members and has brought many civic improvements.

One striking postwar change affects the old warship, *Mikasa*, long a Japanese war shrine. Now the Japanese have voluntarily made her an aquarium, children's playground, and restaurant.

Mikasa was the flagship of Admiral Togo, who in 1904-05 crushed the Russian fleet in the Battles of the Yellow Sea and Tsushima. For many years she has been imbedded in concrete at the water's edge, about as immovable as a concrete-and-steel building.

After World War II a Soviet delegation came to Yokosuka and asked what Admiral Decker was going to do about that warship that led the attack on the Russians forty-odd years ago. It was an outrage, they said, that the vessel should remain here as a military shrine.

The Admiral replied that if they wanted to tow her away they were perfectly welcome to do so.

"They went down and looked at her," he told us, "and never came back."

Tea Table in Every Office

Whenever we visited an industrial plant, such as those in Tokyo, Osaka, and Nagoya, we were met by a bowing delegation and served tea at the little table found in every outer office. But bowing now is less prolonged, doubtless a concession to American ways.

Businessmen were alert for ideas to help improve their products and gain export markets; Japan must export to live.

Officials of a Tokyo camera company pumped photographer Roberts for ideas on making their camera better. Silk manufacturers were trying for a comeback, in the teeth of competition from nylon and rayon. A tea



"Fashionated," Japanese Girls Pore over Western Styles

Mail-order catalogues and fashion magazines hold tremendous appeal for the "modern girl," or *moga*, a Japanese term coined from those two English words. Some make dresses copied from the pictures; others get them through American friends, since exchange restrictions prevent buying directly from abroad. Others have a nonfraternization policy. "I go with Japanese boys," said one. "Me no Madame Butterfly. Don't want pretty soon boy fly away." This bevy consists of dancers training for parts in the Takararuka Girls' Opera Company. (pages 616 and 622).

grower at Uji asked if Americans wouldn't like tea-flavored ice cream. A plant in Nagoya that formerly made *kamikaze* suicide planes was producing three-wheeled fire trucks for use in Japan, Thailand, and Burma (page 632).

Thinks Future "Depends on America"

Seventy percent of the thousands of pearls raised on the famed Mikimoto Pearl Farm on Ago Bay (Wan) go to the United States, the remaining 30 percent to other foreign countries.

To 92-year-old Mr. Kokichi Mikimoto,

scientist-businessman founder of this ingenious industry, I said: "You have lived since 1858, only four years after Commodore Perry opened Japan to the Western world. What do you think of your country's future?"

"Depends on America," he said. "Everything in Japan is 15 years behind America. Therefore we respect America as our elder brother and follow his ways."

I said I couldn't agree that Japan lagged behind us in everything. He himself, a Japanese, first made an oyster produce a perfect spherical pearl.

The old man beamed.

"That," he said, "is what Mr. Edison told me when I visited him in America many years ago."

Tiny "seeds" that are inserted in an oyster to form the nucleus of a pearl are pellets of fresh-water mussel shell from the Mississippi River (page 625).

Pearl divers and visitors splashing in the languid waters of Ago Bay on that hot afternoon were more than Mr. Mikimoto could stand.

"I will swim," he said.

He walked to the dock, and off came his derby hat, gift of an American general; his black-silk *haori* with oyster-and-pearl crest bestowed upon him by the Emperor; and innumerable undergarments, which the nonagenarian handed to worried employees. At last he stood forth in snowy breechclout. He swam. When he emerged, he thumped his chest, face wreathed in an indomitable 92-year-old grin. He had done it and he hadn't died. His employees breathed again.

One enterprise without a worry about raw materials or orders was the mint in Osaka; there Japanese projectiles were being made into coins. An Osaka shipyard was building whale-catcher boats for Norway. Other plants were making brightly printed cloth, bicycles, and glassware, mostly for export to southeast Asia. Shiny locomotives were going to Thailand.

At the locomotive plant, at lunch hour, half a dozen workmen were grunting and shoving in *sumo* wrestling matches (page 613). But at least a hundred more were playing baseball between war-damaged buildings.

"Such energy after wrestling with locomotives!" exclaimed Joe as one hit a home run.

Japanese have borrowed many of our terms, industrial as well as athletic, along with the objects or functions to which they apply. At a coal mine it seemed strange to hear *kolkutta* (coal cutter) and *jincro* (jim-crow, a machine for bending or straightening rails).

Movie makers at a Kyoto studio were saying "OK," "Cut," and "Cameraman" as they worked on a modern triangle film and a sword-and-kimono thriller based on an old Japanese drama.

Girl Cowboys in a Japanese "Western"

Near Osaka the Takarazuka Girls' Opera Company (page 622) was presenting a musical stage show, a Japanese western called *My Dear Arizona*. Shrill-voiced girls (all the players were female) were dressed up like American cowboys, shooting people, outwit-

ting the sheriff, etc., all in Japanese. The people love it, as they do our movie westerns.

But back in Osaka even bigger crowds were flocking to see the *Kamogawa Odori*, age-old dance stories presented by chalk-faced, deadpan geishas to the rattle of drums and the tinkle of samisens. Old ways are far from dead.

In public baths at Noboribetsu, on the northernmost island, Hokkaido, we saw men and women bathing together. Somehow I was reminded of bucks and does dabbling in a woodland stream at dawn, their nakedness seemed so unself-conscious. Elsewhere in Japan the custom of mixed public bathing has largely died out.

On Hokkaido live the last of the Ainu, aborigines who once occupied all of Japan. An anthropologist we met in Sapporo estimates that in 30 years there won't be a single pure-blooded Ainu left. Most of the four or five hundred pure Ainu now living are along in years.

Ainu Women Wear Tattooed Mustaches

Male Ainu we saw wore big beards, and the older women had what looked like a huge handle-bar mustache tattooed on their faces. This and other tattoo marks used to be a prerequisite for marriage. So did a sort of chastity belt, a symbolic one worn around the waist.

In climate and appearance parts of Hokkaido suggest Wisconsin. Cows graze here, and farms are much larger than in the southern islands. SCAP's Natural Resources Section says the island could probably support a million more inhabitants. But Japanese, a warm-weather people, are reluctant to live so far north.

As the Tokyo train crossed Tsugaru Strait on a ferry and later I tossed in the too-short berth, I wondered how long "elder brother" America would continue his tutelage. Would it be long enough to permit his teachings to stick? I remembered something General MacArthur had said:

"I believe that the only thing in this world that can't be stopped is a sound idea, and if you have faith in democracy and Christianity you believe that those ideas will stick."

For additional articles on Japan, see "NATIONAL GEOGRAPHIC MAGAZINE Cumulative Index, 1899-1949," especially the following: "Face of Japan," by W. Robert Moore, December, 1945; "Behind the Mask of Modern Japan," by Willard Price, November, 1945; "Friendly Journeys in Japan," April, 1936; "Japan, Child of the World's Old Age," March, 1933, and "Empire of the Risen Sun," October, 1923, both by William Elliot Griffis.



Girls Gather Fagots near a Village Still Honored for Loyalty 1,280 Years Ago

Because villagers of Yase, near Kyoto, succored arrow-wounded Prince O-ama, who became Emperor Temmu (673-86), modern Yase men serve in imperial court ceremonies. "Doughnuts" of sedge cushion head-loads.

Beneath an Iron Basket of Blazing Pitch Pine Cormorants Catch Fish for Their Master

Wearing ceremonial headgear and a water-repellent skirt suggestive of Hawaii, the master boatman controls the birds by strings as they dive frantically for fish drawn mothlike to the area beneath the flame.

A cord at the base of the neck prevents the cormorants from swallowing their prey. Hoisted into the boat, they are relieved of their catch.

Deftly this man handles six birds without getting the lines tangled; some experts manipulate 12. The boats are poled, the men pounding the wooden sides to urge on the birds.

The scene is the Nagara River at dusk, just before the boats started drifting downstream past Gifu. There the author and photographer watched five boats and 60 cormorants at work in the flickering torchlight flare.

Water boiled as the snaky birds dived, swam madly, and had brief tiffs with each other. A well-trained bird can catch 100 to 200 fish in an hour. The quarry is a smeltlike fish called ayu. Some caught were a foot long. Only after the fishing ends are the birds allowed to gulp their share.

Introduced from China, this form of fishing has been practiced in Japan for more than a thousand years.

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Reproduction by J. Boyer Roberts



At Uji Four-foot Shrubs 150 to 200 Years Old Yield Some of Japan's Choicest Green Tea, the National Beverage

Fast-flying fingernails of girls clip off tender leaves for processing at the plant of the Hayashiya Tea Manufacturing Company in background. The girl at right tends power-driven grinders that pulverize tea for ceremonial use. In 220 years this plantation near Kyoto has been handed down through only five generations. "Our generations very long," explained the proprietor, "because we always drink tea and so live a long time." Tea, *cha*, is usually called *o-cha*, "honorable tea."

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619

Photographs by J. Barthe-Baudry







Fuji, Sacred Mountain and Symbol of Japan, Last Erupted in 1707-8

Six inches of ash from the huge crater covered Edo, now Tokyo, 60 miles away. Ashen clouds hid the sun, and people quaked in terror at the mountain's awesome thunderings. Silent since, the great volcano draws thousands of pilgrims to its crest each year.

"There are two kinds of fools," say Japanese. "Those who have never climbed Fuji, and those who have climbed it twice." The climb is hard, but yields rich rewards—a magnificent view of the countryside and a sight of the yawning crater. From patchwork upland farms growing grain and vegetables, the climber mounts through bamboo grass and forest, traverses dark, desolate cinders, lava, and clinkers, and finally reaches the snowy crown, 12,388 feet above the sea.

Pilgrims plan to be on the mountaintop at dawn to admire the *goraiko*, or sunrise (literally, "honorable coming light").

Beacon, landmark, and inspiration, Fuji on clear days is plainly visible to inhabitants of Tokyo and to sailors far at sea. This view is from the region of Hakone, famed summer resort town and in feudal times the site of a barrier gate on the road between the two capitals, Edo and Kyoto, for identification of all travelers. Here as elsewhere in Japan every available inch is cultivated.

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Arms Color by Horace Bristol



To Plaintive Strains of the Samisen, a Poker-faced Dancer Stamps *Tabi*-clad Feet and Gestures with Folding Fan

When the photographer asked the girl to smile, she reprovingly explained that any facial display of emotion in Japanese dancing is *tabu*. These girls undergo rigid training for the Takarazuka Girls' Opera Company, whose productions range from old Japanese themes to *Carmen* and a western, *My Dear Arizona*.

With Equal Care, Patient Japanese Hands Adorn a Bride Like a Doll and Dolls Like Women

As part of a benefit for rehabilitating a hospital, Japanese women of Yokohama gave a demonstration of the art, science, and ceremony of dressing a bride. Hakata dolls, showing costumes of old Japan, are made in Hakata, part of the city of Fukuoka, Kyushu. The art has been handed down through generations of craftsmen.

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673





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524

Kichibinmes by J. Daylor Roberts

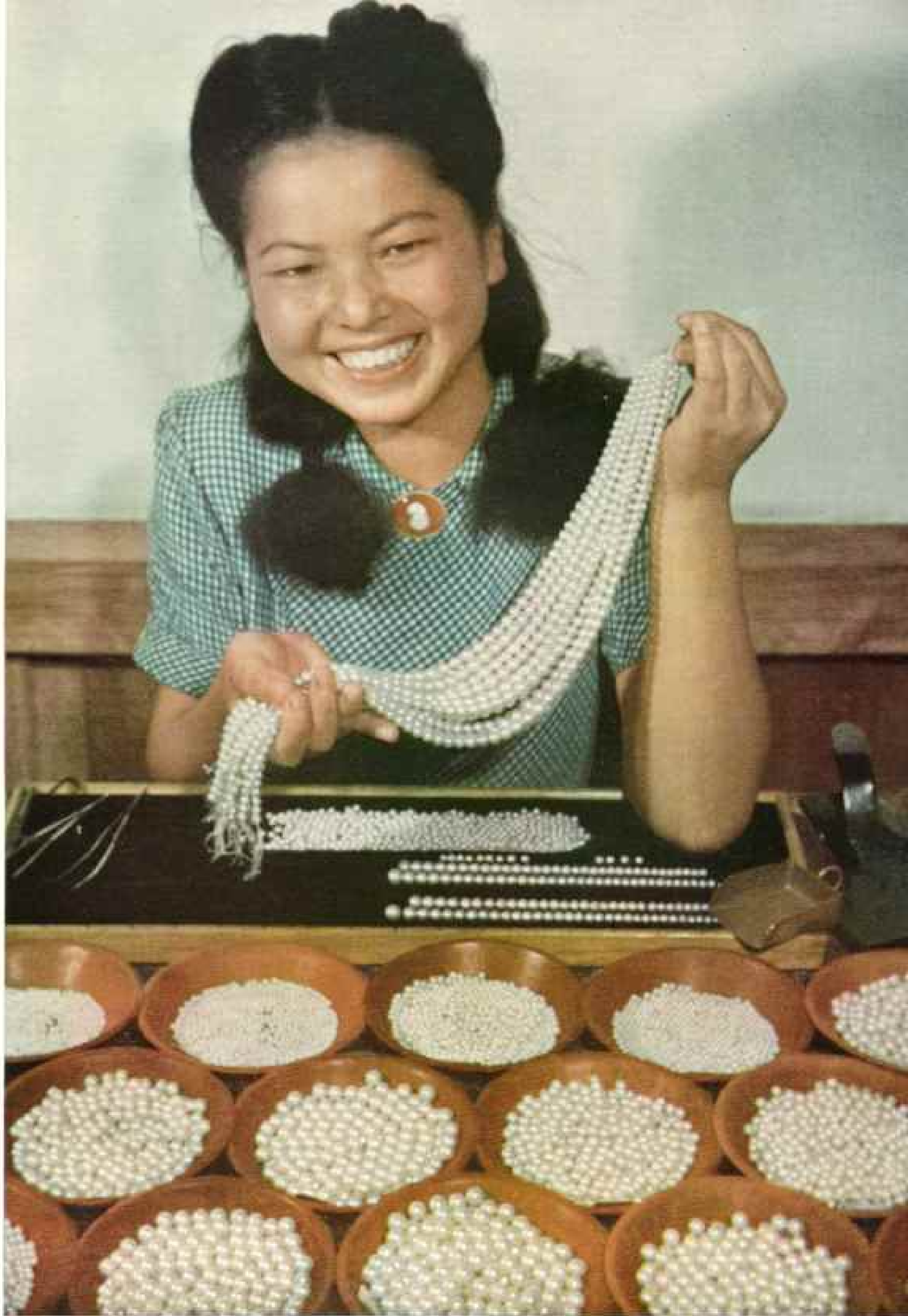
↑ In Osaka's Street of Toys
Little Masa Hugs a Celluloid Doll

Photographer Roberts bought it for her, and Masa (Japanese version of Martha) told her small friends it had been given her by Oji-san (Mr. Uncle) Herro. Japanese tots hail Americans with a cheery "Herro," their pronunciation of "Hello."

✦ A 17-year-old Girl Pastes Paper "Skin" on a Japanese Lantern's Bamboo Frame

This handicraft shop at Gifu makes the more elaborate lanterns (hanging) for export to the United States, simpler ones for Japanese ceremonies. Characters give the company's name and say "Big Selling Out for the Festival of the Dead."





Mother-of-pearl "Seeds" from Mississippi River Mussels Produce Japanese Pearls

At the Mikimoto Pearl Farm a sorter holds \$5,000 worth of culture pearls. Kokichi Mikimoto, now 92, produces pearls by planting in an oyster a bead wrapped in living tissue. He prefers "seeds" from the U. S.



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626

Kodachrome by Gilbert Grosvenor Caville

↑ Loads Hauled by Busy Japanese Women Range from Bales to Babies

Human muscle, female as well as male, provides much of the motive power in Japan. This hard-working mother's shoulder harness enables her to employ the full weight of her slight body, clad in *wompei*, working slacks. Carts often roll on old auto tires.

↘ Notched Nails Serve as Combs in Weaving Rich Brocades

A 17-year-old boy apprentice told the author ruefully that he had to give up baseball lest he break a precious nail. Each "fingernail tapestry" weaver has seven to ten tiny notches filed in nails of the middle fingers, forming tools for tightening wool threads.

Kodachrome by J. Bayne Roberts





Hand Weaving a Fingernail Tapestry, This Artist Plics Silk Threads of Many Colors

In Kyoto a veteran of 15 years at this work tightens threads with a notched fingernail. His 350-color tapestry "Beauty of the Valley," a pheasant amid rhododendron, is valued at 1,500,000 yen (about \$4,166).



Devout Japanese Bear "Gonches of the Gods," Supposed to Contain Deified Spirits of Heroes, at Nikko's Ieyasu Shrine Festival

In this annual procession on June 2, excited thousands honor the shades of the early shoguns. The palanquins are borne to the Sojourning Hall for a service which includes a sacred dance by performers in elaborate silk costumes who sing to the accompaniment of flutes and small flageolets.

Golden Dragons Parade, Children Buy Cotton Candy, and Even the Baby Is Dressed in Its Best at the Nikko Festival

All ages enjoy this festive occasion in mountain-girt Nikko, 75 miles north of Tokyo. Thousands of Japanese and a few Americans watch the annual June 3 procession at the Shinto shrine of the shogun Ieyasu (page 608), born more than 400 years ago. The shrine dates from 1636.

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629

Illustrations by J. Dachtel-Bobergs and Marijant Owen-Williams





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610

Illustrations by J. Taylor Roberts

♣ **Divers for Seaweed Warm Themselves at a Driftwood Fire**

From the floor of Sagami Sea, off Hatsu Shima, they bring up the weed that yields agar-agar, a gelatinous substance widely used in food and drugs. Girls dive for an hour, rest by a fire for two. Mainlanders, the 35 divers work for the island's 48 owner families.

♣ **Lithe as Mermaids, the Girls Can Reach a Depth of 30 Feet**

One diver adjusts her face mask, which gives good visibility but no air. Two others poise for a surface dive. They can stay under water about one minute. Each gets 100 yen (about 83 cents) a day, in addition to lodging and food for the six-months season.





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611

Kodachrome by J. Darius Roberts

▲ Unlike the Mermaids, Farm Girls Swathe Themselves in Cloth

These young women drying wheat wear the colorful "three-apron" costume of Ohara, twin town of historic Yase (page 617) in the mountains near Kyoto. The long tight-legged pants, they say, are better than skirts for farm work.

♣ Launching a Fishing Boat Is Women's Work on Katakai's Smooth Beach

Boats are skidded into the water on heavy wooden tracks. Male crews spread beach seines; then 100 to 120 women haul each net to shore. This Pacific coast of Honshu, within striking distance of Tokyo, was planned as an invasion beach before Japan's surrender.





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Kodasimmas by J. Taylor Roberts

★ "You Win the Rooster," Says the Admiral to a Japanese Fire-fighting Team

Best crew gets the U. S. Navy symbol of supremacy from Rear Adm. Benton W. Decker, U. S. N., Commanding Officer, Yokosuka Naval Base. The Admiral turned unused naval buildings here into factories making useful products and employing 6,000 Japanese.

✧ Not Swords into Plowshares but Suicide Planes into Fire Trucks

This Nagoya plant which made *kamikaze* planes now turns out "Giant" three-wheeled fire-fighting vehicles. With a shattering roar from unmuffled exhaust, the shiny new truck passes factory tests by shooting a stream 150 feet.



Search for the Scarlet Ibis in Venezuela

BY PAUL A. ZAHL

With Illustrations from Photographs by the Author

The author, a distinguished biologist and physiologist with a particular interest in ornithology, led the National Geographic Society's 1949 Expedition to Venezuela.

The object of the expedition was to make scientific observations and color photographs of the brilliantly colored, rare, and little-known scarlet ibis. Its successful conclusion marks an important addition to the bird lore of the Western Hemisphere.

Dr. Zahl is Associate Director of the Haskins Laboratories, New York. In 1938-39 he led the Zahl-Haskins Expedition to British Guiana, Brazil, and Venezuela. His studies of the roseate spoonbill along the Texas coast, in cooperation with the National Audubon Society, resulted in the color-illustrated article, "The Pink Birds of Texas," in the November, 1949, NATIONAL GEOGRAPHIC MAGAZINE.—The Editor.

THE SCARLET IBIS, one of the most elegantly caparisoned of birds, had become almost a forgotten species. The reason was not disinterest on the part of ornithologists, but rather the present-day scarcity of the bird, and the limitation of its breeding haunts to remote regions of tropical South America.

Forty years ago the scarlet ibis ranged along the north and east coasts of South America, nesting in mangrove swamps and feeding on the mud flats of river estuaries. Reports from 1840 to 1910 indicate that in those days the coastal region from Colombia to Brazil was alive with flocks of these birds.

Early travelers and naturalists were lavish in their descriptions of the scarlet ibis. One writer described its plumage as a "scarlet livery of dazzling beauty." Another lyricized what he saw as "beautiful red stains on the green background." Yet another cited a mangrove swamp as if "spattered with blood."

Captive Bird Pale Pink, Not Scarlet

My interest in this bird was sharply prodded one day when, after reading these extravagant accounts, I visited a New York City zoo. I came to a sign: "Scarlet Ibis, *Guara rubra*, range—tropical South America." Instead of a "scarlet livery of dazzling beauty," the creature I saw in the cage wore a sparse feathering of faint pink—a far cry from the hue and texture which had sent those early bird watchers into verbal ecstasies.

My ornithological friends explained that, unless given special food, the scarlet ibis loses in captivity the vivid coloration it possesses in the wild state. They added that little is known of the bird—its breeding locations, its behavior, the effect of encroaching civilization on its welfare.

I embarked on a program of library exploration. Here I found that my informants were right; the scarlet ibis was indeed a for-

gotten bird, living mainly in a few ornate writings of a generation or two ago.

Finally I communicated with Dr. William H. Phelps, at Caracas, Venezuela, research associate of the American Museum of Natural History, New York City. He too recognized this gap in bird lore. He offered to send into the hinterlands one of his field collectors, a Señor Ramón Urbano, with instructions to find out what he could about the scarlet ibis.

Late in 1948 Urbano returned with information that in mid-November, in a remote section of the Venezuelan State of Apure, he had come upon about a hundred scarlet ibis just concluding their nesting period. Dr. Phelps immediately relayed this information to me in New York, and I in turn passed it on to the National Geographic Society.

Here at last we had a dependable clue, and plans for a National Geographic Society expedition were soon completed.

On September 3, 1949, I arrived in Caracas for a final briefing by Dr. Phelps and his explorer-ornithologist son, William Phelps, Jr. The birds had been seen in the *llanos* (plains) about 200 miles south of Caracas. I planned to fly to the nearest airfield and from there make my way by boat (map, page 635).

Weather, I knew, would be a problem, for in September and October the rains and flood are at their height, and thought of dry land in the *llanos* then is a wishful absurdity.

Haunt of Cannibal Fish and "Tigres"

Perhaps by way of warning, I was shown a 16-millimeter film on life in the *llanos*, taken by one of Venezuela's veteran huntsmen, Ramella Vegas. Here on the screen I saw an electric eel being attacked by piranhas (*caribes*). The water seethed as these vicious cannibal fish demolished the writhing eel (page 653). The implied moral seemed to be: "The *llanos* are full of these creatures, so stay in your boat." From Señor Vegas

came the advice: "Be on the alert for *tigres*, too; they're mean when cubbing." *

A few days later I found myself, replete with field equipment and an outboard motor brought from the States, seated in a DC-3 plane of Linea Aeropostal Venezolana, soaring up over the coastal mountains, headed for the llanos country. My destination was San Fernando, capital of the inland State of Apure.

Swollen River Laps at Airfield

On rainy days the airfield at San Fernando is sometimes closed to traffic. It had rained the morning I arrived, but the danger point had not been reached, and we splashed through the puddles for a perfect landing.

Water and mud—that's what I saw as I stepped out of the plane, and that is what seemed to keynote all my subsequent experiences in the llanos. Six months of each year sections of these great plains of central Venezuela are almost entirely flooded (page 642). What are creeks in the dry season suddenly swell into torrential rivers. Areas not inundated are turned into mud and bog by the rains.

While waiting for Government inspectors to examine my baggage in the open shed, I strolled about 50 feet to where the Río Apure—its level startlingly just a few feet lower than that of the airfield—sped heavily on its way to the Orinoco, 100 miles to the eastward. The river, almost half a mile wide here, simmered with eddies and currents.

Out in the main channel a parade of water-hyacinth patches came sailing by. Some were the size of rowboats and abloom with lavender flowers. Far upstream these floating gardens had been torn loose from their home banks by the clutching floodwaters.

I heard the put-put of an exhaust and soon, not far offshore, appeared a long, narrow, low-lying dugout canoe, propelled by an outboard motor. About ten men sat close together, one behind another, in the canoe which, despite the strong current, was making good headway upstream, bound for the wharf of San Fernando, a mile or two farther on.

These days the outboard motor has largely replaced the paddle. Practically all local transport in the llanos during the wet season is accomplished by outboard-propelled dugout; and a good riverman must be a mechanic as well as a navigator.

In the back seat of a cab, we were soon bouncing through the mudholes of the unpaved road to San Fernando. My driver explained that in town the roads were better.

"See," he said, as we entered the city limits and the wheels mounted two narrow parallel cement tracks, "the streets here are paved!"

Low whitewashed houses in a solid line were set back from the street only far enough to permit a three-foot sidewalk. We sped through this quaint postcard city of some 10,000 and arrived at the pension of Señora María de Bolívar.

If I had been expecting a private room and bath, as in urbane Caracas, I should have been disappointed, for I was escorted directly to the common sleeping room, where single travelers are put up. There I was shown two hooks on the wall and invited to hang my hammock.

No one travels without a hammock in the llanos country, since beds are not abundant. Furthermore, a well-knitted bush hammock is more comfortable, to my way of thinking, than a bed with mattress and box springs.

I didn't find the hammock trying that night, nor the absence of plumbing, nor the pigs in the courtyard. Even the snores of my fellow transients were tolerable. For at last I was in the land of the scarlet ibis; and of course there was a concentration of nesting birds just a step upriver, waiting for me but to come and study—or so I thought!

The Quest Begins

Next morning early I was up, eager to get started. By prearrangement I was to meet a riverman, Marcos Delgado, who lived near the wharf. He knew where the birds were and was to be my guide. But nowhere was Delgado to be found; he had not been seen for weeks.

"Probably down-river on another job," his friends said.

But this wasn't too disappointing. Surely other river guides had seen the birds and could show me the way.

For several hours I wandered up and down the wharf, where dozens of canoes were unloading firewood and corn, bananas, cassava, plantain, and other produce brought in from outlying river settlements. With some language difficulty I explained what I was after to various prospects, and at last found a man who said he knew where to find the *cora-coras* (scarlet ibis).

The rookery this man had in mind was apparently the same one visited by Urbano a year earlier, for the route to it was up the Río Apure, into the tributary Río Portuguesa, and finally into the Ruende. There, conspicuously on the right bank, the red birds would be nesting, I was assured. The trip by outboard dugout would take five hours to get

* This South American "tiger" is the gorgeous but lethal jaguar. See "King of Cats and His Court," by Victor H. Cahaline, in the NATIONAL GEOGRAPHIC MAGAZINE, February, 1943.



Drawn by R. E. Hartwood and Irvin E. Alliman

In the Flooded Plains of Venezuela the Scarlet Ibis Makes a Brave Stand

Here during the rainy season man lives in a region of flood and mire. The scarlet ibis turns this condition to its advantage by nesting high above protective floods. For weeks the ibis-questing author searched this wide area in vain. He finally discovered a rookery (arrow) 100 miles west of San Fernando.

there, three hours to return; so this first look-see sortie could easily be completed in one day.

Next morning we were ready to set out. The guide had brought three friends along—just for the ride—and we all got into the boat, a 25-foot dugout, too narrow for comfort, and with gunwales precariously close to the water (page 643). A few tugs on the starting rope, several minor adjustments, and we were off.

As a novice at outboard motor canoe travel, I felt that at any second the craft would capsize. But I soon learned that not only were these pencil-slim dugouts designed especially for neat slicing through the water; they were stable and capable of carrying enormous loads.

We hugged the shore to minimize the retarding effect of the current, and cut out into the middle of the river only to negotiate bends, of which there were many. The man at the prow kept a sharp lookout for submerged logs or weed entanglements, and by hand signal advised the steersman as to his course. If a loaded canoe strikes a log or other obstruction while clipping along at 12 knots, a wreck is inevitable.

An hour later it began to rain. Sheets of water soaked us, and the crew bailed in shifts. Then, just as suddenly as it had begun, the

rain stopped and the sun shone, only to be replaced a half hour later by more rain clouds, more downpour.

Egrets and herons were everywhere, feeding in the marsh shallows along the river. The bank foliage was not high but dense, consisting mainly of scrubby trees and bushes over which a thick green gravy of creeping vines seemed to have been poured. Occasionally, through the emerald tangle, we saw a monkey, watching us intently, or a coiling tree snake.

About five hours had passed when the guide pointed toward white specks on the distant shore. As we came nearer these resolved into several hundred egrets. Here, apparently, was the sought-after rookery.

Anxiously my eyes strained for a sight of foliage "spattered with blood." By now we had left the river and, lifting the motor propeller, had started to pole over the flooded bank into the marsh.

Hundreds, perhaps thousands, of egrets, herons, and cormorants were vocally objecting to the trespass. Some remained on their nests; others rose in flight. But we were not interested in these. It was the rarer scarlet ibis for which all eyes searched.

Our canoe continued slowly to cut its way

A Fiery Cloud of Ibis Casts Its Shadow on a Rolling Sea

When the flying cameraman snapped this picture above the River Orinoco's mouth in 1930, his noncolor film recorded scarlet plumage as white. At first the pink birds were mistaken for flamingos, but size, short necks, black wing tips, and flight characteristics definitely established them as ibis.

Twenty years ago scarlet-ibis flocks were common along the South American shoulder, their only habitat, but recently their numbers have declined.

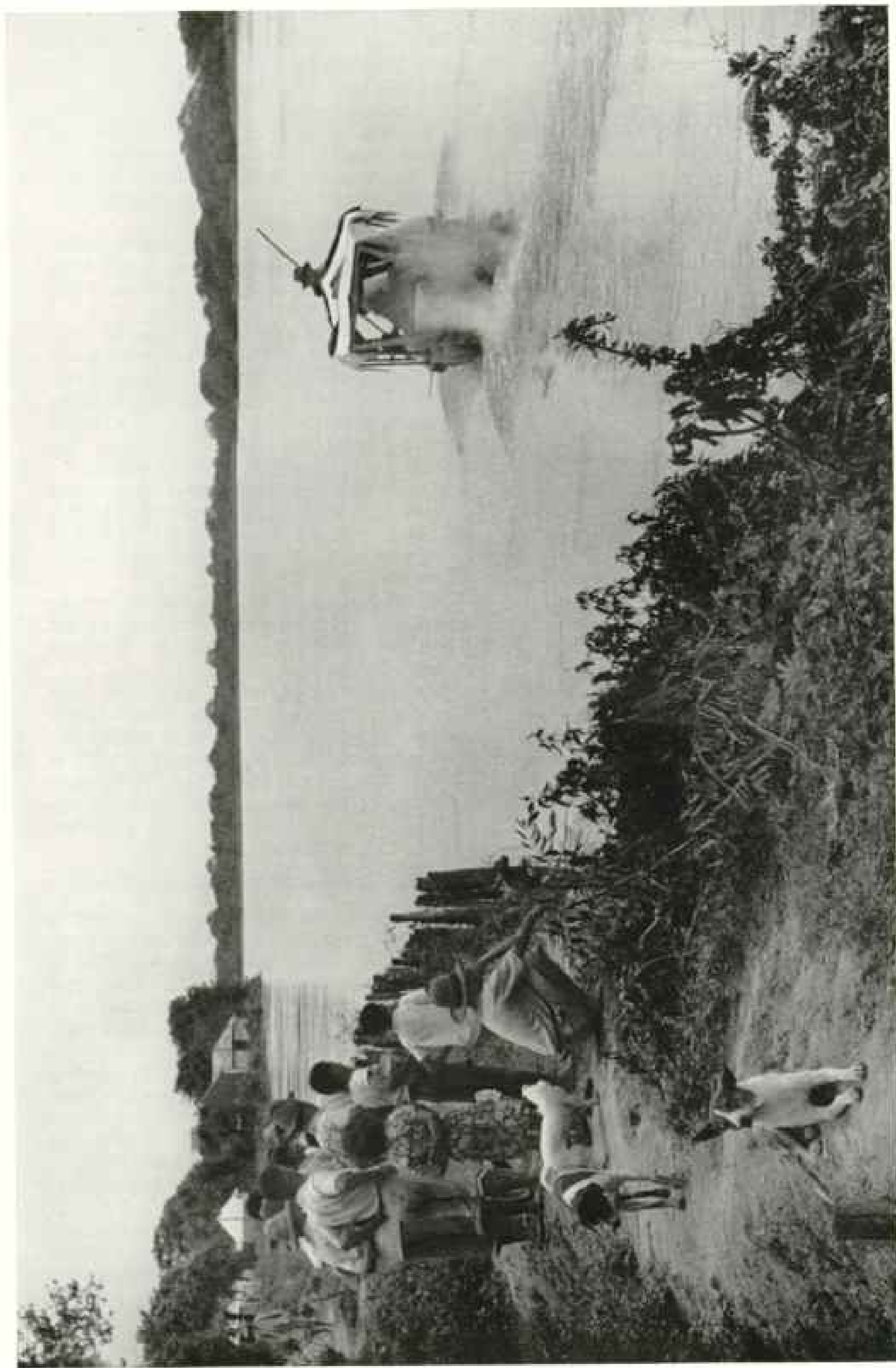
Old records show a few scarlet-ibis visitors to the United States, probably stragglers blown in by storms. Ornithologists doubt the bird has bred in North America during historic times. However, its close relative, the white ibis, flourishes on the Gulf Coast. Whether the scarlet ibis would survive if introduced into the same environment poses an interesting question.

Ibis in flight beat wings rapidly, then glide and rest. This flock appears to have no definite formation, but smaller groups line up somewhat like Canada geese in echelons. During the mating season the scarlet birds spiral up in wide arcs, then undulate earthward.

See "Skypaths Through Latin America," by Frederick Simplic, in the January, 1931, NATIONAL GEOGRAPHIC MAGAZINE.

ALBERT W. BARRON





A Power-driven Dugout Cleaves the Swollen Río Apure. Villagers and Dogs Watch Its Departure from Ariehuna

The covered canoe, its outboard motor smoking, can slice the water at 10 to 12 knots. Though it appears clumsy, it does not capsize easily, and it carries enormous loads (page 635). In full flood the Apure looks like another Mississippi; but the dry season turns it into a relative trickle.

into the tangle, farther and farther into the marsh. Finally, with painful reluctance, I began to realize that here there were no *coro-coros*. After searching for several hours, I told the guide to turn back. We would stop and inquire at a native hut we had passed a mile or so downstream.

Soon we were in the thatched river dwelling, sipping hot black coffee.

Yes, our kindly native host explained, some years the *coro-coros* come to the rookery; other years they do not. The previous season several hundred had nested there; this year not a single one.

We thanked our host for his courtesy, coffee, and information and began the return trip. My companions joked about our failure, but I was mournful.

Whole Town Ponders the Problem

Next day I visited Dr. E. F. Dominguez, governor of the State of Apure. His wife spoke excellent English and, graciously offering to act as interpreter, made it possible for me to lay my problem before the governor. Quickly and sympathetically he realized my predicament.

During the dry summer months, the Governor said, the red birds are numerous in his State and often are seen flying over the town or feeding in near-by lagoons; but now, during the rains, they seemed to have disappeared, perhaps because they were nesting in some remote marsh. Where were such marshes to be found? He didn't know, but would inquire.

With the Governor interested in my problem, the snowball began to roll. Within a few days the whole town was preoccupied with the weighty question of where the *coro-coros* go during the wet season. In cafes, in homes, in the public square, Apurians seized on the problem as one of utmost importance. There were discussions, speculations, arguments. The National Geographic Society had sent a man 3,000 miles to study the red birds of Apure. He must be helped.

People were sent to me, or came unsolicited, bearing information. One man would announce with great conviction that the birds were nesting at a spot just two days upriver; another that he had seen them on a savanna six hours downstream; yet another that if you go east on the Río Apure to such-and-such a tributary you will certainly find the birds.

I took all these stories seriously and investigated each one that seemed plausible. Upriver two days—but no ibis. Downriver six hours and into the prescribed savanna—but no ibis. East on the Río Apure to such-and-such a tributary—but no ibis.

This sort of piecemeal search went on for almost three weeks. Though I found no ibis during this time, I was learning things of value and interest: how to navigate the swollen rivers; how to pole through grass-choked shallows; how to drink coffee black as tar and thick as molasses; how to subsist on unseasoned roasted or boiled beef; how to comprehend provincial Spanish.

The river natives (mostly of Spanish-Indian stock), in whose humble thatched huts I hung my hammock each night, accorded me a full measure of their simple hospitality.

One evening our boat pulled up on the riverbank at Arichuna, a village about three hours downstream from San Fernando (page 637). At the public sala I was about to turn in for the night when into the house came a young European who introduced himself as Dr. Blecker, the Government district médico.

My new friend insisted that I come to his quarters and hang my hammock there for a few days. Perhaps he could find time to join me in examining the two or three rookeries in the vicinity.

During the ensuing days we did not find the apparently mythical scarlet ibis, but we did visit a *garceró* so rich in other bird life as to deserve description.

One should perhaps first define the word "garceró." *Garza*, in Spanish, means heron. *Garceró*, or heronry, has come to signify any great concentration of birds related in habit to herons. During the wet season, birds from the whole of the plains country of Venezuela congregate in these enormous nesting centers, often in tens of thousands.

Nesting Centers Were Treasure Troves

The conspicuous species in most *garceros* is the egret. Some years ago, when a European market for plumes existed, a man with a *garceró* on his property was rich. I was told egret plumes brought collectors as much as \$1,400 a pound, considerably more than their weight in gold.

Stories still told show that the "old pluming days" must have been tragic indeed. More than one *garceró* is said to hold the secret graves of collectors highjacked for their bag of plumes or killed in an altercation.

Bird slaughter was appalling, and extermination became a real threat to snowy and American egrets. Today there are local laws against plume hunting; but the most effective deterrent is the illegality of importing bird plumes to the United States or Europe. As a consequence, egrets in the llanos have increased in almost fantastic proportions.

A large *garceró* is like a city. One dis-

trict—perhaps of a dozen acres—will be white with egrets, with some intermixture of various species of herons; in an adjacent area, cormorants and other birds will have taken over.

In the particular garcero I have in mind there were at least 25,000 cormorants, together with their cousins, the anhingas. Trees had been denuded of foliage, and on each crotch and branch the birds had piled their nests, often so close as to abut on one another.

As we poled more deeply into the garcero, an undertone began to swell. The murmurings of many acres of birds added up to something incredible—not loud but weirdly intense. The nesting birds did not fly off as our dugout pierced the swamp snarl; yet the sky above was alive with outgoing and incoming traffic. Some of the returning birds, in addition to having a full gullet of fish, carried twig fragments for nest repair.

Monkeys Rob or Wreck Nests

Brick-red howler monkeys, in fat good health, swung through the cormorant and anhinga trees. Their prosperous appearance reflected an unrestricted and easy food source.

I watched one of these monkeys for a time. Going from one nest to another, he would drive off the screeching parent birds, then pick up the eggs, or young, and smell them. If the odor was appealing, a meal would ensue; if not, the monkey might mischievously toss the whole nest contents overboard.

But it is not monkeys alone that take a toll of garcero birds. Each heavy wind or rain is apt to dislodge eggs or young. A nestling so plummeted into the water will immediately bring a vicious horde of razor-toothed piranhas rushing to the surface, and in seconds the victim is devoured.

These flesh-eating fish, seldom more than 12 inches long and found in inland waters throughout tropical South America, are also greatly feared by men (page 653). Stories abound of hapless plume hunters of the old days whose canoes overturned.*

The piranha concentrates in garceros because of the abundance of lower organisms upon which it can feed. The bird eggs, nestlings—and plume collectors—are but extra-special treats.

Crocodiles, too, are said to lurk in garcero waters, but I saw none.

Not all garceros are nesting centers. In one type, known as a *dormitorio*, nonbreeding and adolescent birds merely roost. In journeying across the country, one may recognize a *dormitorio* only by the excrement which has white-washed all the underlying foliage and by the fact that during the day it is deserted.

Toward evening big flocks of nonbreeding egrets, their snowy dress pinkened ever so faintly by the evening light, are seen converging from all directions, coming in from feeding shallows.

Squabbings occur as newcomers settle and seek a perch for the night. A tree which at 4 o'clock was an ugly stained skeleton, at 6 is fruited with a multitude of white-pink forms. An hour later its inhabitants are gray and stand silhouetted against a darkened sky.

But egrets, herons, cormorants, anhingas—these are not scarlet ibis. After nearly three weeks of vain up-and-down-river searching in many garceros, I was beginning to be worried.

Indeed, so were others, for when I returned to San Fernando, I learned that my failure to find the elusive red birds had leaked into Caracas newspapers. Readers' letters appeared in print to the effect that there were no scarlet ibis in the State of Apure, that the *norteamericano* should rather be searching along the coast or in this or that other State of Venezuela, certainly not in Apure.

The implied disparagement of their State did not sit well with certain proud citizens of Apure. Among these was Don Carlos Rodríguez, a prosperous Apure cattleman and a past governor of the State.

I well remember the day I was introduced to Don Carlos. He was relaxing deep in a patio hammock, discussing life and philosophy with his English friend, Mr. H. L. E. Briggs, and a countryman, Señor Felix Rodríguez.

When I was introduced as the American *científico* in search of the coro-coros, conversation immediately turned from philosophy, life, business, and cattle to ornithology. Don Carlos was interested and pressed me for details: Why did I want this information; who had sent me to Apure; where else in the world were scarlet ibis to be found?

Jaguar Hunter Gives a Clue

I was in the midst of answering these questions, recounting also my failure so far to find the birds, when Rafael Bezarre, 6 feet 4 and weighing about 250 pounds, came in to join the afternoon circle. Rafael was introduced as one of the greatest "tiger" hunters in the llanos.

He stripped the shirt from his back and with some pride showed me several huge claw marks which, to say the least, were impressive. He then parted his hair with his fingers to reveal further scalp evidence of the time he had been forced to wrestle it out with a wounded jaguar.

* See "Sea Fever," by John E. Schultz, NATIONAL GEOGRAPHIC MAGAZINE, February, 1949.

In due course the conversation got back to the scarlet ibis. Don Carlos said he was positive that the birds nested somewhere in Apure—and they must be found.

By this time Bezarre had his shirt back on and was remarking casually that not far from his ranch on the Río Matyure (Matillure) was a garcero which, when he had seen it a few years previously, harbored thousands of nesting coro-coros. I pricked up my ears.

Then Mr. Briggs recalled that the peons on one of his ranches, not far from Bezarre's, had for years, and especially during the wet season, been bringing in stories of red flocks flying in the same general area.

Off on a New Hunt

Don Carlos's knowing nod to me signified that these men were not in the habit of passing on idle tales and that there could be little doubt that somewhere between the Apure and Matyure Rivers, about 100 miles west of San Fernando, the coro-coros were nesting.

I drew a small circle on my National Geographic map.

Several days later my boat, loaded to the gunwales with fuel and equipment, was ready for the trip, and Don Carlos and Mr. Briggs came to the riverbank to give me a personal send-off.

As we shoved off into the Río Apure, Mr. Briggs handed me a letter of introduction to his manager at the Matapalos ranch, our first destination.

We arrived there three days later. As we poled across the flooded meadow to the elevated land where the ranch buildings stood, Mr. J. P. Kitson, the manager, waited at the water's edge.

Kitson had heard of my approach and the problem which beset me. Living here with only his peons, he welcomed the arrival of an English-speaking visitor. As we walked up to the house, which he had built of homemade bricks, he listened to my story.

By the time we stepped up on the porch, my host already had contracted a bad case of my "scarlet ibis fever." Not only would he join me in looking for the birds; he would show me where other birds nested, where the best fishing was, where to hunt ducks, geese, deer.

This kind of field work was his delight, and he would throw everything he had into the search. That included the use of his airplane, one of the few private craft in the llanos. With it we could quickly reconnoiter vast areas of otherwise inaccessible marshlands.

Next morning we pulled the covers off the tiny plane and took off for a preliminary look.

The pasture was squashy and bumpy and needed a mowing, but we got into the air all right and began a systematic circling over the three or four garceros of which Kitson knew the location.

In one we saw a few dozen red birds, but before we could get close enough to identify them they were gone. We wishfully assumed they were scarlet ibis and so considered it a good sign. However, the fact that they flew off en masse suggested they were not nesting at that spot, and we continued to search elsewhere. But no luck that day.

During the next few days we were grounded by heavy rain and decided to take a river trip to the Bezarre ranch settlement, about 20 miles upstream.

Here at last we learned something of real interest. A peon living still a little farther upriver, one whose word was accepted as reliable, had been heard to say that he knew where coro-coros were nesting, that he had actually visited the site a week or so earlier.

We hurried upstream to interview the man in his little river hut. Yes, he had seen coro-coros—thousands of them—and he would be glad to show us.

Not without some misgivings we transferred to a dugout suitable for savanna poling. Pushing upriver half a mile, we turned into the flooded bank foliage and ultimately out into a great grass-covered savanna.

First Sight of Red Birds

First sign that we were possibly on the right track was the flight overhead of four ibises, recognized easily by their long curved-down beaks and intermittent flight manner. Three of these were of the most startling red color I had ever seen. In a few moments they disappeared beyond some distant woods.

Our canoe had been cutting through the savanna grass in that direction and we now redoubled our efforts. This savanna grass, which often extends four or five feet above water level, was so dense that an aerial observer would have seen no water at all, but our dugout was well designed for transport through such grasses.

Our polesman was adept at his job. In preparation for a stroke he would step to the prow of the boat and plunge one end of his pole into the water (page 643). Then, applying to it his full body weight, he would run half the length of the canoe, tirelessly pushing the pole before him, and the boat would spurt ahead.

Occasionally we would break through the grass and into a deepwater lagoon. When the pole no longer touched bottom, we would use

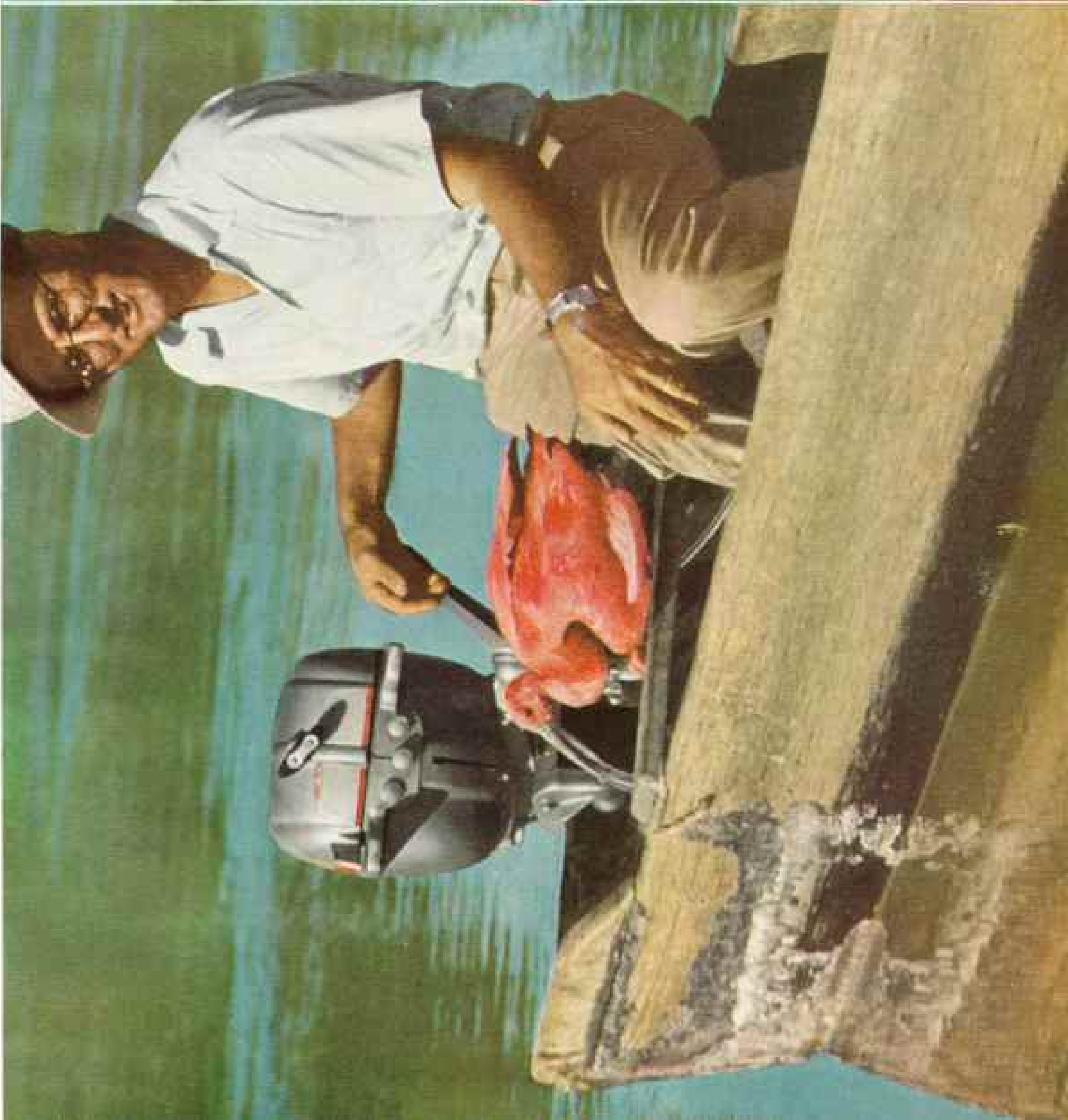


A Winged Flame, *Guara Rubra*, the Scarlet Ibis, Perches Above Venezuelan Floods



Bushes Explode. A Startled Ibis Group Takes to the Air with Flurried Wings and Muted Cries

Cause of the disturbance is the author (opposite page), who after 3,000 miles of travel happily suffers "scarlet fever." His dugout canoe explores Venezuela's flooded plains by pole in shallows, by outboard motor in deeps. The captured bird is for scientific study.





Slender Boughs Bear Blood-red Fruit. Young Scarlet Ibis (Left and Center) Lack Their Parents' Vivid Plumage

This Venezuelan bird city, by the author's estimate, had a population of about 10,000. Dark juvenile ibis quit nests and maintain bush-top positions until they can fly. Reddish feathers emerge only after the first molt. A complete color transformation requires about three years.

A Bushbound Youngster, Fluttering Above the Family Home, Warns Up Wings for Flight's Great Adventure

Immature birds must be ready for the colony's dispersal at the end of the rainy season, when flightless youngsters are abandoned. Adults working in mud flats carry food to their offspring in tireless relays. Worms, grubs, crayfish, and green stuff appear on the bill of fate.

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144

Kebleham by Paul A. Eick





Wild Birds Spend Their Brilliance on the Unappreciative Jungle. In Zoos, Where They May Be Admired, Scarlet Turns a Drab Pink
Forty years ago hosts of scarlet ibis ranged South American shores from Colombia to Brazil. They have become so scarce that the author spent weeks in search before he found a single flock. Venezuelans call the bird *erro-coro* and its rookery a *parreco* (after *gorra*, heron).

Male and Female, Identically Colored, Take Turns Guarding Nests

Piranha-infested water three feet deep lay between the author and these pictures. Only a canoe could move in close; and, whenever it did, frightened ibis stampeded from nests (page 642).

A blind, anchored in mud and projecting above the surface, seemed the only solution. Nailed together and set in place, the four-legged platform sank in the mire, submerging the floor. A beach umbrella provided the frame for a cloth curtain, and perches were cut for the camera.

Dr. Zabl, his feet awash in three inches of water, concealed himself and ordered his dugout crew to depart. Half an hour later the birds remained nervous, as though they could see the man behind the curtain. Glancing around, the photographer found his two canoesmen in full, alarming view 20 feet from the blind. Contradicting orders, they had stood by to save him from savage piranhas (page 653). Once they were out of sight, the ibis settled tranquilly.

A telephoto lens shot these close-ups. Sexes appear so alike that pictures cannot tell them apart.

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647

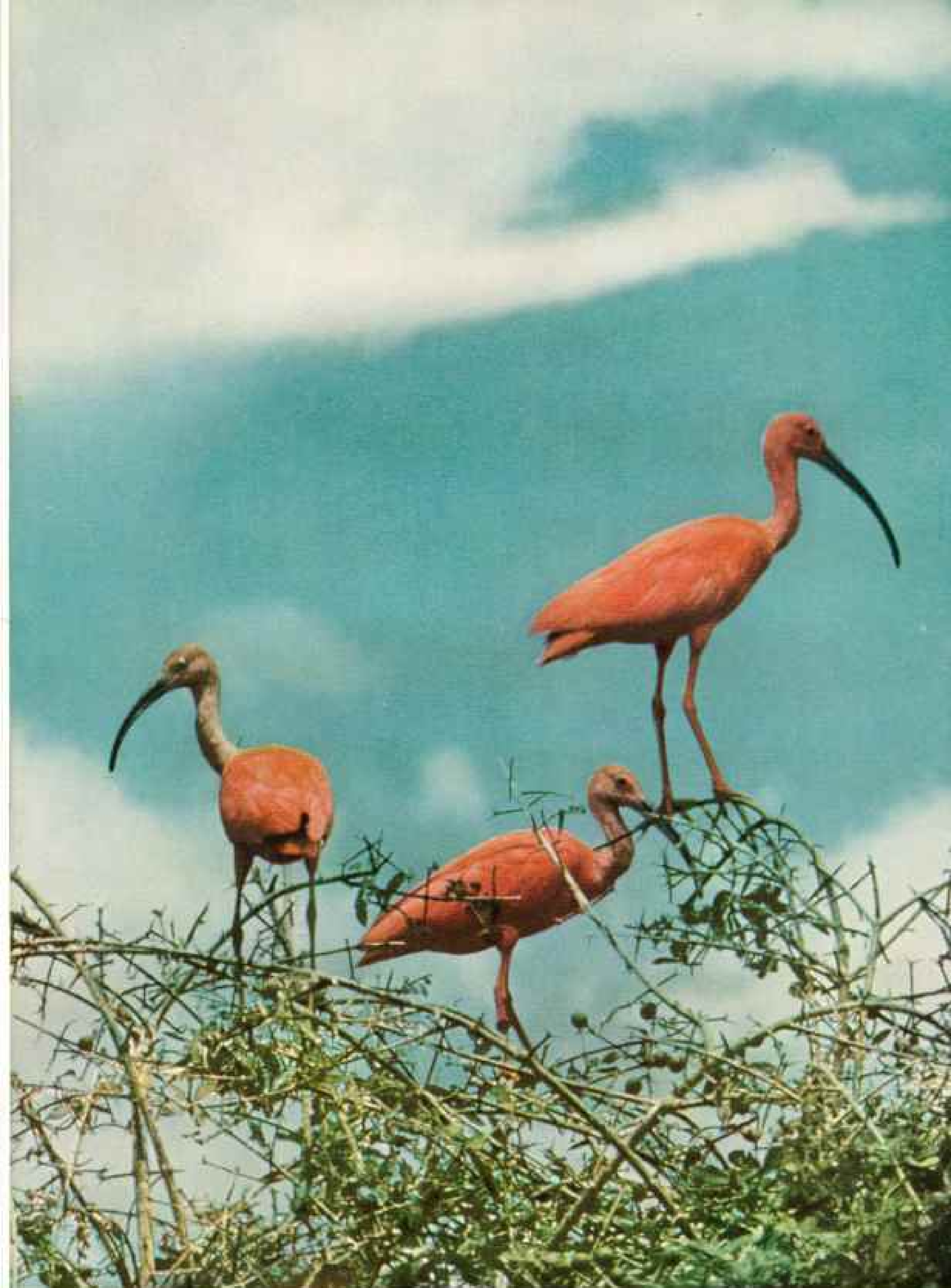
Illustrations by Paul A. Zabl





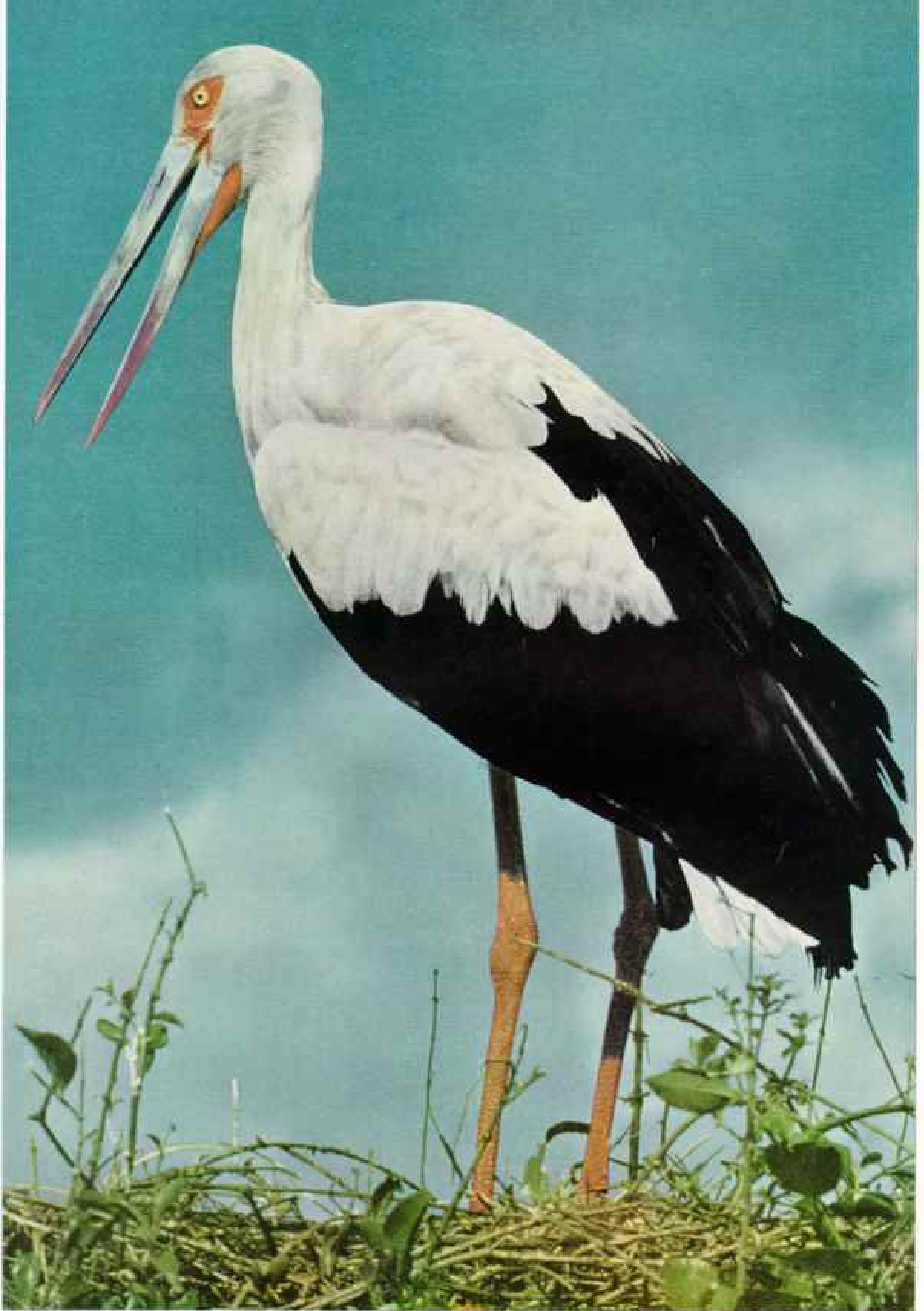
Conservative White and Snappy Scarlet Are Close Relatives and Next-door Neighbors

Bone for bone, these two are identical. Some ornithologists consider *rubra* and *alba* color varieties of the same species. The author looked for mixed marriages, but white to white, scarlet to scarlet seemed to be the rule.



Suspicious Birds Keep One Eye Cocked on the Photographer's Worrisome Blind

Off guard, the scarlet ibis may bury its beak in the back feathers. Its color varies in intensity with the degree of sunlight and the angle of view. Vocally, the ibis is no songbird, though it may utter short cries.



Scissors Bill, Needle Legs, and Scarlet Stare Mark the Maguari Stork



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651

Redactiones by Paul A. Ehl

↑ **Hoatzin, Wearing a Comanche Tuft, Has the Look of an Outraged Chicken**

Disturbed, this bird with the rare eyelashes screeches protests, and flaps from tree to tree. Its nestlings dive, swim, and, using wing claws, climb trees. A musty odor, objectionable apparently even to piranhas, gives hoatzin the name "stinking pheasant."

† **Boat-billed Night Heron Owes Its Name to a Beak Like an Inverted Boat**

This Venezuelan bird has large liquid eyes and a long mane of blue-black feathers. Like other night herons, it hunts by dark and sleeps by day. During the nesting season it congregates in close association with ibis, egrets, and other marsh birds.





A Hunger Riot Occurs in the Branches Each Time a Crimson Parent Settles Down with a Meal for Its Dusky Young

Fledglings, welcoming elders home from the feeding grounds, bob heads in beckoning gestures. Then, with lightning movements, they plunge beaks into open mouths, withdraw, and gulp. These juveniles could not fly, but within two weeks they earned their wings and soared.

Bloodthirsty Piranha, Tiger of the Rivers, Loves His Flesh

Razor teeth, underslung jaw, and malevolent eye mark the piranha with a pugilistic cast. Even tougher than he looks, the fish is the terror of tropical South American rivers. Almost every form of life is his meat. The least trace of blood lures a ravening school. Dark waters seethe; a silver machetrom rips flesh from bone.

Rarely more than a foot long, the piranha makes up his lack of size with numbers and ferocity. Ganging up, he skeletonizes victims a hundred times his weight.

Other fish survive only by constant vigilance. Wading birds run the hazard of amputation. Cattle swim streams at risk of their lives. A sheep carcass is stripped in minutes.

The silver-eyed devil rips brothers or just as readily picks a man to his bones. In 1819 piranhas attacked an entire army fording a river.

Man in turn preys on the fish for its tasty flesh. There is no long, dull wait for a bite; the piranha's hot temper and voracious appetite make him an easy mark for baited hook.

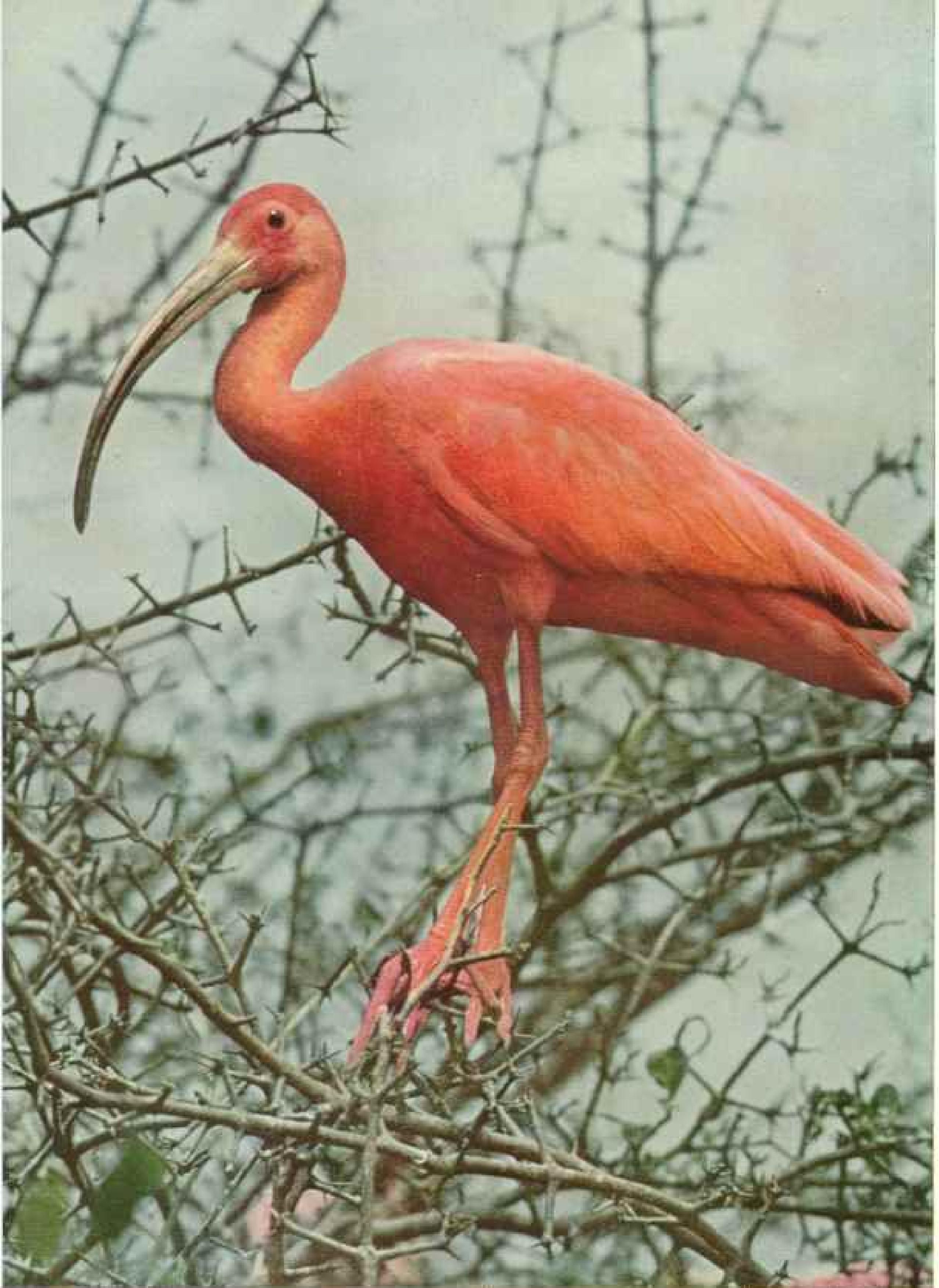
Piranha is a Brazilian word. Venezuelans term the fish *curfio*, a Caribi Indian name.

What appears to be a deformed eye in this fish is in reality a nostril.

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Kiddermōnō by Paul A. Kohn





A Couch of Thorns Shields the Gentle Ibis with Nature's Prickly Armor

These barbed bushes, however, offer no protection against air attacks. Hawks, swooping down, drive off birds and devour their young. The author saw howler monkeys loot cormorants' unprotected nests for eggs.



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635

Rephotomies by Paul A. Zahl

Treetop Apartments Are Thickly Populated. Every Branch Has Its Tenant

A fully grown ibis spreads its flaming wings some three feet. Its arched beak, resembling a curlew's, is about six inches long. Useless as a weapon, the blunt bill dredges food out of mud banks.

Though rain clouds were a constant handicap, the camera captured the poetry of motion in both pictures. The upper bush supports half a dozen dark juveniles. Scarlet birds below are mature.

The author's boatmen evinced a healthy respect for pitarahas. Swarms of hungry fish lurking beneath ibis roosts gobbled any fledgling that fell their way.





Crimson Feathers with Dark Chevrons Come from the Spotted Eggs of Ibis

Stylish wing tips are worn by both the scarlet and white birds. Fall coloration marks the first four primaries only after several molts. Plate on page 655 illustrates the effect on open wings.

As many as four eggs, varying a bit in shape and color, may be found in an ibis clutch. They hatch out in about three weeks.

In interior Venezuela the breeding season coincides with the June-October rainy period. The rarer coastal ibis has been observed nesting a month or two earlier.



the outboard motor until heavy grass was encountered again.

In the sky overhead and in the distance, birds were now becoming more numerous—mostly egrets, herons, and cormorants, but now and then some scarlet ibis.

Suddenly we were overwhelmed by coming unexpectedly upon a colony of nesting maguari storks (page 650). The grasses had opened, and ahead for a quarter of a mile was a series of neatly spaced round-topped bushes rising up out of the water like huge derbies. About eight feet in diameter and six feet high, each bush supported a huge red-eyed stork guarding its nest and watching our approach.

Some of the nests contained one or two eggs; others held young. The adults were quite tame and we could come to within 50 feet before the great birds, with exquisite grace and poise, would take off. These dozen or more stork mounds, some studded with pale-blue morning glories, were a sight to behold.

Finally we came to the wooded barrier beyond which those first four ibis had disappeared. Without hesitation our boatman spearheaded the canoe into this dark tangle of trees, underbrush, and thorned creepers (page 661).

The barrier luckily extended for only 100 feet or so, and when we emerged into the clear, we were again part of a tableau such as the storks and their flowering thickets had presented—only this time the birds were not storks! Flashes of red were discernible on distant shrubs, and our guide was pointing ahead to the beginning of the ibis garcero.

City of Blood-red Birds at Last

Before long—as if in a gondola entering a Venetian fairyland—we were among the scarlet ibis. I was a bit stunned by the suddenness and beauty of the transition. On all sides now, mound bushes rising from the water were smothered with the fabulous birds for which I had been searching these weeks, and which I had come 3,000 miles to find (page 646). Speeding through my mind were “beautiful red stains on a green background” . . . “scarlet livery of dazzling beauty” . . . “the mangroves as it were spattered with blood.”

Any doubts I might have had regarding the accuracy of these descriptions vanished.

There was no time for detailed exploration that day. It was late afternoon, and we faced a five-hour river trip back to Matapalos. The birds had been found; that was enough for one day. In a day or so I would establish camp at one of the farm huts along the Río Matyure. From there I could make daily trips to the birds and thus begin my studies.

It was long after dark when Kitson and I reached Matapalos. I was exhausted, but emblazoned on my memory was the image of bushes heavily laden with blood-red birds!

Erecting a Blind in Water Infested with Man-eating Fish

As I planned the next step, knotty problems loomed. The immediate task was to build a blind from which to watch and photograph unobserved. This presented great difficulties because all the land in and around the ibis garcero, even to a distance of more than a mile, was covered with slowly flowing water three to six feet deep.

The water, like that of garceros previously visited, was infested with piranhas, and therefore not to be waded or stood in. Furthermore, the bushes were too thickly and fiercely thorned to permit climbing.

On my second visit it was quickly apparent that the only solution would be to build a platform in the water, regardless of depth. Through the center of this platform I would implant my long-poled beach umbrella, and finally over the whole I would drape a circular piece of monk's cloth, brought from the States.

Within a day or two I had made the platform, a crude four-legged table affair with a top about two feet square. We canoed this out from camp and placed it, legs down, in the water at the location selected for the blind.

At first the table surface jutted several inches above the water. However, when I stood on it for testing, the structure began to sink slowly and didn't stop until the top was some three inches underwater.

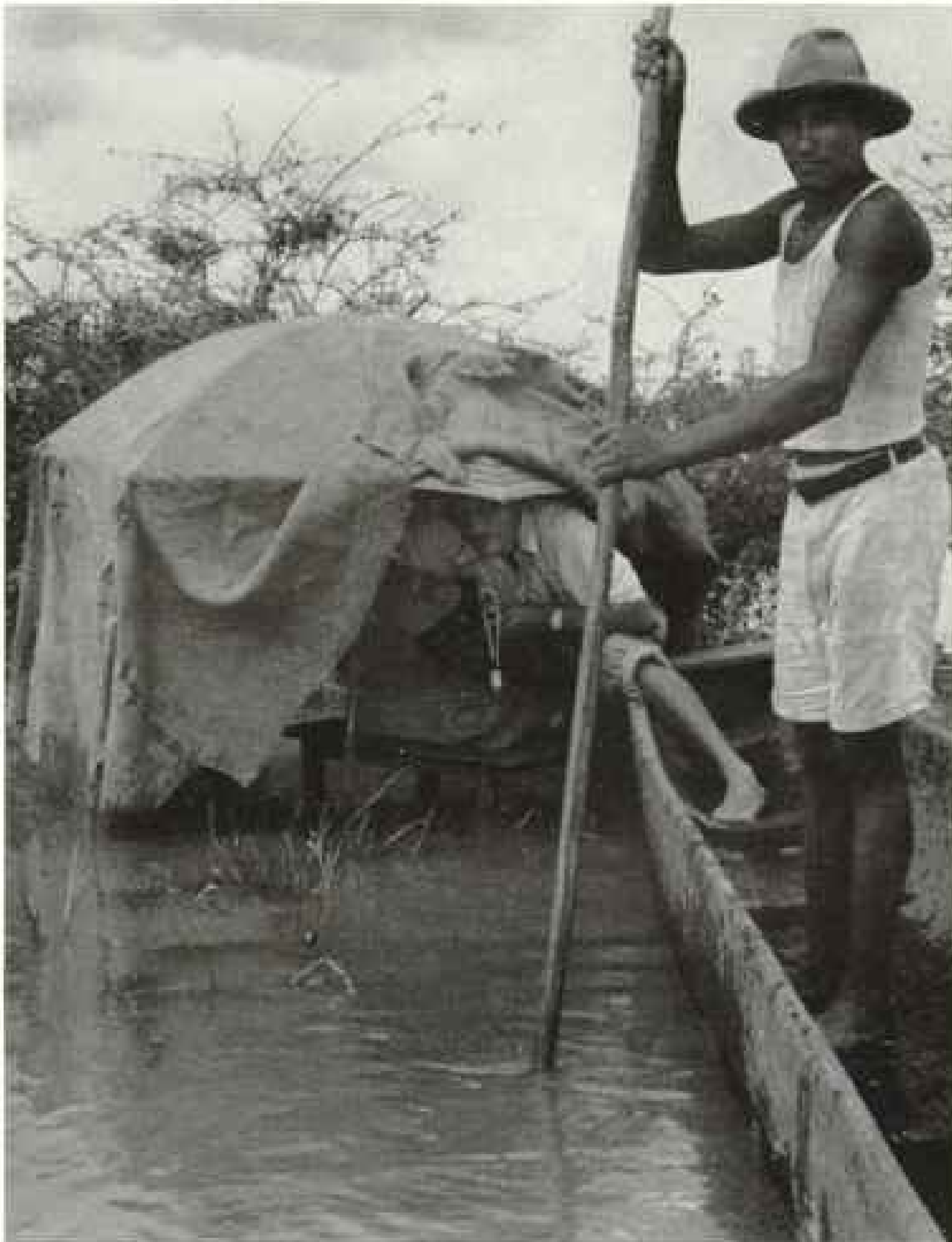
When my native helpers saw me place a wooden box on the submerged table, to serve as a dry seat, and when they learned that I proposed to sit on this box and rest my bare feet on the flooded table top, they voiced immediate disapproval, loudly warning of piranhas and insisting that I abandon the plan.

Since I did not see how piranhas could possibly operate effectively in a mere three inches of water, I ignored their alarm and arranged the umbrella and monk's cloth.

All these activities, by the way, were being executed somewhat ticklishly from the side of the dugout. In the “bleachers,” watching it all, were hundreds of scarlet ibis.

At last I crawled out onto the table again and into the completed blind (page 658). I instructed my associates to paddle the canoe off about a quarter of a mile and to leave me alone for a three-hour session of bird watching.

I waited quietly and expectantly, peering through the forward peephole at an egg-containing nest in the nearest bush. Perhaps half



A Bird Watcher Tests His Uncomfortable Camouflage

Mad-anchored platform, beach umbrella, and peepholed curtain composed Dr. Zahl's blind. As soon as he set foot on the narrow table, its legs sank deep into the mire, allowing his feet to dangle in the piranha-infested water. Two dark clumps in the bushes are nests of scarlet ibis.

an hour passed, but no parent bird returned. I was becoming a little distressed lest scarlet ibis were more wary than I had expected, or the blind was not a good camouflage.

Finally I took a look out of the back peep-hole. There, not more than 20 feet away, were my two men, sitting ever so quietly in the canoe, watching the blind and, of course, in full view of every ibis in the area!

I threw back the corner of the monk's cloth and was about to express my exasperation. Then the meaning of the situation dawned. These men, with touching consideration, were determined not to leave me exposed to what they fancied to be the real danger of maiming or death from the bloodthirsty piranhas.

They wanted to be close at hand with the canoe in case of trouble.

While this exchange was in progress, the sky had blackened and rain began to fall. Since it looked as if the rain might continue for the rest of the day, we decided to go back to camp. The blind and platform were to be left there for the night so that their stability would be tested, and also that the birds could become accustomed to it. I felt, too, that if next day the structure was found in good shape, my helpers might not be so reluctant to leave me alone in it.

That was how things worked out. Next day the blind stood exactly as we had left it; and as soon as I had disappeared into the monk's-cloth cell, the men obediently poled the canoe out of sight.

Rare Bird of Blazing Hue at Home

Only those who have sat in a blind can appreciate the excitement one feels when the awaited bird, finally and unafraid, flutters in close and proceeds with its activities as if in

solitude. I had been waiting no more than five minutes when an approaching red streak suddenly materialized into an ibis landing on a branch of the bush before me (page 654), then hopping down onto its nest of brown-spotted eggs.

Framed by the ravelled edges of my crude peep-hole, there it was—a bird portrait in scarlet. I sat stock-still, for the creature was not yet wholly at ease and kept watching the blind. Its narrow arched beak, six inches from base to tip, seemed disproportionate to the rest of the body, which was somewhat larger than that of an average pigeon.

Dominating the picture, of course, was the bird's blazing color, broken on each side only

by half-hidden blue-black tips of the four primary wing feathers (pages 655 and 656).

The red bird seemed to lose all fear of the blind when, a little later, a white ibis landed on its nest a few feet to the right. Both birds quickly settled—heads serene, feathers smooth. Occasionally one or the other would rise and with its awkward beak prod or roll its eggs, then return to drowsy brooding.

There they were, side by side—*Guara rubra* and *Guara alba*—two birds whose identical structure has led some ornithologists to suspect that they are, in fact, but color varieties of the same species (page 648). It was to explore this possibility that I located the blind near these two nests.

Would both parents of a single nest be of the same color? It should be easy to determine, for nest care is shared by the two sexes, and when the relief mate arrives for his or her session of nest supervision the brooder immediately flies off, presumably for feeding.

Finding a white and a scarlet ibis sharing the same nest would provide fairly convincing evidence of mixed marriage, and would indicate that the two birds were indeed members of the same species.

Somewhat to my disappointment, no such thing happened. Scarlet to scarlet, white to white—that appeared to be the mating story.

Meals Served Cafeteria Style

After a time I shifted my not too comfortable position in the blind and spied through a different peephole. From this angle I had a direct view of a large bush, perhaps 35 feet away, the rim of which was densely covered with a hundred or more immature ibis. During blind-building operations they had crawled down deep into the bush, but had now returned to their surface positions.

These young were distinguished from their elders by a lack of scarlet, most of the under feathers being white and the wings, back, and neck dusky. They could flutter from branch to branch—all but fly. They perched there, hungrily waiting for food (page 644).

Every few minutes a single adult scarlet ibis would swoop down and, with great flutter and excitement, land among the group (page 652). The younger set would immediately put up a loud hue and cry, plunging their heads forward in an awkward and beckoning gesture.

The actual feeding operation is rapid, making careful observation difficult. A youngster darts its beak into the donor's mouth and almost instantly withdraws it, gulping. Food supplied by the adults is not predigested, but lies in the throat at the base of the mouth. The young bird merely helps itself.

I was unable to determine whether the parent bird recognizes its own young or whether feeding is indiscriminate and communal. I suspect the former to be the case, although heaven alone knows by what subtle cues a parent can identify its offspring amid such a populous and seething nursery.

The immature young of white and scarlet ibis look alike, but judging from the absence of white adults arriving to feed the youngsters, I assumed that this particular nursery was wholly of the scarlet variety.

Probably because the first to dine usually cleans out the larder, the parent rarely attends more than a single young; after serving the meal the bird flies off on a long repeat journey to the foraging grounds.

Exactly where these feeding grounds were located I did not ascertain, but I knew they were miles to the southeast, where open fields were not so deeply flooded. I could see evidence of this each evening from my camp, about three miles from the garcero and in the direct line of ibis flight to and from forage.

Between 5 and 7 p. m. the procession reached its maximum. At no time during these hours could one look into the southeast without spotting somewhere a group of home-bound birds.

These flocks varied in size from a few birds to several hundred, some in Indian file or in an angled line; others spearheaded, like geese. Scarlet ibis, however, do not seem to be as geometrically minded as geese, for always a few individuals would be out of position, giving the echelons a ragged appearance (page 636).

But compensation for this indifference to line aesthetics was to be found in the variety of scarlet hues the birds' featherings assumed in the evening sun. These hues were, of course, determined by the degree of sundown and by the angle of view.

Flocks approaching our camp in the distance would be a colorless gray, then suddenly pink. Speeding nearer and overhead they would undergo a whole series of spectrum shifts through pink, rose, dark red, and flaming scarlet, finally to disappear in the northwest as dark silhouettes.

Always a few individuals in any sizable group were white ibis, which but added by contrast to the scarlet glory.

As to ibis diet, I was surprised to find the stomach contents of several adult birds to consist wholly of green plant material, with no traces of crayfish, insects, worms, etc., usually considered to be standard ibis food.

Yet I doubt that grasses and fresh-water shoots are the permanent and exclusive diet

of the scarlet ibis. I captured a preflight immature bird and gave it to Mr. Kitson for domestication. Before I left Matapalos for Caracas, the bird had become completely tame and would eat greedily of almost anything offered.

Further evidence of ibis omnivorousness comes from stories told me by llanos farmers. They testified that in summer large flocks often follow the plow and search for worms in the overturned sod.

Courtship or a Sparring Match?

While sitting in my blind one day I saw two scarlet ibis, alone on a bush top, fluttering about as if in nuptial activity. I was immediately agog, for considering the late date, I had long since despaired of observing and recording the bird's courtship behavior, about which so little is known.

The two birds were sparring with their beaks, each trying to seize the other's. Suddenly they leaped several feet into the air, flutteringly pursuing one another; then down they settled on the bush for more sparring.

My hopes for determining whether these activities were nuptial or merely those of two wrangling cocks soon vanished along with the birds, and never again did I see further signs of presumptive mating activity.

For a proper study of ibis nuptial behavior one should be present in June or July. At that time the wet season is well under way, and the garcero as a secret retreat magnetically draws ibis from the vast plains over which, during the Venezuelan summer, they have dispersed. Molts have been completed and the scarlet dress is at maximum intensity.

During the courtship and mating period nests are built in the garcero bushes (page 647). Shallow whorls of knitted-together twigs about ten inches in diameter, the nests in some bushes may be so close as almost to touch.

In canoeing from bush to bush studying these nests, I was perplexedly unable to discover a single one containing nestlings. Throughout the garcero were perhaps 5,000 young on the threshold of flight, and some parents were brooding over egg clutches, but none of the intermediate stages could I find.

The explanation of this, again, is likely to be found in the calendar. The official egg-laying period had long since passed, and the birds I saw vainly warming a new clutch were doubtless those which, for some reason, had lost their eggs or young. I say vainly because, once the garcero waters recede and the bottom turns into dry cracked mud, all inhabitants capable of flight take off, and any

eggs or nonflying immatures are abandoned.

From all accounts the juveniles and adults depart in more or less separate companies and have little further association that season. The young at this stage are far from striking in their still drab and colorless plumage.

The transition to the magnificent dress of adulthood, beginning when the young are about six months old, is not accomplished in full until about three years have elapsed, although the exact sequence and timing of the molts is obscure.

Perhaps the most enchanting of all my bird experiences in the llanos occurred daily as our canoe traveled the length of the garcero to the blind. The thorn bushes, ibis-garnished, rose bluntly out of the blue-green water and glowed each time with a different degree of scarlet, reflecting the mood of the sky, the clouds, the sun.

Bushes "Bursting into Fire"

In weaving our way through this avian Venice we were invariably preceded by a wave of up-darting birds. Ibis are far more explosive in their movements than most birds their size, and a bush of several hundred adult scarlet ibis suddenly bursting into fire is something to remember. In take-off they seem to propel themselves upward, with wings churning at a tremendous rate (page 642). The leaping flame color is accented only by the flickerings of black wing tips.

There were many other bird species to be seen on all sides. There was, for example, the hoatzin, locally known as the *chenchena* (page 651). Secluded during the hot midday, hoatzins aroused in early morning or late afternoon by the noise of our outboard would spurt from one riverbank to the other, issuing raspy cries of alarm.

The hoatzin is an extraordinarily interesting bird. In adulthood it is about the size of a chicken, and russet to brown in color. Its head, small for the body, wears a Comanche tuft of feathers. The nestlings have two well-developed claws on each wing, and long before they are able to fly, they negotiate the branches of their nest tree, using wing claws for clinging and climbing.

When disturbed, the young sometimes drop bodily into the water underlying their nests and hide for a few moments, submerged; then return to their nests by the use of their special scaling equipment. During such aquatic escapades they are apparently not molested by piranhas. The hoatzin has an odor that repels the fish.

Among the nongarcero birds, in addition to the maguari stork already referred to, a

conspicuous one was the jabiru, a stork standing five feet high and with a wingspread of about seven feet. Otherwise white, this largest of American storks has a black and featherless head and upper neck, with a loose red skin extending down as far as the chest. The jabiru is noncolonial and builds its huge solitary nest high in some lofty tree.

Then there were the boat-billed night heron, with its broad beak and elaborately tufted head (page 651); the various species of parrots and macaws; the anhingas and cormorants; the egrets and herons.

During this period of studying other birds I dismantled and removed my blind from the ibis garcero.

Back at camp I hung the monk's cloth in the air for a thorough drying. Returning one evening, I found that in my absence members of a peon family whose hut stood near our camp had appropriated the monk's cloth and neatly cut it into two-foot squares for use as saddle blankets during the approaching dry-season cattle roundup.

This loss was serious to me, for without the cloth I would have no blind. On the other hand, to express displeasure was unfair, for I knew that the friendly culprits had been entirely naive in their action.

Falling Water Signals Breakup of Colony

Next morning, after gathering up as many of the pieces of the fabric as I could find, I took a long, curved surgical needle from my first-aid kit and quietly spent the day sewing. My unintentional malefactors sat near by, childishly delighted with my tailoring efforts.

When the job was finished, we again set up



Pole and Dugout Penetrate a Flooded Thicket

When the author's party broke through this jungle, "flashes of red were discernible . . . we were among the scarlet ibis" (page 657). The poleman's holstered knife, a universal weapon on the Venezuelan plains, is used in bush-whacking, butchering, eating, and defense.

the blind in the garcero, and I engaged for another few days in ibis watching.

Already there was evidence of the impending garcero breakup. Many of the young which had been bush bound when I first arrived were now able to fly. The water level had dropped almost eight inches, a sure sign that the wet season was coming to a close and that the days of the garcero were numbered. Soon the birds would be leaving for their annual dispersion, for their molting period, for six months of decentralization.

I, too, took the cue, and was soon bidding farewell to the garcero, to my kindly native helpers, to my friend at Matapalos, and last to my benefactors in San Fernando.



National Geographic Photographers R. Anthony Stewart and John E. Fletcher

Minerva in Mosaic Looks Down on the Gutenberg Bible, a Library of Congress Treasure

This rare volume, marking the birth of the printing art in Europe, helped turn the Dark Ages into the Renaissance. Johann Gutenberg printed the Latin text at Mainz, Germany, around 1455. This is one of three perfect copies on vellum. When sold to the Library as part of a collection, the book was valued at \$300,000 (page 676).

The Nation's Library

It Serves and Is Served by the World

BY ALBERT W. ATWOOD

NEARLY every visitor to Washington, no matter how brief his stay, enters the Library of Congress. Here, in the two largest buildings in the world devoted exclusively to library purposes, are almost 30,000,000 separate pieces of material, the greatest collection which man has ever made of his own recorded ideas and thoughts.

Each year between six and seven million new holdings pour into these two buildings, and even after duplicates have been disposed of and serials bound into volumes, there is a net gain of well over a million.

If each one of the million people who enter the Library every year gave it a book or other item, the total would be less than the holdings which are actually added!

The Library of Congress is a gigantic workshop throbbing with activity, turning out information instead of steel or automobiles.

It is consulted constantly for all manner of purposes by all manner of people, and is in touch with the far parts of the earth by correspondence, telegraph, telephone, cable, radiogram, and through personal visits for the purpose of collecting and exchanging material.

Many Questions—Sometimes Too Many Answers

Increasingly people go to the Library, or write or telephone, to secure information and to get answers to questions.

"People come in here desperate because they lack the information they need to write a book or thesis," the chief of one highly specialized section said; "but after three or four weeks they avoid meeting my eye for fear I may give them some more material!"

From every part of the globe an ever-mounting, almost overwhelming torrent of books, pamphlets, magazines, newspapers, maps, music, phonograph records, manuscripts, photographs, microfilms, and documents pours into the Library to make it the greatest collection of its kind in existence.

No statistical summary, however imposing, is half so impressive as the sight of the incoming material itself, the so-called accessions. They come in cartons of every size and shape, in wooden cases, mailbags, flimsy paper bundles, and battered valises and trunks, and are measured by tons, carloads, truckloads, and ship bottoms.

The official who must find space for all this

new material went to the Bush Terminal in Brooklyn one day not long ago to see a single, newly arrived consignment of 487,595 books!

In the stacks I gazed at 1,900 unopened mail sacks of Japanese material. Nearly a thousand other sacks were being opened and the material sorted and classified, not by paid librarians, for whom there was insufficient appropriation, but by graduate students representing universities specializing in Japanese. Their institutions were compensated by duplicate copies which they might find.

In an age when so much published matter is in serial form—that is, in newspapers, magazines, journals, bulletins, directories, and catalogues—the Library has a huge mass of diverse material to deal with.

An entire division is required just to record these serials bound and unbound, more than a million of which are received each year, and to obtain missing copies from publishers.

So many questions pour in from other parts of the Library concerning the location of a particular serial that to save time several telephone operators move to and fro around the room, plugging in instruments at that section of the special card catalogue where the facts about the particular serial are to be found.

Where does this vast mass of material come from? Part answer is that there is hardly a country where the Library does not have a buying agent. If there is no book dealer, then the consul or a legation official acts as agent; if we have no diplomatic relations with a particular country, then a consul in a neighboring country serves.

Books Sought in Faraway Places

The Library acquires books through dealers in Liechtenstein, Cyprus, Portuguese East Africa, Belgian Congo, Addis Ababa, Nairobi, Indochina, Bangkok, Rangoon, Ceylon, and Pakistan, to name a few places.

In Finland the University of Helsinki acts as agent; in Dakar the consul; in Nigeria a church missionary bookshop; and in Korea the president of a college.

In a single year new arrangements for blanket orders were made in Iceland, Korea, Japan, southeast Asia, Greece, and North Africa.

But only 15 percent of the Library's acquisitions come through purchase. Masses of material are obtained by gift, exchange (domestic and international), transfer from other U. S.



National Geographic Photographers H. Anthony Stewart and John E. Fletcher

Tilling and Weaving Pictures Were Painted on Silk for the Emperor of China (1696)

Dr. Arthur W. Hummel (left), chief of the Library of Congress's Orientalia Division, and Dr. Walter T. Swingle, scholar and plant explorer, examine a herbal instructing Chinese how to survive in famine times (page 682). Narrow pine cases contain the Tibetan scriptures (spread out, right), printed from wooden blocks 500 years old. Believed to be the only set in the West, they were collected at Choni Lamastery, western China, by Dr. Joseph F. Rock while leading a National Geographic expedition (opposite page).

Government agencies (the largest single source), and from copyright deposits.

Under the copyright laws of the United States, going back for more than a century, millions of copyright deposits have been added to the Library's collections—published books, periodicals, dramas, musical compositions, maps, works of art, photographs, prints, motion pictures, etc. Since 1909 many copyright deposits of unpublished material are also included.

Between three and four million items are acquired each year by gift and exchange. The first gift of any size accompanied by an endowment was that which the widow of Gardiner Greene Hubbard, first President of the National Geographic Society, made in 1898 of her late husband's large collection of engravings.

Since then books and papers of the highest value seem to have been attracted to the Library, almost as if by a natural force, the total collection building up day by day and year by year like a great coral reef. For example, the

presence in the Library of the papers of Woodrow Wilson has been like a magnetic force drawing to it the papers of other public men of his time (page 671).

A typical example of how such methods of acquisition as copyright, purchase, and gift combined can gradually build up an important and valuable collection is to be found in the section of local histories and books on genealogy and heraldry.

This is the largest collection of local histories in the country and one of the largest of family histories and other genealogical material. It is much used for genealogical, biographical, and historical research (page 677).

By gift, exchange, and purchase the Library reaches into every language, every country, every subject. From Achimota College, Gold Coast, British West Africa, it receives books on the social organization of the natives; from another source it gets two books on Hitler's genealogy.

Mrs. Franklin D. Roosevelt visited Parliament House in Australia's capital, Canberra,



National Geographic Photographers B. Anthony Stewart and John E. Floebier

Books from the Library Arrive in the Capitol 20 Minutes or Less After Request

Congressmen on the floor and committees in session want reference works in a hurry. Conveyors on an endless cable in a quarter-mile tunnel answer their needs. Harold S. Lincoln, who here hands books to pages, recalls the days when illuminating gas seeped into the tunnel and "nearly gassed us." He remembers the late Senator Huey Long's midnight call for Aesop's *Fables* for reading during a filibuster.

and was given for the Library a photographic copy of Captain Cook's autographed journal of his first voyage, the original being in the Commonwealth National Library.

92 Boxes of Tibetan Scriptures

In 1923-24 and again in 1927-30, Dr. Joseph F. Rock led National Geographic expeditions to remote corners of China, including the Chinese-Tibetan frontier. He was commissioned by the Library to buy a complete set of the Tibetan scriptures, and he secured them at the Choni Lamasery.*

Packed in 92 boxes, it took more than a year to bring them out of China and to this country. They are believed to be the only set in the Western World. The volumes consist of independent leaves between wooden boards, with the covers tied together by wide cotton bands.

A representative of the Library, on his search for material in Asia, told a native friend in Burma that there was no set of the *Tripitaka*, the Hinayana Buddhist scriptures, in the United States. As a result, not only

the scriptures but many classical and literary works were presented to the people of the United States by the people of Burma at an impressive religious ceremony in Rangoon.

On this occasion water was poured into a cup, drop by drop, to inform the spirits of the good work being done; and, at the close of the ceremony, a conch was blown, bells were rung, and gongs struck.

The books were then carried down the 300 steps of the Shwe Dagon Pagoda by 100 Burmese nuns and placed in a gilded chariot decorated with holy pinnacles and paraded through the streets of Rangoon (page 681).

International cooperation is not a one-way street. As a return gift the Library sent several hundred volumes on the American way of life to Burma. In a single week material has been sent to as many as 72 libraries in 50 different countries.

A modern, effective tool for world-wide exchange of information is photoduplication.

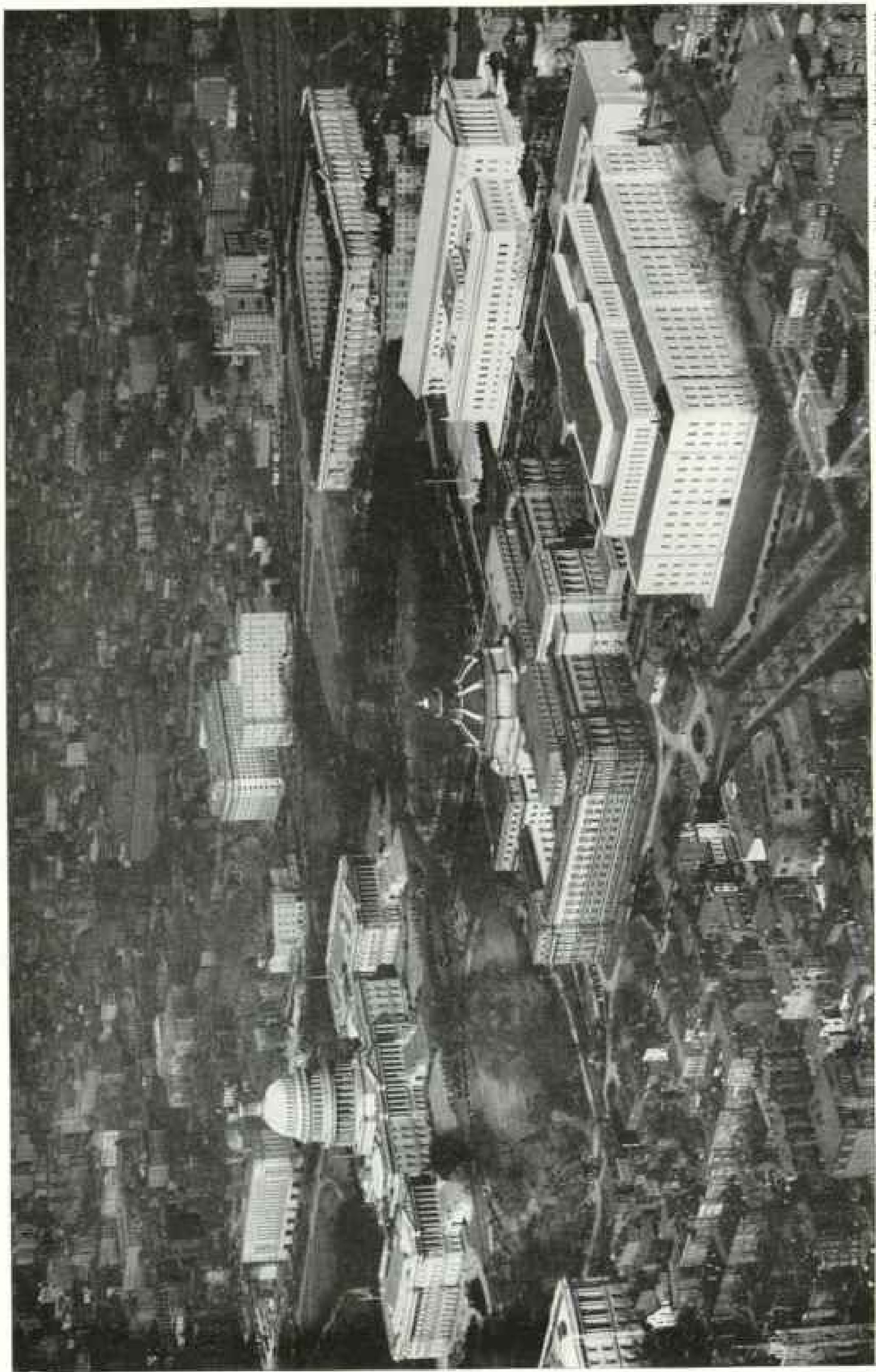
* See "Life Among the Lamas of Choni," by Joseph F. Rock, NATIONAL GEOGRAPHIC MAGAZINE, November, 1928.



National Geographic Photographers B. Anthony Stewart and John E. Fletcher.

National Geographic Maps on Display in the Library of Congress Illustrate Half a Century's Progress in Cartography

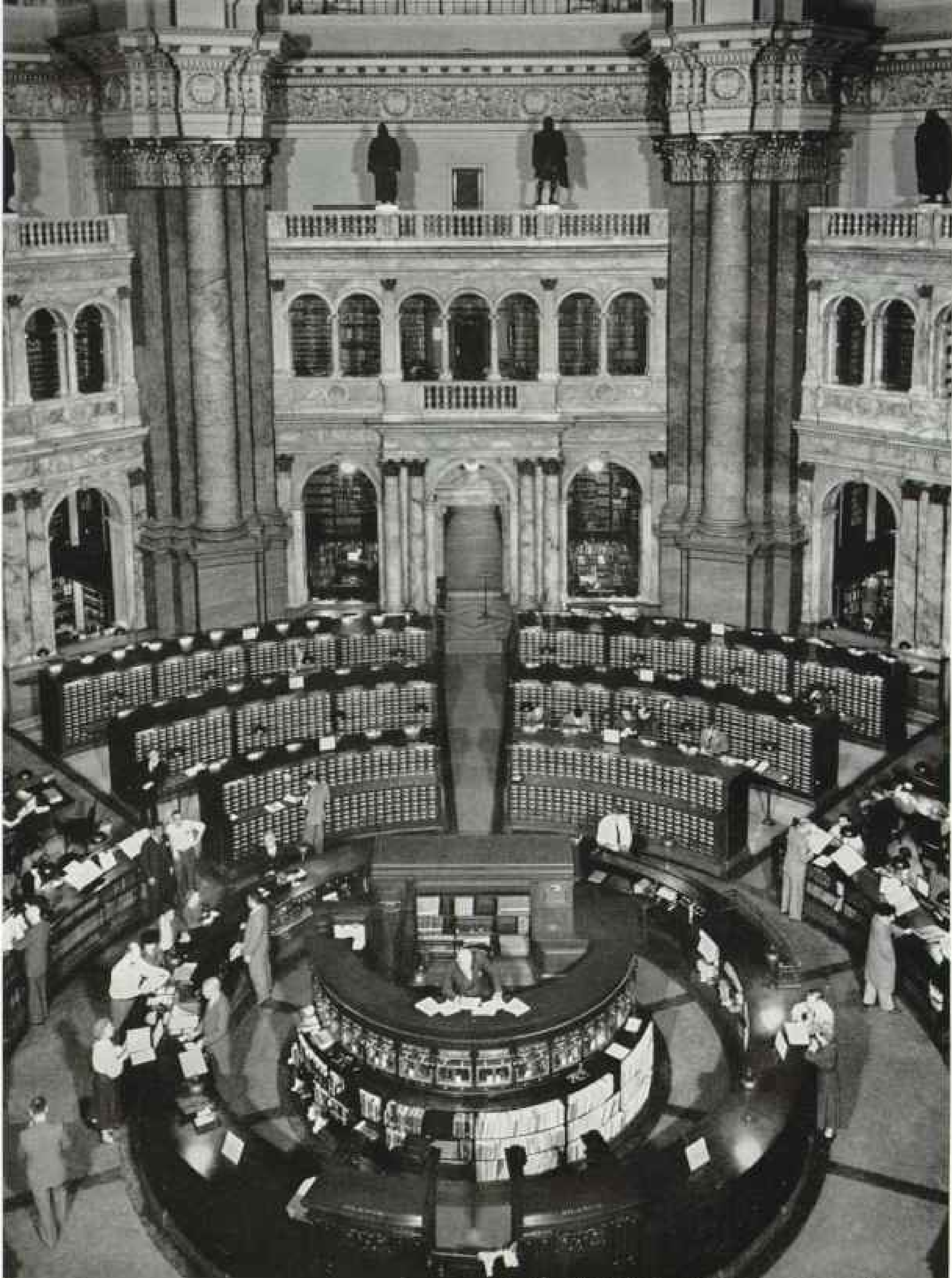
Fifty years ago the NATIONAL GEOGRAPHIC MAGAZINE, lacking its own cartographers, borrowed map plates from the Government. Today it has a staff of 31 creating four 10-color maps a year and numerous black-and-white maps (page 677). These steel files hold a fraction of the Library's two million maps, one of the world's largest collections (page 683). John Bartholomew (with cane) is a distinguished publisher of atlases from Edinburgh, Scotland.



National Geographic Photographer B. Arthur Bennett

World's Greatest Library, Storehouse of 30 Million Items of Knowledge, Faces the Domed Capitol Which It Serves

No one can fathom more than a fraction of the learning gathered here (pages 663 and 668). This cluster of Federal buildings has been called the "Acropolis on Capitol Hill." Center, the Library of Congress's Main Building, completed in 1897; right, its Annex (1939), its steps here not yet complete; right center, Supreme Court Building and hollow Senate Office Building. Beyond, a blimp's-eye view of Washington, D. C.



From These Galleries a Million Visitors a Year Quietly Peep into the Main Reading Room.

"Silence!" say signs on the desk, but they cannot hush the click of pneumatic tubes, the thump of books, or winter's honking noses. In summer a bat or pigeon occasionally flies in through lantern windows and distracts readers. Bacon and Michelangelo (center) and 14 other statues preside over the octagonal study (page 670).

Anyone anywhere can write to the Library and get an estimate of the cost of the reproduction of any material not protected by copyright which he might see if he visited the Library in person, whether it be a copy of an old newspaper, a half-dozen pages from a scientific treatise, an original letter of Thomas Jefferson, or a musical composition by Brahms.

The Photoduplication Service started in 1938 with three employees; it now has about 80. To begin the service, a revolving fund and modern laboratory equipment were supplied by the Rockefeller Foundation. Reproductions are by several methods of photography used for such work—conventional photography, photostat, microfilm, blueprint, and others.

But the Library receives as well as distributes the benefits of modern photoduplication. Representatives search the earth for rare treasures to microfilm—in the National Archives of Mexico, rich repository of material on Spanish colonial America; in the Greek Orthodox Church Library in Jerusalem; the Vatican Library; the Swiss National Library; and the University of Amsterdam. Sometimes they set up branches of the Photoduplication Service for as long as a year at a time to copy the material.

Records of Bible Times on Microfilm

Under way is a project to microfilm for the Library the priceless and heretofore almost totally inaccessible manuscript collections in what is believed to be the world's oldest Christian monastery, that of St. Catherine, on Mount Sinai, located on the Sinai Peninsula, the land bridge between Africa and Asia.*

On this spot Moses is supposed to have seen the Burning Bush and to have received the Ten Commandments.

From this monastery nearly a century ago a German scholar brought the *Codex Sinaiticus*, one of the oldest manuscripts of the Bible, which the Soviet Government sold to the British Museum in 1933 for almost half a million dollars. But for the most part the contents of the monastery's many manuscripts are unknown to Western scholars.

The Library of Congress is open to all comers from all places, free from any red tape. There is no presentation of introductions or credentials one day and calling back the next. The only question the reader is ever asked is what he wants, not why he wants it.

Any person 16 years and over may use the collections, and in 23 different reading rooms.

In a sense the Library is a great university, for it houses more scholars in its reading rooms, 225 special study rooms, 400 study

tables, and on its staff than most large universities can boast even at commencement time.

More than 200 faculty members and some 400 graduate students from more than 100 universities and colleges use the special research facilities in the course of a year. In the specialized divisions of the Library other hundreds of scholars and authors are engaged in similar tasks.

Books Help Write More Books

It is estimated that always at least 200 books are in preparation in the Library.

What kind of books are written in the Library? Three recently published works covered the history of education in Puerto Rico, the story of drugs, and the history of football. Two distinguished authors have spent years in the Library gathering material for biographies of James Madison and Theodore Roosevelt.

But the Library of Congress is open to the layman as well as to the most learned and distinguished scholar. It is a reference library for the whole people, a national public library; Thomas Jefferson thought of it as the "library of the United States."

In the words of the historian, the late James Truslow Adams, "one sees the seats filled with silent readers, old and young, rich and poor, black and white, the executive and the laborer, the noted scholar and the schoolboy, all reading at their own library provided by their own democracy." †

From 9 in the morning until as late as 10 at night on weekdays a staff of about ten men, working in shifts, take on all comers in the way of questions. Hundreds of thousands of queries pour in by mail and telephone, but the Reading Room reference staff answers from 150 to 200 a day that readers ask in person.

There is no typical question. One of the librarians kept for me a list which he answered over a period of a few days. This showed that people wanted architectural plans for a Jewish synagogue, the number and kind of houses in Cuba, the number of words in the English language, and an unidentified book written about twenty years ago on trade routes in the Middle Ages.

Questions range from that of the 12-year-old boy in Waterbury, Connecticut, who wrote that he played with 14- and 15-year-olds who pushed him around so much that he wanted a book on jujitsu to help him hold his own,

* See "Sinai Sheds New Light on the Bible," by Henry Field, NATIONAL GEOGRAPHIC MAGAZINE, December, 1948.

† From *The Epic of America*, by James Truslow Adams, Little, Brown & Company, 1931.



National Geographic Photographers Robert F. Stone and John E. Fletcher

Percy Grainger Checks a Primitive Wax Cylinder in the Library's Recording Laboratory

Old-time recording devices, warming up or slowing down, often turned out music at unequal speeds. This variable-speed machine was built to order for the Library's Folklore Section so disc transcriptions can be matched to the tempo of old-style cylinders (center). Here George Steele (left), chief engineer, transcribes a folk song collected by composer Grainger in Denmark about 1908.

to the Department of the Interior, which sought information about the Battle of Saratoga, prior to making the battlefield a national historical park.

The Library was able to furnish the Department with many original maps of the battle, including Brig. Gen. Tadeusz Kosciuszko's own drawing, and with numerous original letters, journals, official reports, diaries of generals who took part, and books.

Queer Questions People Ask

The man who requested the chemical formula for a cockroach's secretion was probably working on a new insecticide. One of the librarians told me he had just been asked for a history of clothespins; his only thought was how to find the desired information.

The Library contains such a vast mass of material that a patient worker can bring together seemingly unrelated bits of information. Given a man's name and the town in which he lives, a surprising amount of detailed information can be pieced together concerning him.

The Library takes nearly 1,400 newspapers and almost 26,000 separate periodicals. By using city directories, local newspapers, trade

association journals and directories, college alumni directories, and about 420,000 fire insurance plats, most of the essential facts about any man's business, home, and associations can be dug out.

Until 1897, when the huge, massive structure just east of the Capitol was opened, the Library was housed in the Capitol. The "new" Main Building, now 53 years old, was considered an architectural masterpiece of its day, and has an interior filled with gorgeous decorative detail (page 667).

Here are wide marble staircases and a wealth of statuary, murals, and mosaics, with enough allusions of a historical, literary, scientific, and artistic nature to keep the visitor busy for weeks.

The Annex, opened in 1939, is more functional in that it has many offices, a sore lack in the old Main Building.

The structural schemes of the two buildings are directly reversed; the central core of the Annex is one great stack, whereas the hub or core of Main is a huge rotunda, the octagonal reading room, whose marble pillars rise to the dome which crowns the building (page 668).

Ainsworth Rand Spofford, who had been Librarian for a long period prior to the opening



National Geographic Photographer B. Anthony Stewart

General Mitchell's Papers, Deposited in the Library, Become a National Heritage

The late Billy Mitchell, World War I commander of U. S. aviation in France, sacrificed his career to forewarn the American people of air power's revolutionary changes. Here his former widow, Mrs. Thomas Bolling Byrd, turns over a part of the Mitchell documents to Dr. Luther Evans, Librarian of Congress. Carl Spaatz, World War II air general, and Mrs. Kenneth N. Gölpin, Jr., Mitchell's daughter, look on.

of the new building, thought that it should be circular to bring everything close to readers, but this idea was carried out only in the far-famed Main Reading Room.

"Who Reads All These Books?"

Members of the Library staff are sometimes asked, "Who reads all these books?" or "Why do you keep all this junk?" But Thomas Jefferson remarked a century and a half ago that "there is no subject to which a Member of Congress may not have occasion to refer," and this statement is even truer today, applying also to the constituents of Congressmen.

A book uncalled for for decades may suddenly be asked for by two readers within a few minutes of each other.

In 1812 a brigadier general in the Napoleonic Wars wrote a book on rockets. Recently it was requested by a War Department ordnance officer, and a few moments later a National Park Service ranger from Fort McHenry, Baltimore, wanted to see it for a very different and more literary reason. The ranger was studying the words "the rocket's red glare," in *The Star-Spangled Banner*.

Two men wanted a book on Russian spies at almost the same moment. The second

man was suspicious of the first when he heard that the book was out and demanded to know why it had been taken out; but that was the first man's business, not the Library's.

Some mistakes which readers make in calling for books are queer indeed, such as "U. S. Farmers Coupe" for *Pharmacopoeia*, or "Dickinson's Notes" for *American Notes* by Charles Dickens, or "Three Mosquitoes" for *Three Musketeers*, or "Four Hotsemen of the Malca Type" for *Four Horsemen of the Apocalypse*.

Transportation of books is largely by a system of pneumatic-tube carriers; it takes 30 seconds for books to travel the 748 feet between the two buildings.

Tracing Borrowed Books

Of the books "not on shelf" many, of course, are charged out or are new books not yet received in the stacks, or in bindery, or in special collections and divisions, or not in the Library at all—that is, missing.

In 1947 the total of missing books was reduced by one volume when the State Department sent to the Library a copy of *Hauptverkehrswege Persiens*, by Paul Freiherr Rausch von Traubenberg. The State Department had borrowed it for use at the Paris



National Geographic Photographer J. Taylor Roberts

"20,000 Years of Comics," a Library-Treasury Show, Traced Cartoons from Cave Art Days

Conlidge Auditorium last October 3 watched the Nation's top cartoonists promote the sale of U. S. Savings Bonds. They were described by Assistant Librarian David C. Mearns as "masters of communication," whose "40 million daily readers" exceeded even the Library's. "No wonder we preserve their work in 10,000 volumes," he said. Here Bill Zarba, Treasury artist, caricatures Bill Holman, creator of Smokey Stover.

Peace Conference in 1919 and finally returned it in 1947!

A distinguished Government ornithologist complained that he couldn't find the book, *Aves de la Isla de Cuba*, deposited in the Library in 1866 by his own office.

Several weeks of work by a special investigator brought out the fact that the organization had borrowed the book back in 1887 and had not returned it, retaining it in the bird section of its own library.

As in all libraries, there is some mutilation and theft, mostly by mental crackpots. No dramatic case of theft has come to public notice since 1896 when two employees began to remove valuable manuscripts and sell them to New York dealers, one of whom was honest enough to report the fact.

One of the employees turned state's evidence, and the other was fined \$200. Among the manuscripts stolen was George Washington's report while serving under General Braddock. The defense lawyer challenged the competence of Librarian Spofford to say that the handwriting was really Washington's, on the ground that Spofford had never seen George Washington write; but Spofford effectively replied that he had studied hundreds of Washington's autographs!

In a library of this size, the custodial problems are enormous. The material must be cleaned, the shelves "read" and "searched" to see that the books are there and in order, and protective devices provided for some material.

Collections must be shifted from time to time to make room for new accessions. In a



National Geographic Photographer B. Anthony Stewart

China's Monumental Encyclopedia, Printed in 1728, Comes in 5,040 Volumes

China presented this 1898 reproduction to the United States as a thank-you for remission of the Boxer Indemnity. Huge as it seems, the set is not the largest Chinese encyclopedia. That honor belongs to the 11,005 volumes which 1,000 Chinese scholars compiled by hand in 1403-08. Some 370 volumes survive; the Library keeps 41. Chinese used movable type centuries ahead of Europeans (page 681).

single year the contents of 37 miles of shelves, or 12,324 sections, are moved or rearranged.

The problem of controlling the vast mass of material in the Library, so that it shall be available to readers, is at once complex, tremendous, and endless.

It is a question whether the complete cataloguing of all this material, including manuscripts, maps, and pictures, is anything more than a dim and perhaps an unwise ideal.

Many special catalogues of the many special divisions do not lend themselves to consolidation into the general catalogues. For example, how are nonalphabetic, ideographic Chinese and Japanese books to be combined into a catalogue that English-speaking peoples can understand?

Of the four great general catalogues in the

Library, one is for staff use and another is the National Union Catalog. This locates books in 700 other American and Canadian libraries, for there are several million books which the Library of Congress does not have.

It also includes many titles in the Library's own collection which are not to be found in the other general catalogues, huge as they are.

The National Union is an author catalogue. If subjects were listed, there would be 40,000,000 to 50,000,000 instead of the present 15,000,000 entries.

Every week the Library sends out a list of from 30 to 100 titles of books which it cannot locate even in the Union Catalog; most of the requests to find them come from universities. The list is sent to some 60 selected research libraries.



National Geographic Photographers B. Anthony Stewart and John E. Fletcher

The Library Serves Not Only Congress but Learned Institutions and Scholars

At times the 20,000 books in the National Geographic Society's library fail to answer a staff writer's questions. Then the Library of Congress truck comes to his aid. Last year it delivered 780 items to this door. On rare occasions The Society feels honored to lend a scarce book to the Library. The flag is at half-staff for the death on January 15, 1950, of General of the Air Force H. H. Arnold, a Trustee of The Society.

Then once a year all titles still unlocated are gathered in a volume and sent out again. A few are found as long as four years after publication of the annual list.

The Mystery of a Lost Young Lady

One as yet unlocated volume whose title caught my eye is "*Memoirs of a Young Lady of Family*. Being a succinct account of the capriciousness of fortune, and an accurate survey of the heart of that incomprehensible animal called Man. London, J. Scott, 1758." I do hope she is found!

For many years the Library of Congress has served as a central cataloguing bureau for the entire country. It sells duplicates of the printed catalogue cards of its own books for a few cents each to nearly 9,000 other libraries, at the rate of more than 20,000,000 cards a year.

No two libraries have identically the same books, but many books are the same, and the same cards will serve for them. Thus much of the costly and expert work required to catalogue the country's books needs to be done only by the Library of Congress.

To sort and file incoming orders is a tremendous job. It is done in a room 200 feet long, with 2,000,000 card entries, there being a reserve stock of 170,000,000 cards in the huge sub-basement of the Annex.

When a new book is published, skill must be used in estimating the number of cards to print, to avoid building up too large an inventory. The morning I visited the Card Division, estimates on two of many new books were as follows: *Horse of the Desert*, 700; *Birds in Your Backyard*, 1,500.

Among the libraries from which orders had been received that morning were those of the Pittsburgh Plate Glass Co., International Business Machines Corp., Oberlin College, Connecticut College for Women, American Philosophical Society, U. S. Coast Guard Academy, Ohio Department of Education, and the Detroit and St. Louis Public Libraries.

Institutions and individuals have standing orders for all the cards on all the new books on a given subject; among those I saw listed were the polar regions, mountaineering, and whaling.

The Library of Congress is not a circulating library; unlike the usual local public library, it does not permit the public at large to withdraw books. But some 1,500 other libraries throughout the country, including that of the National Geographic Society, are greatly indebted to it for the loan of books which cannot be found elsewhere (opposite page).

The morning I visited the Loan Division

one volume wanted was *Military Equitation*, published in 1778; another was a book describing the flags of Russia prior to the 1917 revolution. Many old foreign books, rarely called for, are asked of the Loan Division. There has been an increase recently in requests from industry for technical works.

11 Million Manuscripts Available

Many different kinds of material make up the Library, but none are more important and picturesque than the manuscripts, which are handwritten or typed, as opposed to printed documents. Half a century ago the Library had 30,000 manuscripts; by estimate it now has more than 11,000,000.

Official Government records are kept in the National Archives, which does not file private papers; whereas the Library's manuscripts are largely personal or family papers, of national rather than local or regional importance.

This is the country's largest collection of such manuscripts, and next to the National Archives it is the greatest primary source of American history. Few important books of American biography or history are written without acknowledgment to the Manuscripts Division.

Here short-time readers are few because personal papers do not yield their secrets quickly; they must be studied and deciphered. Manuscripts are unique in that there is usually only one copy in existence.

To me there is something fascinating, almost awesome, in gazing upon the collected papers of Washington, Madison, Jefferson, Lincoln, Theodore Roosevelt, William Howard Taft, Woodrow Wilson, Calvin Coolidge, and many other statesmen in their carefully guarded stronghold rooms. Each collection seems to be in a different kind of container, portfolio, or scrapbook.

Most of the Presidents from Washington to Coolidge are represented, as well as military leaders, statesmen, scientists, philanthropists, and men of letters. Public figures of today accumulate far more papers than those of a century or even a generation ago.

The Library has 112 letters of Abigail Adams, mother of one President and wife of another; but of more recent public figures it has 30,000 pieces of Frederick Law Olmsted, landscape architect and city planner; 70,000 of William Allen White; 80,000 of Albert J. Beveridge; 125,000 of Judge Ben Lindsey; nearly 500,000, or five tons, of Josephus Daniels; and 1,500,000 of Gifford Pinchot.

By the time Herbert Hoover and Franklin D. Roosevelt had come along, Presidential correspondence had grown to gargantuan propor-



National Geographic Photographers W. Arthur Stewart and John H. Fletcher

Talking Books Comfort the Blind. Twenty Double Discs Recite the Average Novel

Records for the blind, selected and distributed by the Library, have become more popular than Braille, the embossed, dotted type read by finger tips (page 684). Sightless since 1918, Fred O. Lutz (above) prefers Braille, however. "It is quieter, and I like to read in bed," says the custodian of the Library's Braille periodical archives. "On cold nights I can read with my hands beneath the covers."

tions. Hoover's papers are housed at Stanford University, and Franklin Roosevelt's in a special building of the National Archives at Hyde Park, New York.

Most manuscripts are open to full public inspection from the time they are given to the Library, but there are exceptions. Within ten days of the assassination of Abraham Lincoln, 18,350 of his papers were removed from the White House and retained by his son, Robert Todd Lincoln, until 1919 when they were deposited, without publicity, in the Library.

On January 23, 1923, Mr. Lincoln gave them outright to the Library on condition that they be sealed until 21 years after his death.

Treasures of American History

From Civil War times until the dramatic public opening of the papers at 12:01 a. m. on July 26, 1947, no one saw them except Abraham Lincoln's two secretaries and official biographers, John G. Nicolay and John Hay, and much later the professional cataloguers who indexed them but were not even allowed to make private notes from memory for future scholarly use.

Associated with the manuscripts are the Library's treasures, mostly on permanent ex-

hibit in the second-floor gallery. Here in the "Shrine" are the original engrossed and signed copies of the Declaration of Independence and the Constitution of the United States, the most priceless possessions of the American people.*

Guarded in three shifts for each 24-hour day, they are viewed by a steady stream of visitors with unaffected reverence.

Other treasured documents of American history on display near the Shrine are the Articles of Confederation, the Bill of Rights, Washington's commission as commander in chief of the Army, and various drafts of Lincoln's first and second inaugural addresses and the Gettysburg Address.

Also there is one of three perfect vellum copies known to exist of the Gutenberg Bible, first large book to be printed from movable metal type, approximately in 1455, and formerly in possession of the Benedictines for nearly five centuries (page 662).

The proper preservation, lighting, and display of such documents require prolonged study by Library specialists and those of the National Bureau of Standards and the Libbey-

* See "Washington Through the Years," by Gilbert Grosvenor, NATIONAL GEOGRAPHIC MAGAZINE, November, 1931.



NATIONAL GEOGRAPHIC PHOTOGRAPHERS R. ANTHONY STEWART AND JOHN E. FLETCHER

Pedigree Hunters Enthusiastically Track Down Great-grandfathers in the Genealogy Room

Some 30,000 visitors a year dig into the Library's unmatched collection of genealogies, biographic encyclopedias, local histories, and military records (page 664). Some are historians, others professional genealogists, the vast majority happy amateurs. Some hunt a baronial castle; others seek admission to a patriotic society. To all the Library provides published material, but it does not issue coats of arms or trace missing persons.

Owens-Ford Glass Company, as well as by architects.

The documents must be protected against injurious light, various forms of atmospheric contamination, and the attacks of insects and larvae. It is expected that an inert gas in improved, sealed containers will prove highly protective and that automatic recording devices will show at all times the atmospheric conditions within the containers.

Much was learned about the care of such documents by sending some of them on the Freedom Train,* and before that during the war, when they, along with nearly half a million other pieces, were removed following Pearl Harbor to five depositories, including the U. S. Gold Bullion Depository at Fort Knox, in the interior of the continent. Not a single piece was lost in this moving back and forth.

The Library exhibits from time to time treasures lent to it by other institutions, such as the Lacock Abbey copy of Magna Carta, lent for two years by the British Museum.† In transporting such a document from city to city, the Library employees have the added protection of Secret Service personnel.

Besides exhibiting its most famous treasures and those on loan, the Library puts on at least

once a week, mostly from its own vast collections, an exhibit of one or more items having a special and topical interest. These emphasize and commemorate important historical events and personages.

In this way the enormous number of visitors to the Library are brought into contact with its many collections, even though they do not use them as readers.

A typical exhibit in the summer of 1949 was of several hundred books and art objects in connection with the Goethe bicentennial. Other exhibits have celebrated the 100th anniversary of Wisconsin's admission as a State and the centennial of the first official public demonstration of ether anesthesia upon human beings.

National Geographic Maps Shown

In the spring of 1949 the map-making activities of the National Geographic Society were shown in connection with the 50th anniversary of Dr. Gilbert Grosvenor as Editor of

* See "Freedom Train Tours America," 16 ill., NATIONAL GEOGRAPHIC MAGAZINE, October, 1949.

† See "Washington—Storehouse of Knowledge," by Albert W. Atwood, NATIONAL GEOGRAPHIC MAGAZINE, March, 1942.



National Geographic Photographers B. Anthony Bennett and John E. Fletcher

The Library Owns 11,000 Dime Novels. It Classifies Them with the Rare Books

No other library's dime-novel collection can approach the Congressional's, which grew up from copyright file copies. One old gentleman used to journey from Baltimore week after week just to read them. Such thrillers as *Tip Top Weekly* actually sold for a nickel; one rare series now brings thousands of dollars. W. Robert Moore, NATIONAL GEOGRAPHIC writer, here shows a young friend "Frank Merriwell's Flying Fear."

the NATIONAL GEOGRAPHIC MAGAZINE.* The exhibit consisted of typical maps and of descriptive charts showing the steps by which they are made (page 666).

No one can possibly realize the broad scope of these displays without visiting the Library. Among the exhibits have been those connected with the 175th anniversary of the Boston Tea Party, the 175th anniversary of the birth of Coleridge, author of *The Rime of the Ancient Mariner*, and "20,000 Years of Comics," naturally much publicized (page 672).

Still another exhibit consisted of samples of road maps. An accompanying explanation stated that 150,000,000 were distributed in 1947, and that the custom probably started with the Gulf Oil Company around 1915.

A display of children's books from Russia included the smallest Russian book, printed in 1856. A person with good eyesight can read

* See "Gilbert Grosvenor's Golden Jubilee," by Albert W. Atwood, NATIONAL GEOGRAPHIC MAGAZINE, August, 1949.

it without a magnifying glass, though it is only $1\frac{5}{16}$ by $1\frac{3}{16}$ of an inch in size.

Still another exhibit was the subpoena, signed by Chief Justice Marshall, to President Jefferson to appear at the treason trial of Aaron Burr. Jefferson refused, but furnished certain papers.

Naturally, many of the books placed on exhibit come from the Rare Books Division of the Library. This is a good-sized library in its own right, with some 200,000 volumes encompassing the whole field of learning from man's earliest records to the present day; it is a microcosm of the general library, a concentrated, scholarly library within the Library.

A rare book is difficult to define. It may be considered such because of age, scarcity, some unusual printing circumstance, eminence or priority in style or manner, fine craftsmanship, historical importance, and association with the great. It may be irreplaceable and of a value not to be expressed in money.

At any rate, the "rare" books are segregated



Library of Congress

A Folklore Enthusiast Collects an Old-time Ballad for Preservation by the Library

Field collectors, spurred by the inroads of radio and juke box, visit mountain hollows, coal mines, and even penitentiaries to capture the flavor of American folk music (page 684). Others gather rare material in Tibet, Greece, Scotland, and other far places. Together they have endowed the Library with 60,000 songs, most of them not copyright. Here Henry Whorton at his home near Amisville, Virginia, sings "The Boston Burglar." Dr. McEdward Leach, secretary of the American Folklore Society, makes the recording.

and given special supervision and protection. Humidity is kept at 50 percent and temperature at 68° to 70° F.

Jefferson's Private Library Acquired

Included are the libraries of the two Presidents whose lives were most intimately associated with books, Thomas Jefferson and Woodrow Wilson, about 2,500 in the former and some 9,000 in the latter.

The Jefferson books are, in fact, the foundation collection of the Library of Congress. The Library was founded in 1800, but destroyed in 1814 when the Capitol was burned. The next year Congress bought Jefferson's private library of nearly 6,500 volumes, to make a fresh start. Two-thirds of these, however, were destroyed in the fire of 1851.

Two volumes of the *Journals of the Continental Congress* are thought to be the only books which survived both fires, those of 1814 and 1851.

Some of Jefferson's books have marginal notes in his own handwriting: one which I saw discussed, in a very minute hand, the treatment of prisoners of war.

But no book which I examined had such caustic and copious marginal notes as the volume, *Reflections, Moral and Political, on Great Britain and Her Colonies*, by Matthew Wheelock. It was acquired by Jefferson from Benjamin Franklin's library, and on almost every page Franklin scored the author.

"As they [the colonists] commonly have large families," wrote the author, "and their produce not being very valuable, few can afford to give their children a liberal education."

"How ignorant this Writer is!" exclaimed Franklin. "There are no less than eight universities in the Northern Colonies." And he named them.

In the Rare Books Division are some which were among the first to mention Columbus's discovery, and one which contained the first



National Geographic Photographer J. Baxter Roberts

A Vellum Bible Illuminated by Medieval Artists Is a Rare and Precious Prize

In 1949 the Library of Congress published a monograph by Meta Harsen on the *Nekcsői-Lipőczy Bible*, a Latin work executed by Bolognese artists in Hungary around 1340. Frederick R. Goff (left), chief of the Rare Books Division, and Warren W. Ferris, chief typographer of the Government Printing Office, compare the Bible frontispiece (right) with a reproduction. In both, gold leaf was used in the page-deep initial letter L.

suggestion that the new continent be named "America." Here also is the largest collection of books printed in English-speaking America in the 17th and 18th centuries and the second largest collection of 18th-century American newspapers.

Here is to be found the country's largest collection of 15th-century books (incunabula), exceeded only by seven European libraries. The private libraries of Hitler and Tsar Nicholas II also are here. The Tsar's library numbers 3,000 volumes, many in French.

There are large collections of the works, including first editions, of such authors as Washington Irving, Walt Whitman, Charles Dickens, and Rudyard Kipling.

One of the most fascinating books in the collection, solely because of its "association" value, is the volume entitled *Scrap Book on Law and Politics, Men and Times*, presented to Abraham Lincoln in 1855.

Attached to it is a handwritten letter of thanks to the donor, George Robertson of Kentucky, from Lincoln, discussing the slavery question and making the first known explicit statement of the problem of a Nation half slave and half free.

Curiosities are not lacking. There is the 4,350-title collection on psychic phenomena, spiritualism, magic, witchcraft, demonology, and evil spirits made by Harry Houdini, the magician.

Rich and Rare Chinese Books

In the Kipling collection are six dessert plates, never used as such, on which Kipling wrote an original verse, each describing a fruit. And there are old Mexican books branded like cattle.

Rare books of an entirely different kind are found in abundance in the Orientalia Division of the Library, which consists of Chinese, Jap-



Library of Congress

Rangoon Monks Parade the Buddhist Scriptures, Burma's Gift to the United States

Burmese, learning that the Library of Congress had no copies of their sacred writings, oversubscribed a fund to buy them. They bound their gifts in leather and embossed the covers with gold. A hundred nuns bore the books down 300 steps of Shwe Dagon Pagoda (background), and a gilded chariot delivered them to the American Embassy. Accepting the gift, the Library presented American books to Burma (page 665).

anese, South Asian, Near East, and Hebraic sections. Here are the largest collections of Chinese and Japanese books outside those countries, and many rare Chinese books not to be found in China itself (page 673).

The oldest printed book in the Library is a Chinese scroll, dating from A. D. 975; the British Museum has a similar scroll, dating from A. D. 868 and commonly regarded as the oldest printed book in the world.

Older Chinese books were terse and condensed like a telegram or headline; put into English, they would take up three times as much space. For centuries China has put everything into print; it has been extraordinarily rich in books and correspondingly poor in manuscripts.

I walked through aisle after aisle containing nothing but local Chinese histories, 3,500 of them. They have been compiled for fifteen centuries, and each generation of local scholars

revised them. In them are maps and descriptions of antiquities, biographies of famous men and women, officials and travelers of the country; they tell when the temple was built and burned, and when the city wall was repaired.

Despite wars and other destructive events, China has an extraordinarily long, unbroken literary tradition. Its historical records are unusually full as to dates and facts.

Ancestor worship made it especially desirable to keep past records in China. The fact that printing went on there centuries before Europeans discovered the art made it possible to do so.

Naturally, interest in the contents of the Orientalia Division has increased since the beginning of World War II. Retired naval and diplomatic officers have taken up the study of Chinese and Japanese subjects as a hobby, and courses in them in American universities have increased by leaps and bounds.



National Geographic Photographers B. Anthony Stewart and John E. Fleisher

Resonant Treasures Speak When the Library's Stradivari Violins Play

That its Music Division be more than the keeper of silent scores, the Library gives about 40 concerts a year. Its Strads, here in the hands of the Budapest String Quartet, may not be played outside the premises. Viola, cello, and three violins (one partly concealed) are gifts of Mrs. Gertrude Clarke Whittall, and their value is estimated at \$250,000. Antonio Stradivari of Cremona more than two centuries ago built such perfect instruments that modern craftsmen cannot match them. Some 400 of his creations survive.

The great Chinese collection had its start in 1869 with a gift of classics from the Emperor of China, but got its real stimulus from the imagination, enthusiasm, and insistence of Dr. Walter T. Swingle, botanist, now in his 80th year.

Chinese Records of Plant Life

For many centuries the Chinese have had an extensive literature descriptive of their plant life, probably the most varied of any country. Because of famines the Chinese must discover and use, if possible, every kind of plant, and indeed they have the least restricted of vegetable diets (page 664).

At first Dr. Swingle was looking only for herbals—that is, for books about plants; but later he persuaded Dr. Herbert Putnam, then Librarian of Congress, to acquire Chinese books in every other field of learning.

The Slavic Room contains the largest collection of Russian and other Slavic material in the Western Hemisphere.

The Russian collection is based on the famous private library of Gennadius Vasilievich Yudin, a Siberian merchant who combined love of books with winning first prize in a great government lottery and a highly profitable liquor trade. It was bought in 1907 for only one-third of its original value through the efforts of Herbert Putnam and President Theodore Roosevelt, and is now worth far more.

Lovers of fine books should see the treasures of the Slavic Room, exquisitely printed, bound, and illustrated. An interesting book is the one published in 1913 to commemorate the 300th anniversary of the Romanov family. It contains sketches of all the tsars and tsarinas from the first to the last.



National Geographic Photographer B. Anthony Stewart

For Accuracy, a Conductor Goes to the Ultimate Source, the Composer's Own Hand

Howard Mitchell, leader of Washington's National Symphony Orchestra, knows that printed compositions frequently contain editors' alterations. To determine what Johannes Brahms intended, Mr. Mitchell examines the original manuscript of the composer's *Third Symphony*. The Library of Congress's Music Division treasures this score, together with musical autographs by Beethoven, Schubert, Wagner, and others (page 684).

Two of the Library's large collections are those of maps, and prints and photographs. In addition to 15,000 atlases and gazetteers, the Map Division has nearly 2,000,000 maps. It secures them by gift, purchase, copyright, transfer from other U. S. Government agencies, and by exchange with other institutions. It is the Government's chief map depository (page 666).

The Government has other very large map collections, but they are not open to the public in the same sense as the Library's accumulation, which is especially valuable because it contains more early editions of maps than are found in most similar collections.

Although several famous collections of etchings are included in the more than 3,000,000 separate pieces in the Prints and Photographs Division, not more than two percent of the total could be described as valuable works of art. The remainder are photographs and other

forms of illustrations, of value for their information.

For instance, a man in California writes in for a picture of a particular pump. I saw a letter asking for a picture of a certain type of locomotive made in Taunton, Massachusetts, during the Civil War.

Photographs Collected, Too

Mankind has long had access to books through libraries, but while pictures parallel and supplement books, and are just as valuable and practical, they have not been organized in central repositories like books. The Library of Congress is trying to fill this need with photographs, negatives, slides, posters, caricatures, comics, etc. (page 672).

There are at least 750 different collections in the Prints and Photographs Division, including one of the two nearly complete sets of world-famous glass plates made by Mathew

B. Brady and his staff to record every detail of the Civil War.

There are several thousand drawings by the late Clifford K. Berryman, well-known Washington cartoonist; photographs taken of delegates to the Paris Peace Conference in 1919 by George W. Harris, Washington photographer; 81 albums and portfolios of views illustrating the life of Hermann Goering; and many collections of auto race, cowboy, boxing match, railroad, and circus parade pictures.

But the Library does not confine its services to those with only the sense of sight. It also takes care of the adult blind, providing them with raised-type books and with sound recordings, or "talking books."

The Library supplies 26 regional or distributing libraries for the adult blind with talking books averaging 20 two-sided records to a book, and also with the sound-reproduction instruments; the regional libraries in turn mail the records and equipment on loan to about 20,000 adult blind (page 676).

Braille, or raised-type, books are supplied to about 10,000 other adult blind, who prefer them to the sound recordings. Both types are carried through the mails post-free.

This present system of supplying the blind with reading matter by mail supplants almost entirely the earlier custom of taking the blind to reading rooms where volunteers read books to them. The demand for talking books naturally has increased since the war because of blinded veterans.

A Musical Center

The Music Division of the Library has the largest and probably the best-balanced collection in the world—more than 2,000,000 pieces of material.

Included are the recordings of songs and ballads, fiddle tunes, harmonica and banjo pieces, and other indigenous American folk music, made in the field with portable recording equipment (page 679).

These records are sold only by the Library of Congress, as are the contemporary recordings of well-known poets reading their own poems. Among them are W. H. Auden, E. E. Cummings, T. S. Eliot, Allen Tate, Robert Penn Warren, and Robinson Jeffers.

With so many great musical centers in Europe, the Library naturally does not have as many pieces of music in the handwriting of the composer as it might wish, but these are accumulating.

To a student of music a printed or even a photoduplicated copy lacks something which the original may reveal (page 683).

One of the Music Division's functions is to answer questions in its own field. On top of the pile of incoming mail the day I visited the Division was a request from a Hollywood producer for a phonograph record of the Moslem call to prayer; also requests for a photostat of the oldest-known version of an old German song, and the origin and history of a well-known Christmas carol. All were supplied.

Origin of Our National Songs

Among the Division's publications is a detailed study by a former chief, Oscar G. T. Sonneck, of the origin of the words and music of *America*, *The Star-Spangled Banner*, *Hail Columbia*, and *Yankee Doodle*.

The Library is a musical center in a still larger sense; it actually gives concerts, through the generosity of two great women benefactors, Mrs. Elizabeth Sprague Coolidge and Mrs. Gertrude Clarke Whittall.

Mrs. Coolidge's gifts have made it possible for the Music Division to provide chamber music to many universities and colleges and also in the Coolidge Auditorium in the Library, which is now a world center for chamber music. Mrs. Whittall presented a "pavilion" for smaller audiences.

Among Mrs. Whittall's musical gifts are five famous Stradivari stringed instruments—three violins, a viola, and a cello—which are actually played at the Washington concerts (page 682).

A less well-known musical collection to be seen in the Library is the 1,521 flutes gathered by the late Dayton C. Miller, former professor of physics at the Case School of Applied Science, Cleveland, Ohio. Included are flutes of gold, rock crystal, jade, ebony, and cut glass.

One belonged to Frederick the Great, one to Joseph Bonaparte, and another was given to President Madison by a "French personage," probably Lafayette.

The Library was founded in 1800 for the use of members of Congress, and while its scope has broadened much in a century and a half, its primary obligation is still to Congress. A staff of nearly 160, known as the Legislative Reference Service, devotes its time exclusively to gathering, compiling, and preparing information required by Senators and Representatives (page 665).

Legislative Reference cares for more than 20,000 inquiries a year from Congressmen, some of them involving extensive research reports. One Senator had used the service 92 times in less than a year, and one Representative 82 times.



Praying Mantis

As an Engaging Pet the Mantis Belies Its Natural Role, Terror of the Insect World

Walking on New York's Fifth Avenue, John G. Pitkin noticed a mantis "praying" in the First Presbyterian churchyard. Fascinated, he carried the insect home; as "Eloise" she became a family pet. Close-up studies of Eloise and other mantids follow. Powerful forelegs armed with cruel spines make the mantis a formidable hunter. Once within reach, no insect can escape its lightning-swift grab. Fearless, mantis attacks any living prey it can subdue. A cannibal from birth, it devours its own kind. Its popular name comes from a prayerful attitude while awaiting or stalking victims; "preying" better describes its predatory habits. Harmless to humans, mantis is a friend of gardener and farmer.

More than 1,000 mantis species, chiefly tropical, have been recorded; only 15 are native to the U. S. One European and two Asian species, arriving as stowaways in egg form, have become established in parts of the Middle Atlantic States. Those shown here are *Tenodera angustipennis*, a narrow-winged oriental.



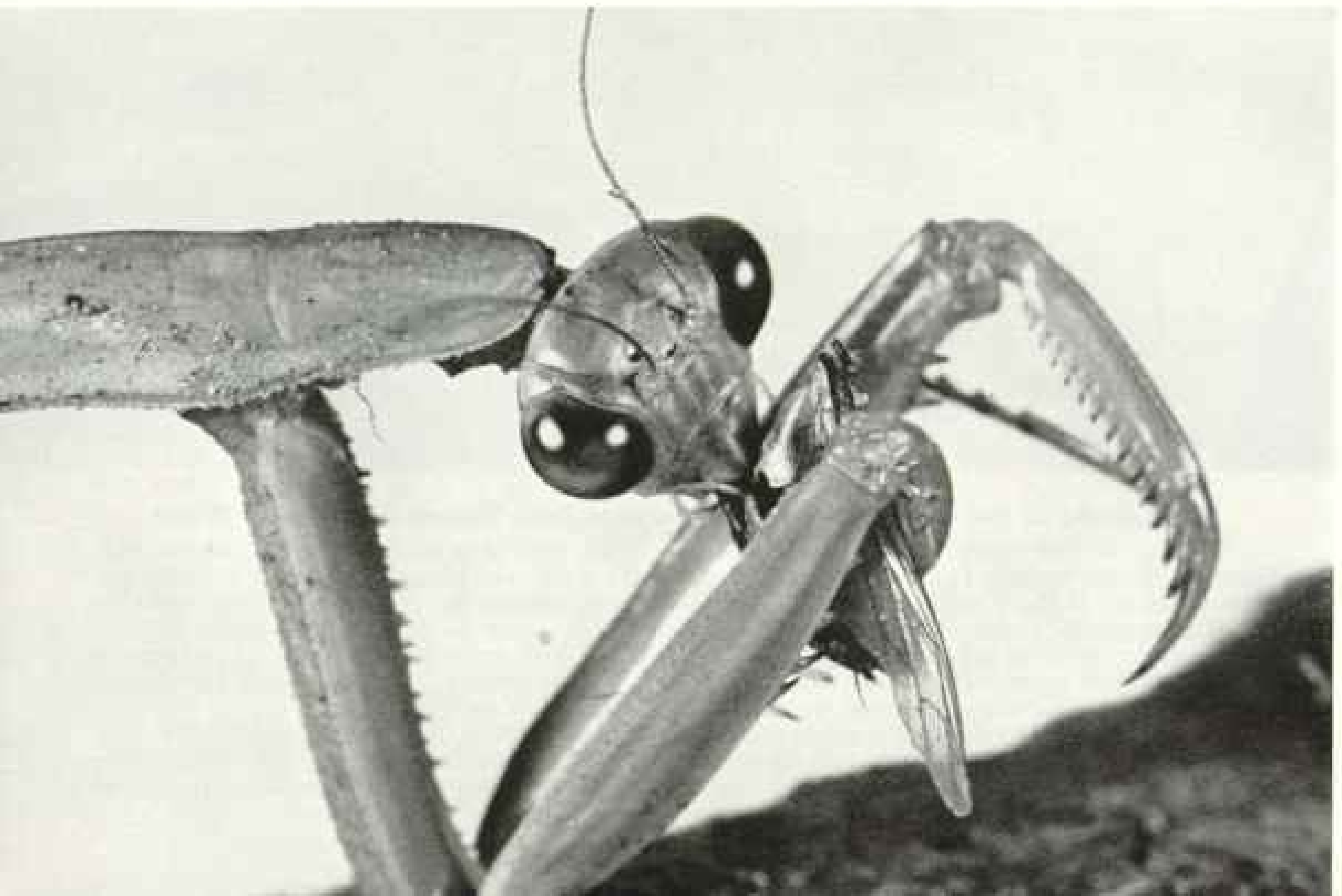
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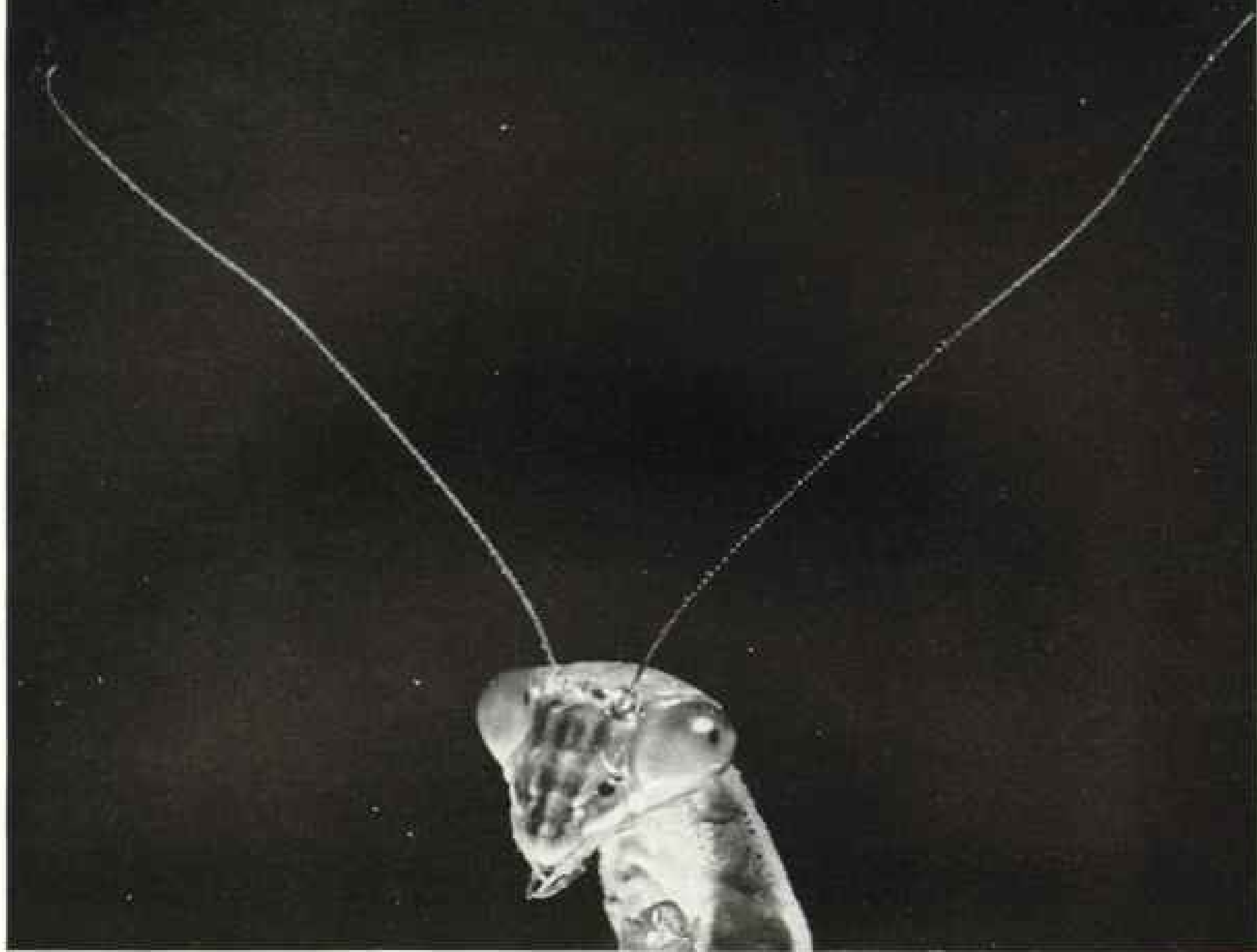
John G. Patten

A Walking Flytrap Makes a Catch; She Dissects Her Victim and Dines Like a Gourmet

In upper left, poised to strike, mantis stalks her unwary prey. Soon spiny forelegs thrust forward faster than the human eye can follow. Like the jaws of a toothed steel trap, their "blades" snap shut on the victim. Her catch completed, upper right, she has bitten the fly in two.

Resting on elbows, below, she leisurely finishes the meal. Mantids dine methodically, eating with evident relish their victims' more delectable parts and discarding the rest. Their voracious appetites seem never satisfied. Their varied diet includes a long list of destructive insects.



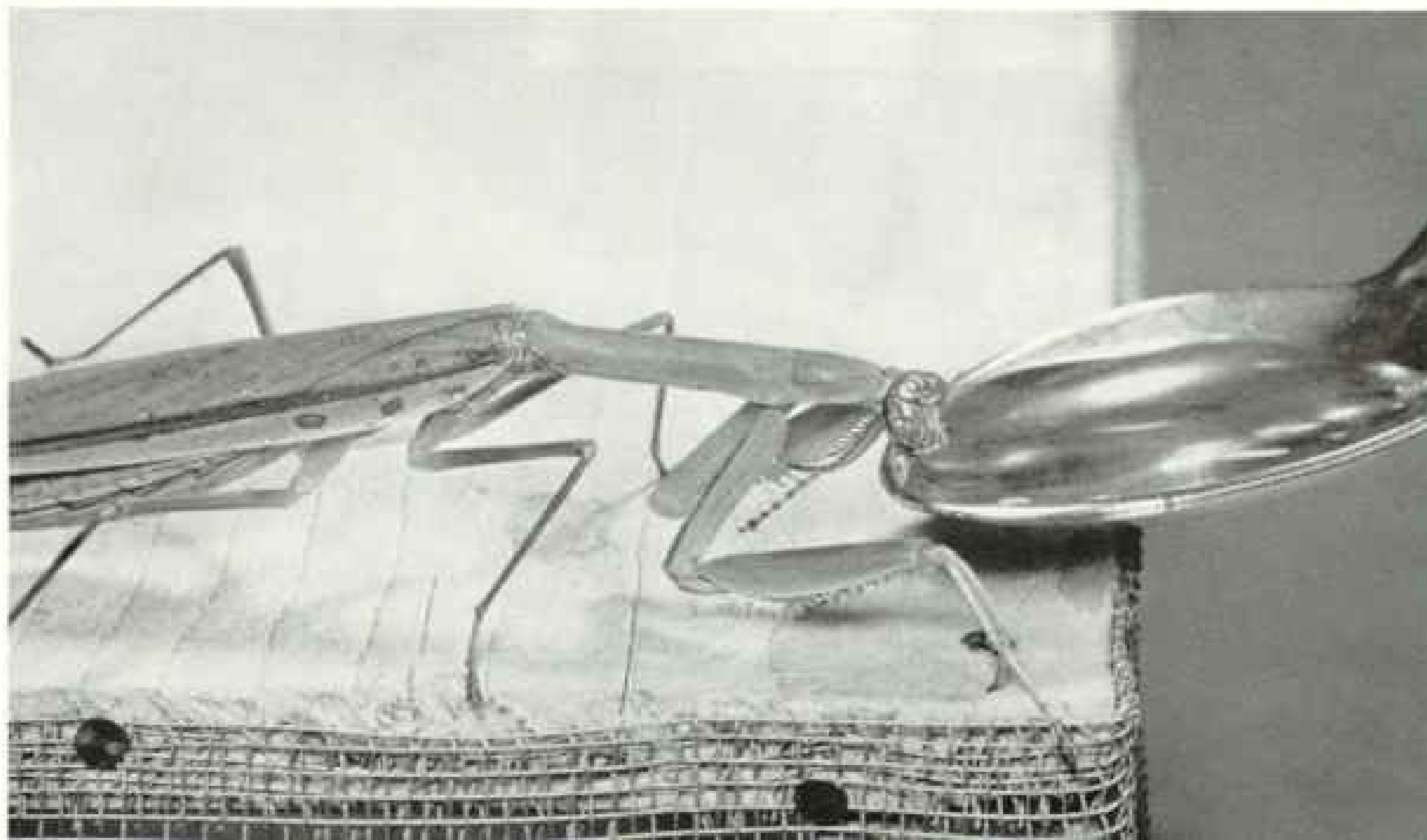


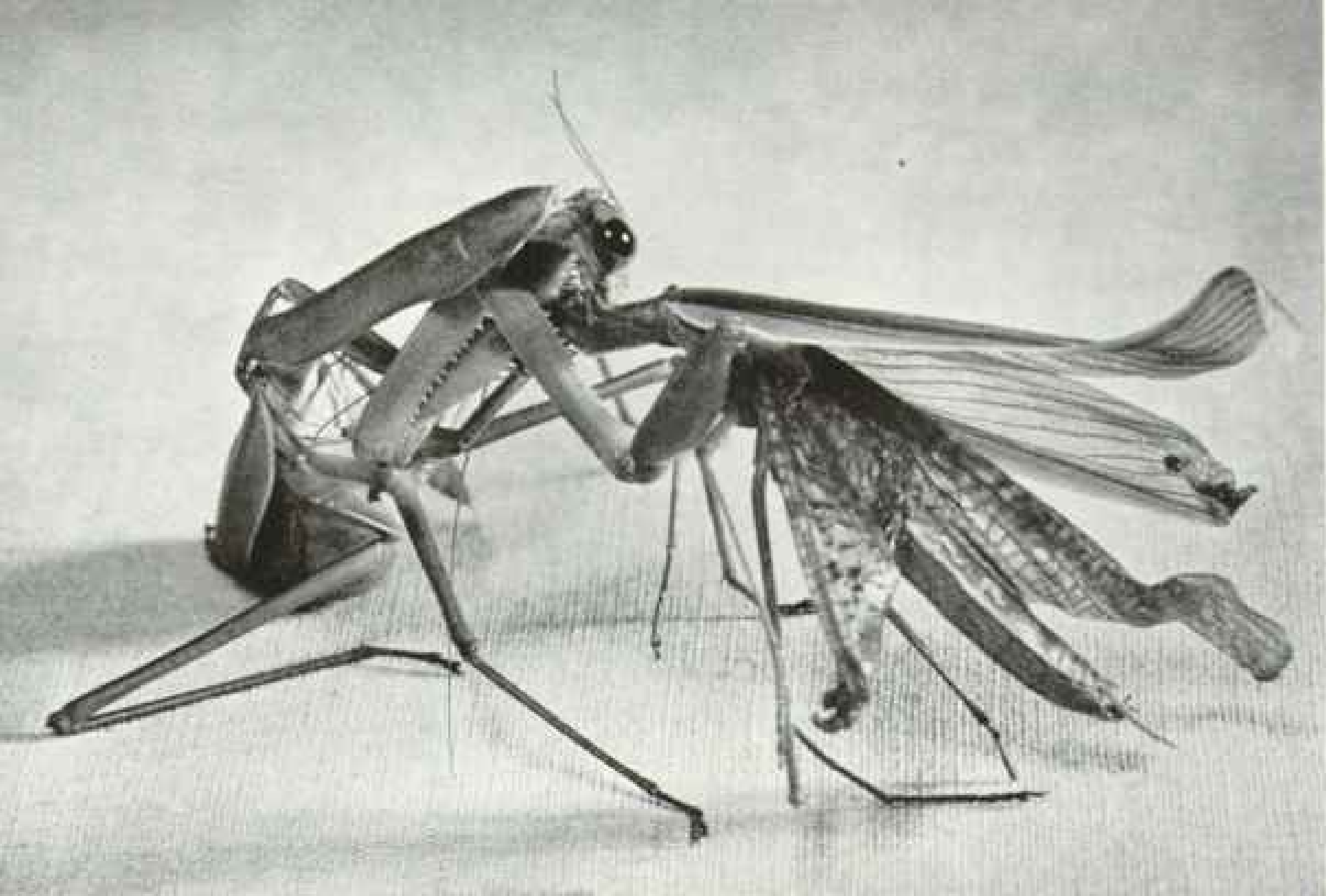
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John G. Pihla

In Eerie Close-up, Eloise Looks Like an Insect Nightmare; Below, She Drinks From a Spoon

Above, photo lights outline grotesque head and long, quivering antennae. Bulging, multi-lens eyes fill two corners of a shrewd, triangular face. Mantids have no voice and lack real ears. Their long bodies, ambling gait, and bony "armor" suggest a prehistoric reptile in miniature. As pets, these "backyard dinosaurs" readily drink as shown here. At large they slake their thirst with rain water or dewdrops.



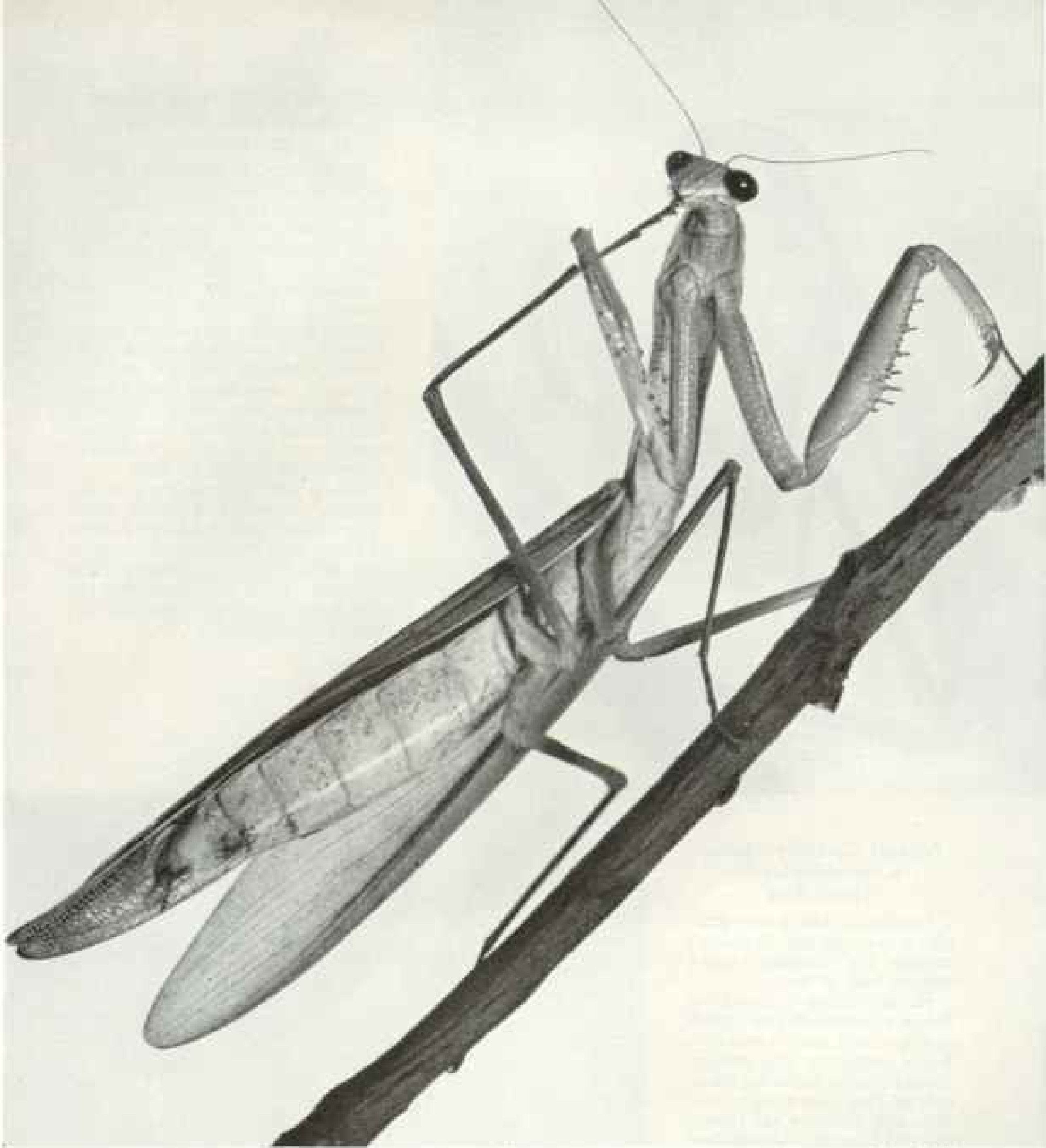


↑ **A Battling Amazon Subdues a Tousel Male.
Mating Ends in a Cannibal Feast, Below**

The female, thrown on her side, viciously bites her victim. The male's ruffled wings indicate the intensity of the struggle. Larger and heavier, females usually win. This battling pair was brought indoors for photography, but the mortal combat went on unabated.

In temperate latitudes the slender, swaggering males seek mates in late summer. After mating, the female dispatches her mate with a well-placed bite and devours him at her leisure. A male, below, trails a female through a weed patch. Later, at right, she suns on a sprig of goldenrod while her mate's headless body dangles grotesquely.





Catlike, a Fastidious Mantis Scrubs Her Face and Preens Herself After Every Meal

The after-dinner ritual may take as long as 15 minutes. The insects do a thorough job, cleaning each leg in turn with the mouth (above), polishing the face with forelegs, even running the antennae through the jaws. Then they are ready for the next meal.

Young mantids eat chiefly aphids and leaf hoppers. As adults they live on flies, spiders, grasshoppers, crickets, locusts, bees, wasps, and even beetles. Almost any insect will do. In nature their prey must be alive and moving. In captivity they prefer their natural diet, alive, but will accept small bits of meat offered on a moving straw or toothpick. One insect the mantis gives a wide berth—the common ant. Often these tiny ants swarm over a mantis egg case, killing and eating the young as they hatch. After their first day the survivors can take care of themselves and have few, if any, natural enemies. But even as adults all mantids, seemingly by instinct, let ants pass unmolested.

Related to grasshoppers, mantids are true insects, having six legs. Unlike their muscular forelegs, the walking limbs are long and slender. On them they stalk in slow and ungainly manner. Usually they wait patiently in a strategic spot for their prey. At times they roam, actively on the prowl. In either case the vicious forelegs are raised ready to strike. Other insects often accept the mantis as one of them, unaware of its predatory designs until too late.



"What's Up?" Head Turned, Goggle Eyes Question the Intruder

Unlike most insects, mantis can turn its head like a man, but in a wider arc. The neck is very short, sandwiched between the head and the long, tubelike prothorax to which the forelimbs are hinged.

Hundreds of small "eyes," each producing a tiny part of the whole picture, make up the two large eyes. Altogether they make a mosaic view, evidently blurred except at one central point, since insect eyes cannot change focus like man's. With its head-turning advantage, mantis can quickly scan more than 300 degrees of its limited horizon for prey.

Insects wear their skeletons on the outside. Those of mantids cover their forelegs and the forward parts of the body. Half a dozen times in their short lives they outgrow them and molt. For a short time, until the new covering hardens, they are vulnerable to attack.

Mutual Curiosity Marks a Shoulder-level Tête-à-Tête

Fascinated, the photographer's two-year-old daughter watches the climbing insect without hint of fear.

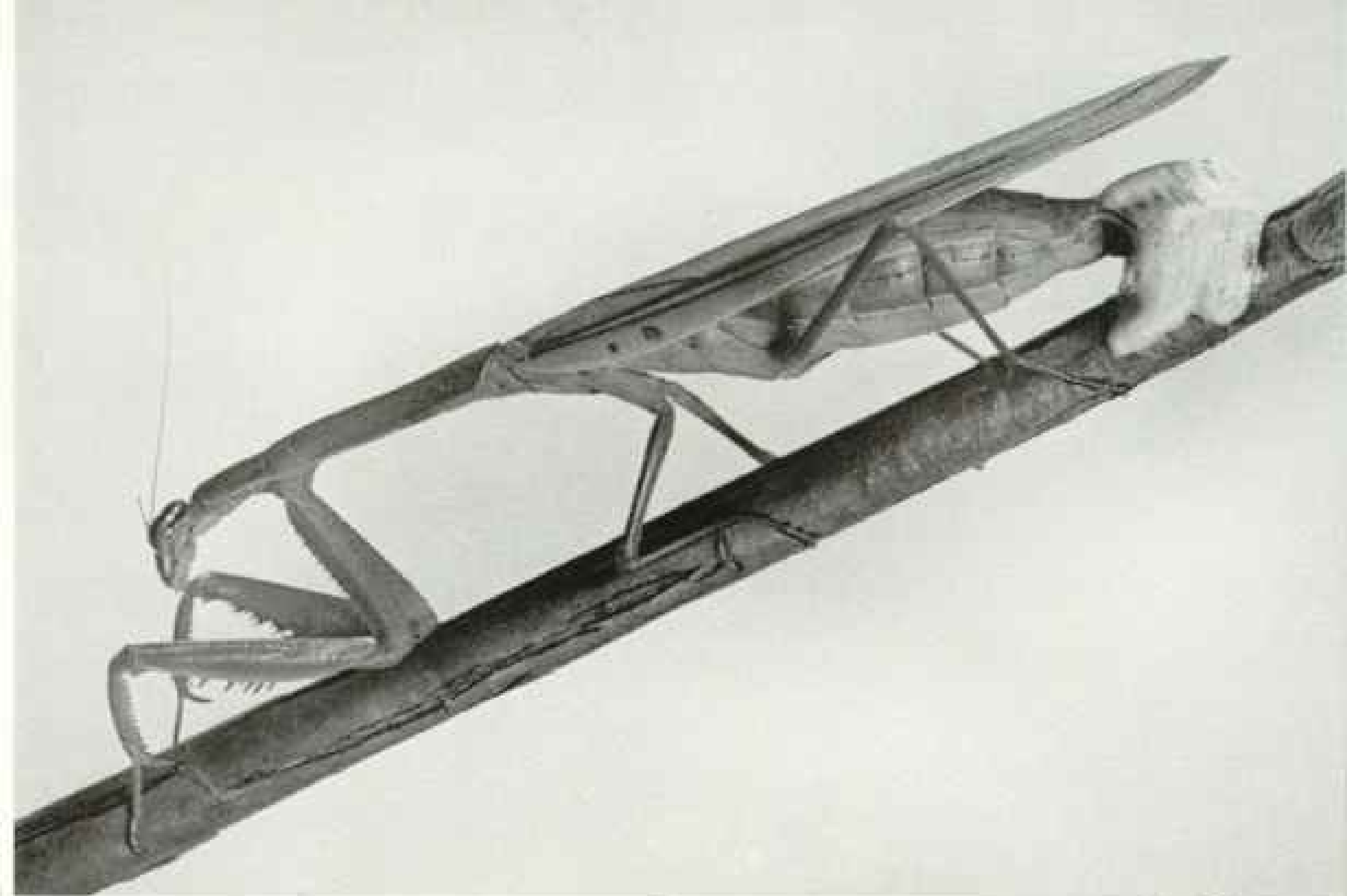
Plucked from a shrub or flower, mantids will grab thumb or finger with spiny forelegs. But in contrast to their attitude toward insects, including members of their own family, they show only curiosity and friendliness to humans. As pets they flourish when properly cared for, and often become quite tame.

Allowed to roam the house, they explore endlessly. In spite of well-developed wings they are poor flyers, depending more on their matchstick legs to get around. Rearing up in unexpected places, they often startle guests.

If raised from birth, newly born mantids must soon be separated. Otherwise, in a short time only one fat and saucy cannibal remains.

John G. Pridin



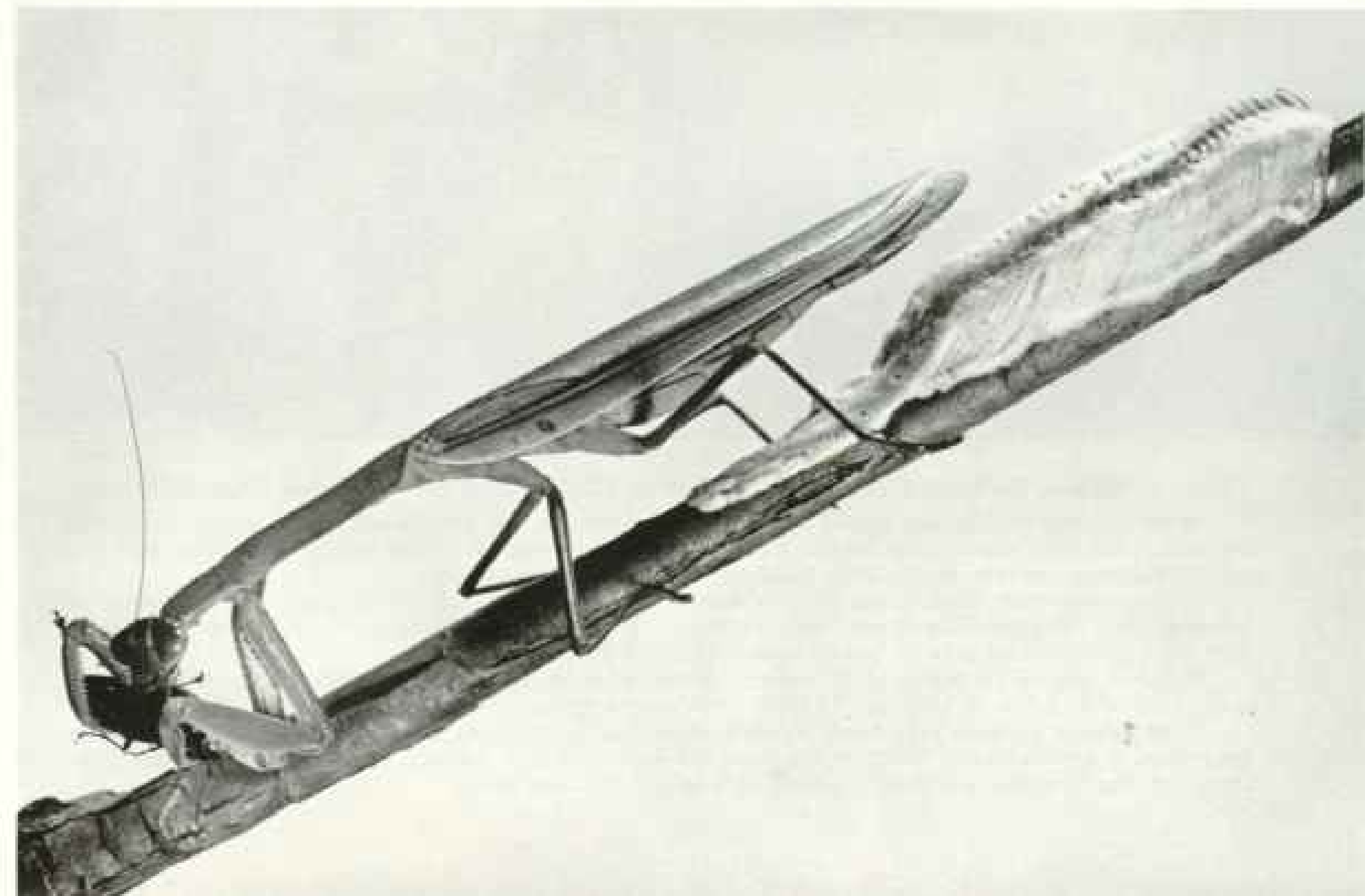


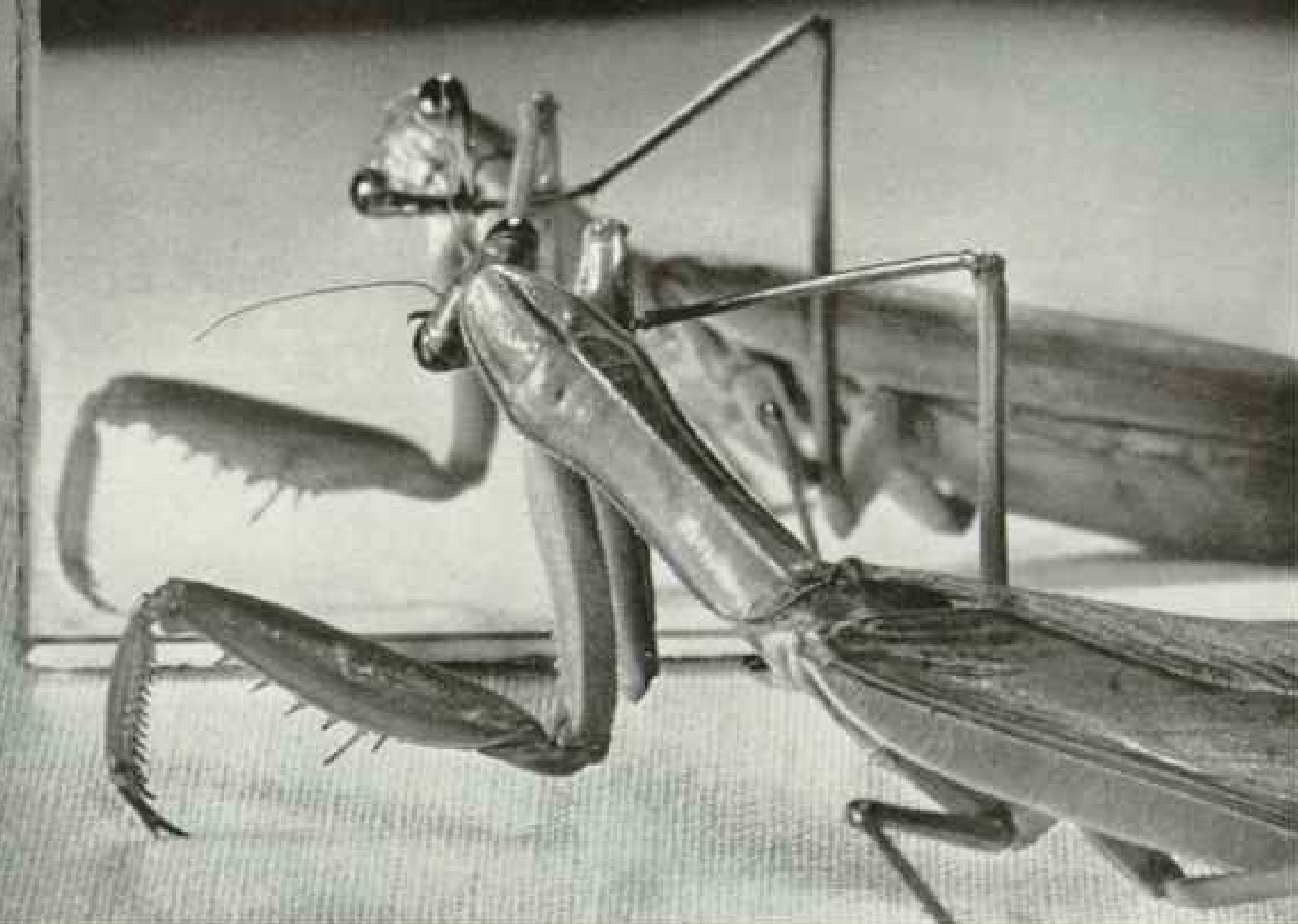
♣ Like Toothpaste Squeezed from a Tube,
an Egg Case Is Laid on a Twig

While depositing the frothy mass, the female lays dozens of eggs in it. Each has its own tiny chamber with ascending groove. Air quickly hardens the case; when spring sunshine hatches the eggs, it "explodes" with life. Egg laying takes several hours.

♣ Slim and Hungry, Her Long Job Done,
Mantis Grabs a Bite to Eat

Her eggs laid, she feeds with never a backward glance. Laying takes place some two weeks after mating; often the female deposits two or more masses. Every autumn adults of northern species die; the next generation awaits spring in egg form.





Even a Mantis, Glimpsing Herself in a Mirror, Can't Resist the Feminine Urge to Primp

With her long middle leg, guided by a muscular forelimb, the pert insect almost seems to powder her nose. Actually, she watches herself do the after-dinner clean-up. Such unexpected antics, with the natural curiosity common to her kind, make the creatures interesting pets.

During their early lives, from May to August, young mantids are seldom seen. Mosquito-size on hatching, they "disappear" until they reach maturity. Even then, light green and buff in color, they blend with the vegetation and may be passed unnoticed a few feet away.

Tropical species far outdo their northern relatives at the art of camouflage. Some have brightly colored, petallike lobes on body and limbs to lure flower-haunting insects.

Kept indoors, a mantis may live a month or so beyond its normal span of life. Inevitably, as autumn progresses, it grows drowsy, loses its appetite, and dies. Through winter's cold the future of the genus rests with the countless egg cases scattered throughout the countryside.

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To carry out the purposes for which it was founded sixty-two 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 The Magazine uses, generous remuneration is made.

In addition to the editorial and photographic surveys constantly being made, the Society has sponsored more than 100 scientific expeditions, some of which required years of field work to achieve their objectives.

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

In Mexico, the Society and the Smithsonian Institution, January 15, 1930, discovered the oldest work of man in the Americas for which we have a date. This slab of stone is engraved in Mayan characters with a date which means November 4, 291 B. C. (Spinden Correlation). It antedates by 200 years anything heretofore dated in America, and reveals a great center of early American culture, previously unknown.

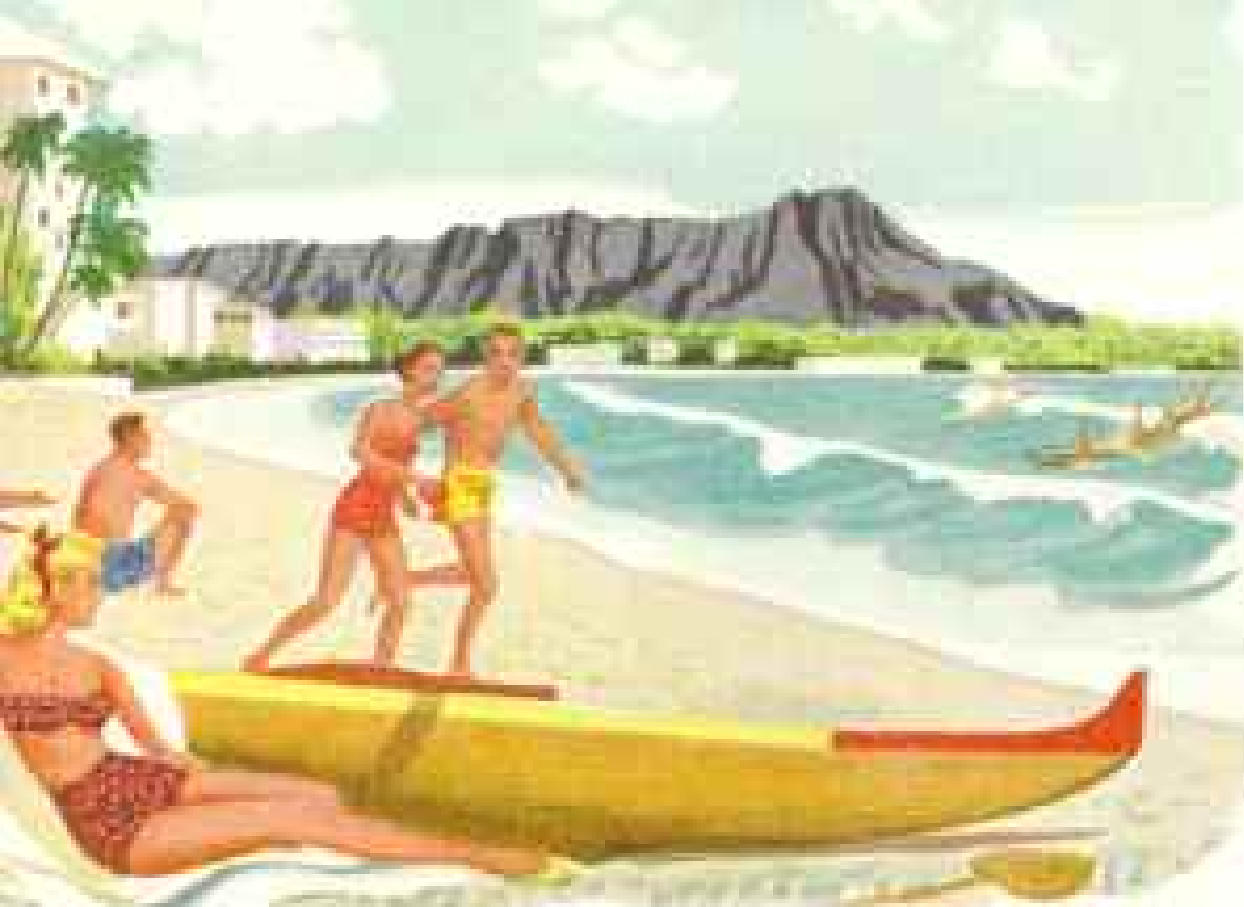
On November 11, 1935, in a flight sponsored jointly by the National Geographic Society and the U. S. Army Air Corps, the world's largest balloon, *Explorer II*, neared to the world altitude record of 72,305 feet. Capt. Albert W. Stevens and Capt. Orvil A. Anderson took aloft in the gondola nearly a ton of scientific instruments, and obtained results of extraordinary value.

The National Geographic Society-U. S. Army Air Forces Expedition, from a camp in southern Brazil, photographed and observed the solar eclipse of 1947. This was the seventh expedition of The Society to observe a total eclipse of the sun.

The Society cooperated with Dr. William Beebe in deep-sea explorations off Bermuda, during which a world record depth of 3,028 feet was attained.

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 in the Giant Forest of Sequoia National Park of California were thereby saved for the American people.

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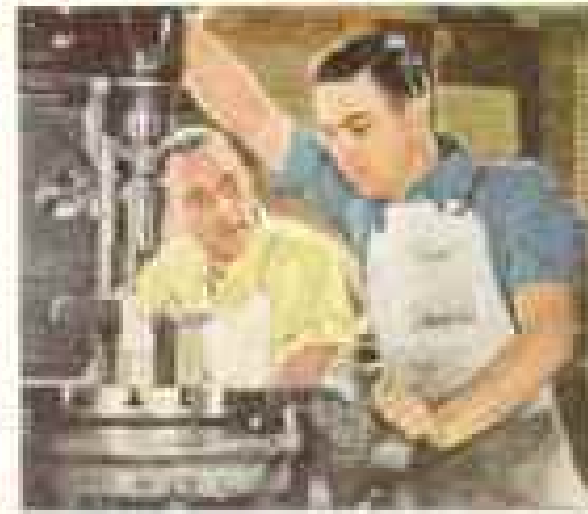
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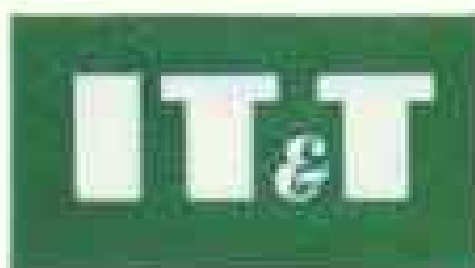
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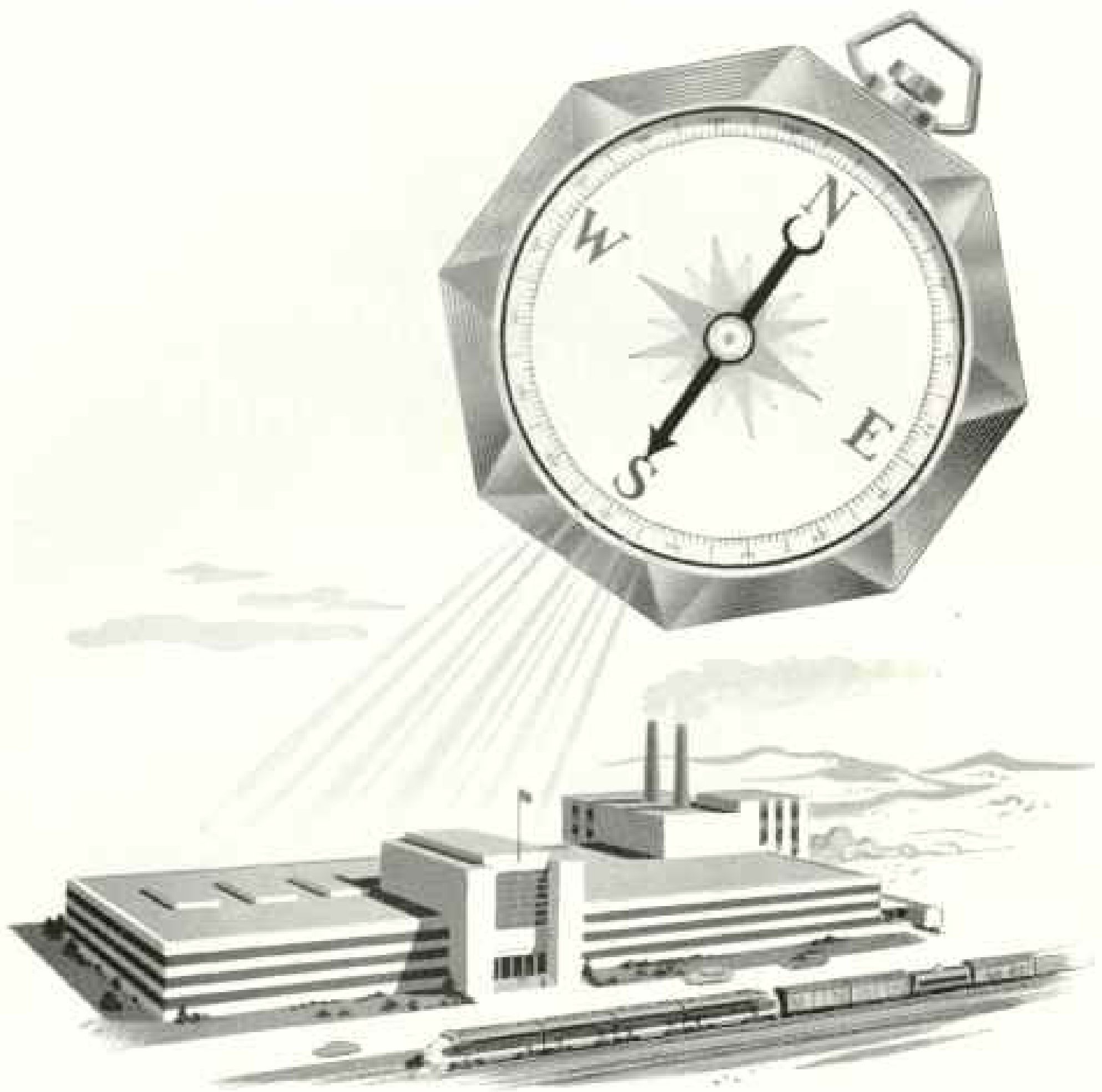
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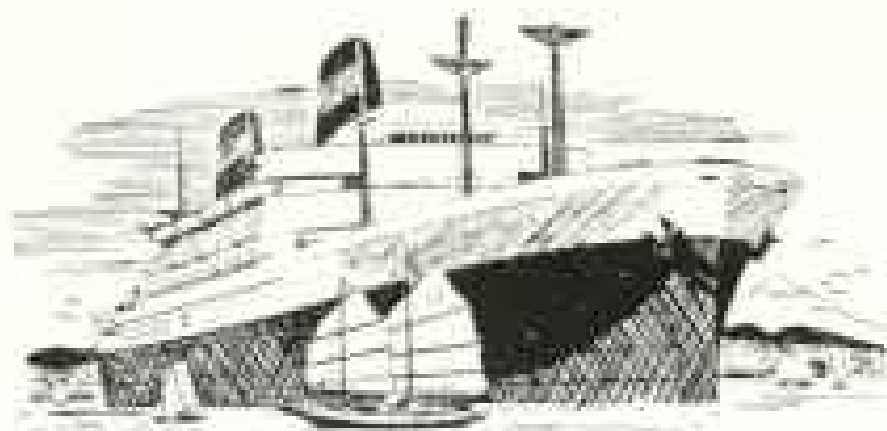
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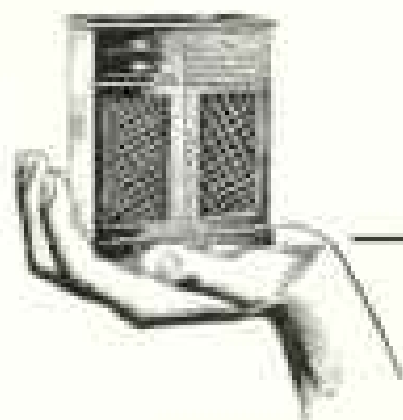
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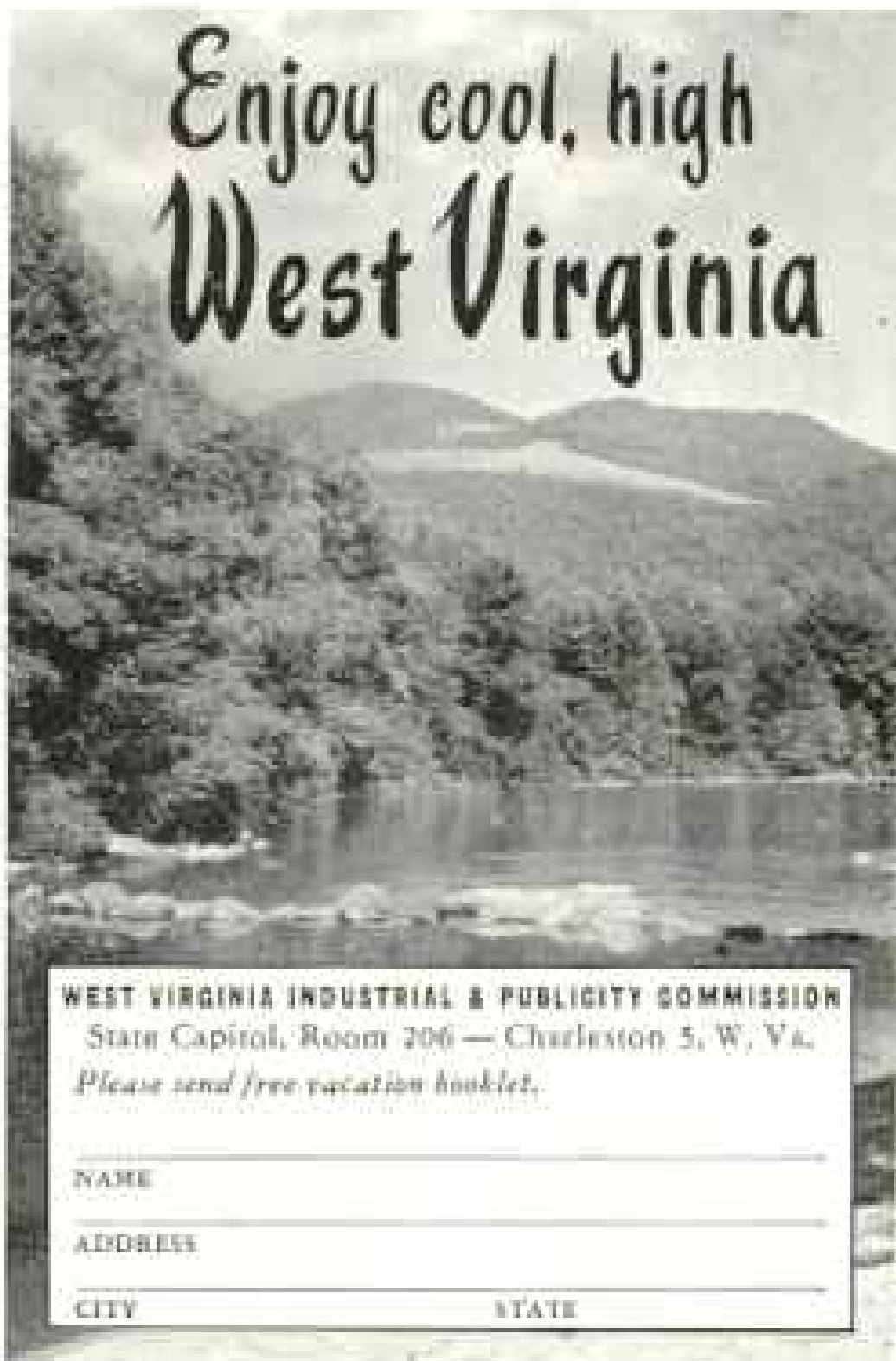


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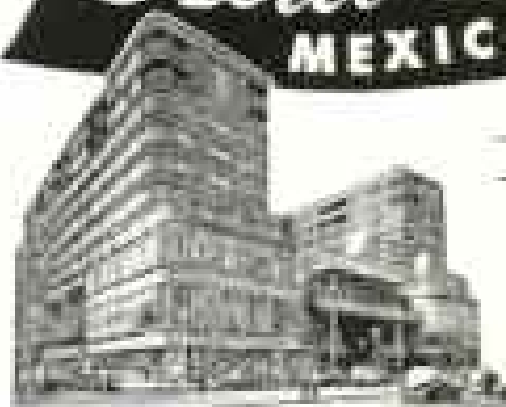
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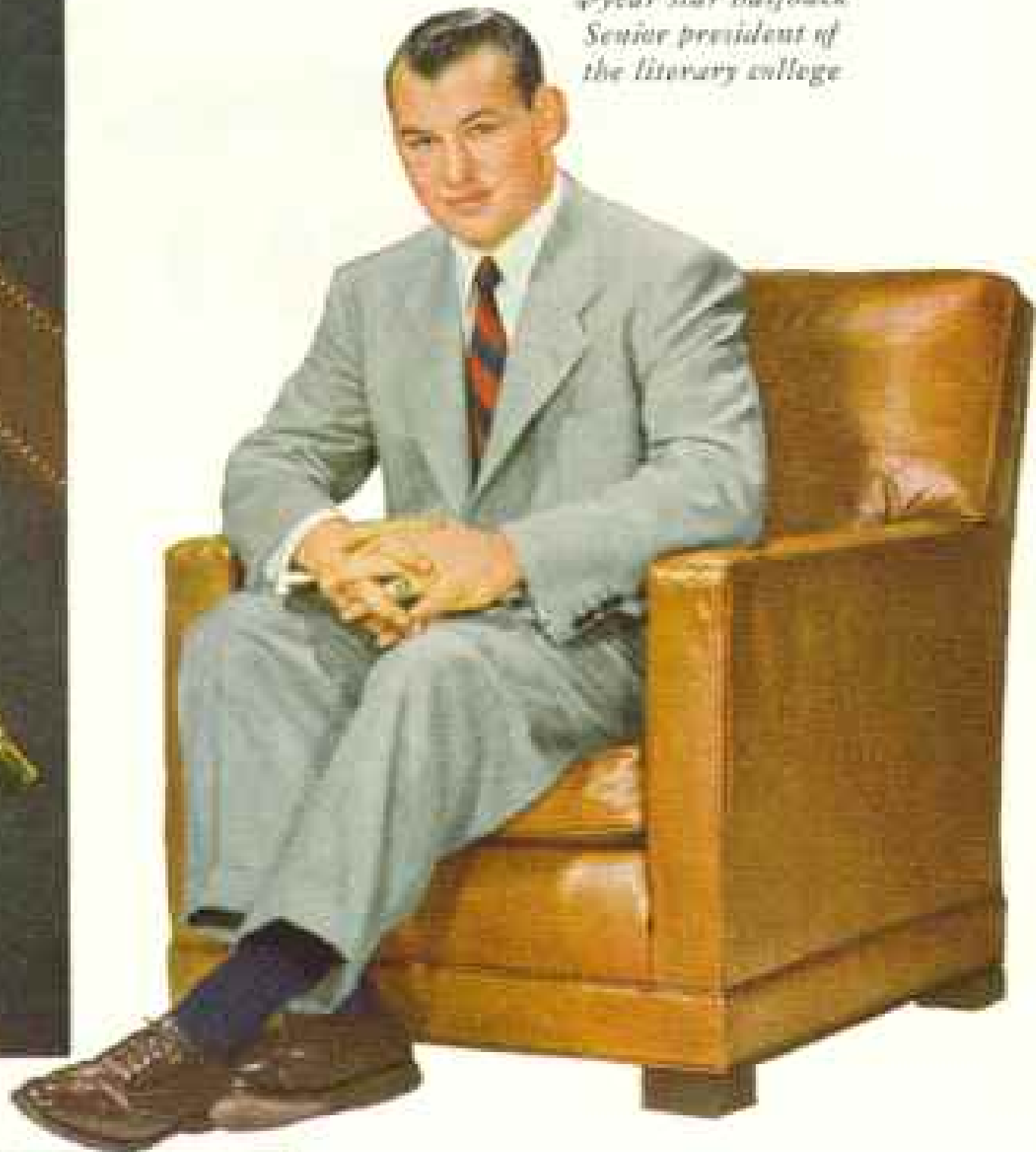
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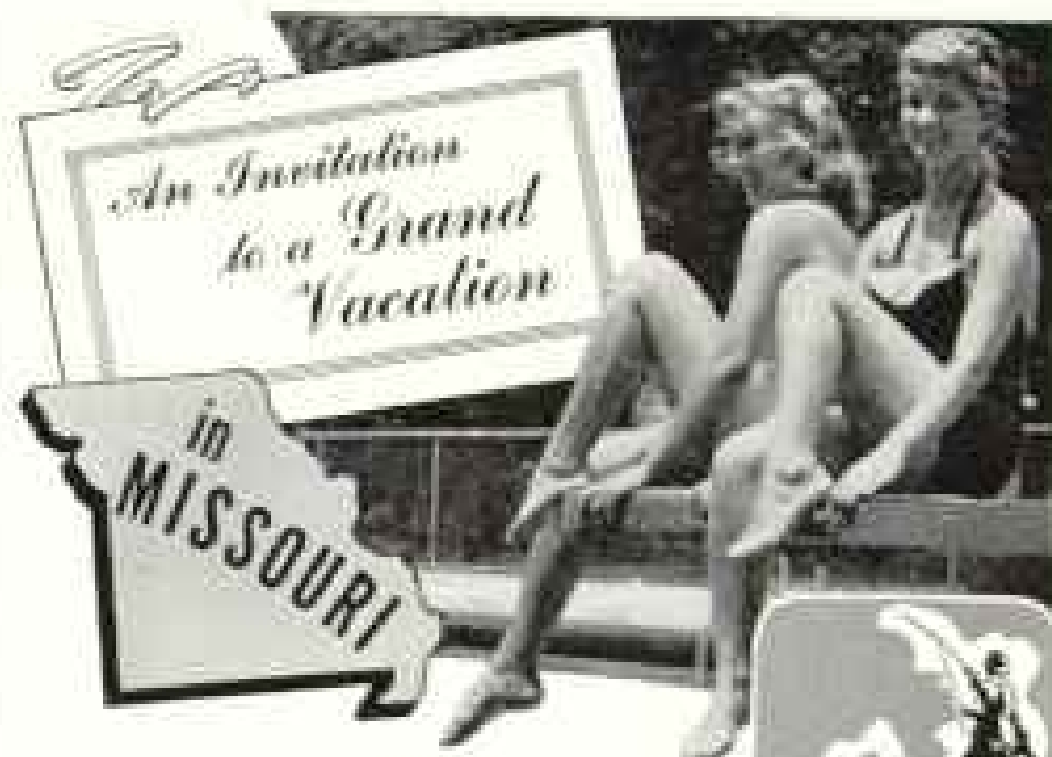
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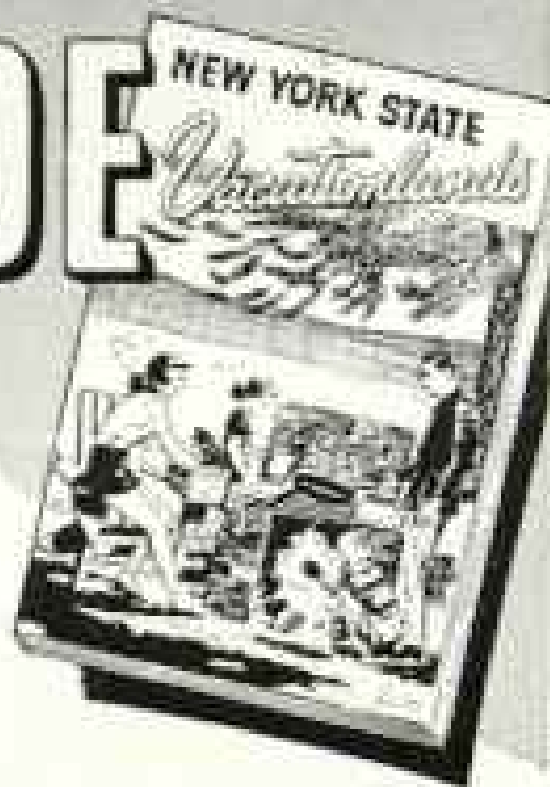
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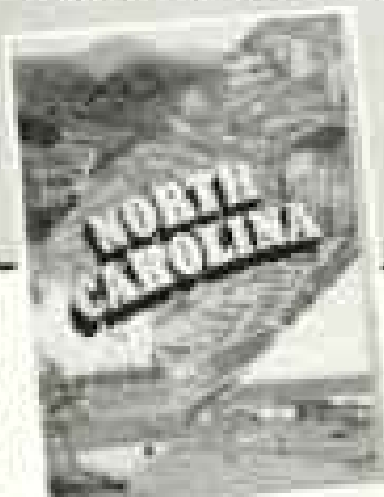
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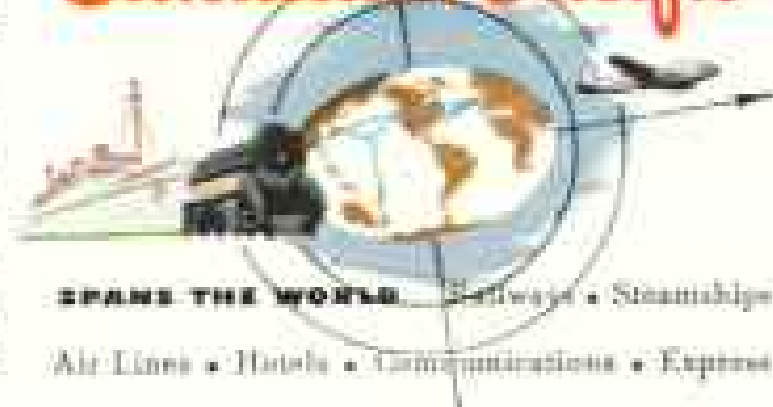
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The average increase during or after middle age is about 15 pounds. To avoid this, it is wise to follow the doctor's advice about diet, exercise, and living habits, especially after age 30.

If overweight should occur, it is usually possible to reduce to proper weight simply and safely under medical guidance.

Some ways to reach and keep your best weight

See your doctor before attempting to reduce. Virtually all cases of overweight are due to overeating. Some cases, however, may be complicated by other conditions.

After a thorough examination, the doctor can determine whether or not you have complications that require special medical attention. He can also decide how much weight you should lose, and advise approved methods by which you can lose it safely.

Follow your doctor's advice about diet. Authorities say that weight loss usually should not exceed 6 to 8 pounds a month. A diet that causes more rapid loss may fail to provide food elements the body needs.

So let the doctor recommend the kinds and

amounts of foods that will protect health and strength while you are reducing. It is also wise not to take any reducing drug except under a doctor's supervision.

Rely on your doctor to recommend proper exercise. Excess weight strains the heart and other organs—and too much or the wrong type of exercise may add more strain.

Only the doctor can determine the types of exercise that will be effective and safe in your reducing program.

Even after reducing, people with a tendency toward overweight often put on extra pounds again. This can usually be avoided by following a medically supervised daily routine.

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Immense numbers of scorpions were disposed of as a result of these measures, Gregg reported. But so many of these crawling, venomous little creatures remained that scorpion-bite still rated as one of the commonest accidents in Durango.

The idea of preventing accidents by removing the cause, as this 1835 scorpion-scotching program indicates, is quite an old one. But no safety program—not even a modern one—can be expected to do away with *all* mishaps.

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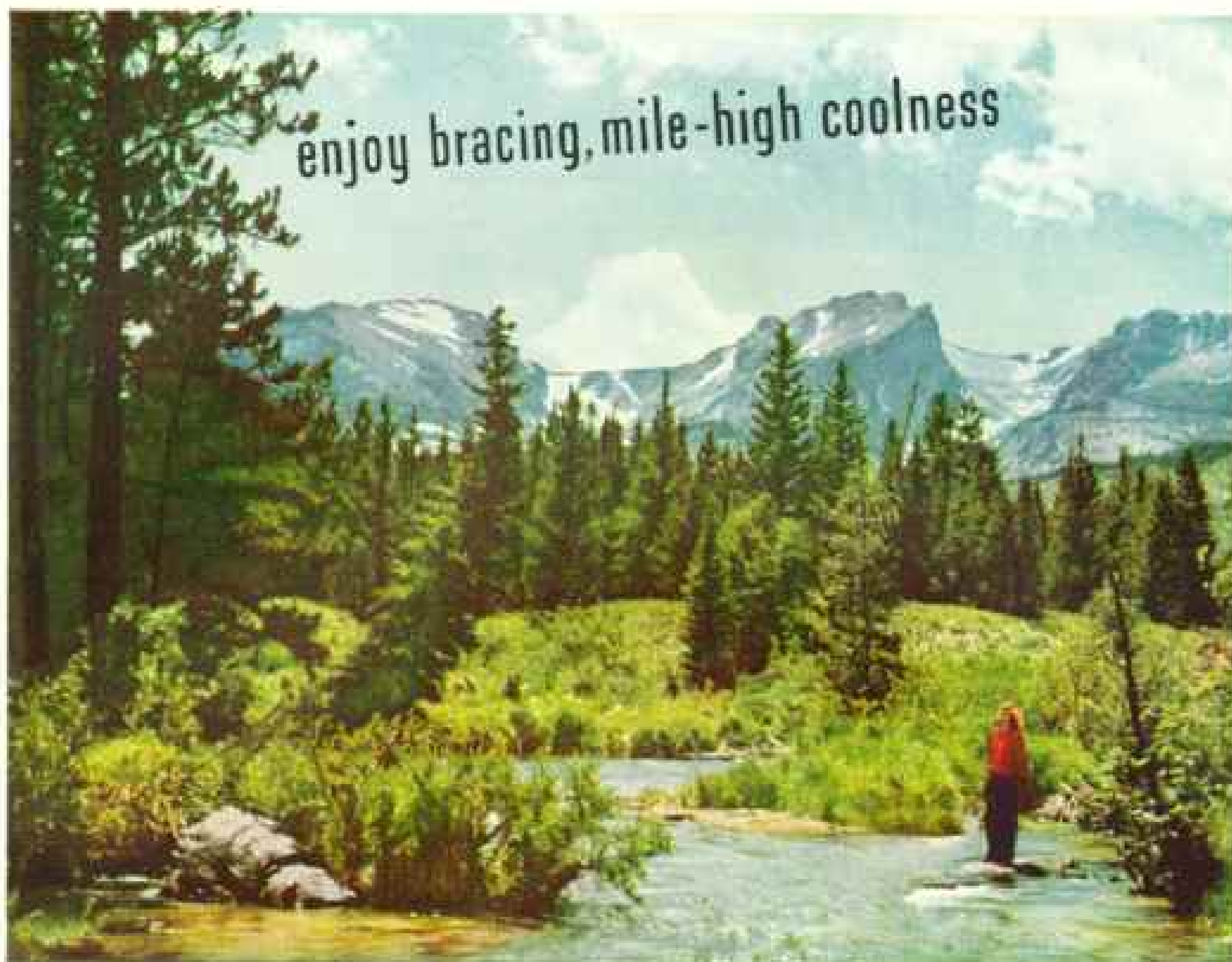
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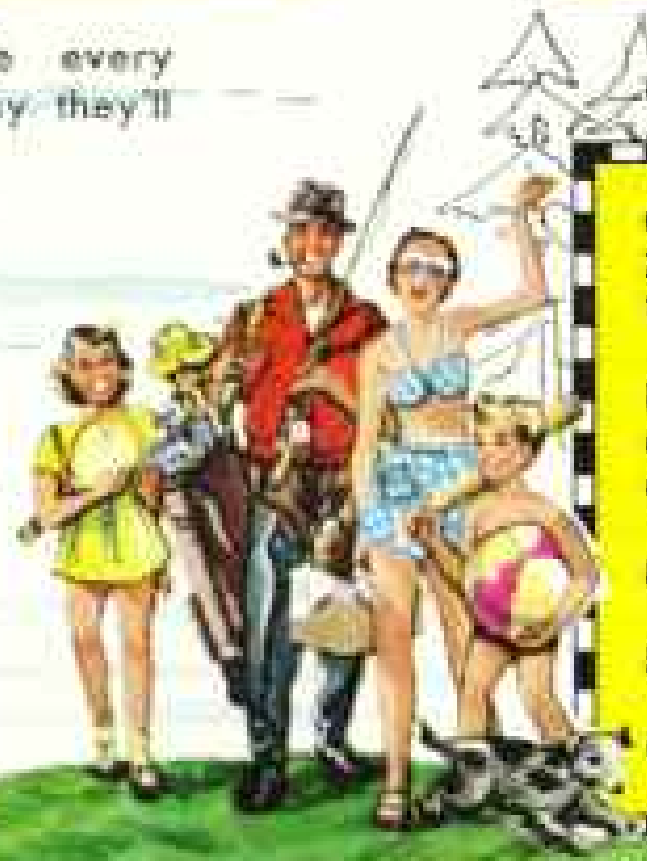
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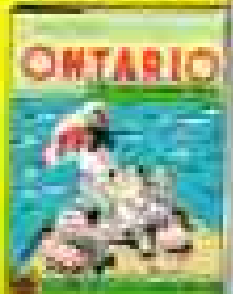
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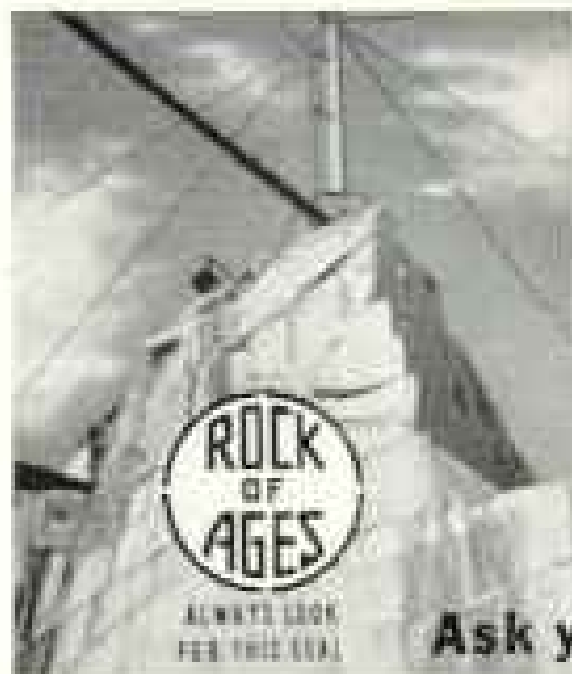
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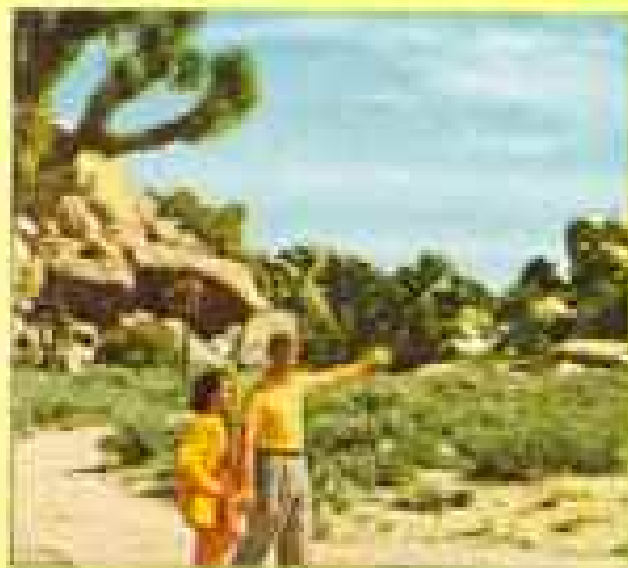
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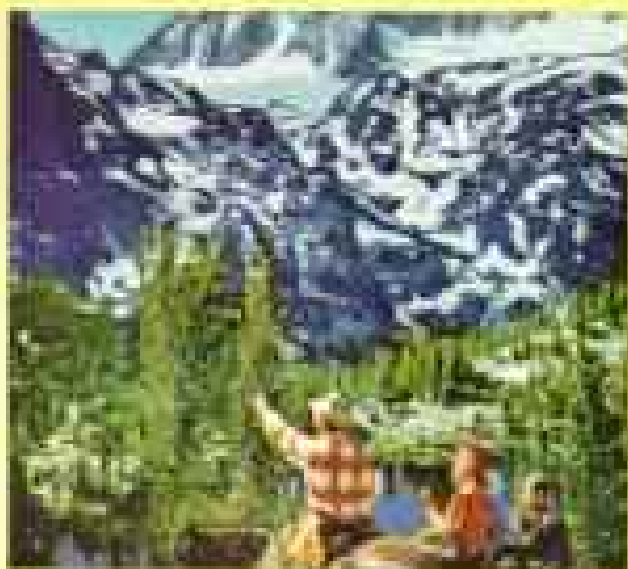
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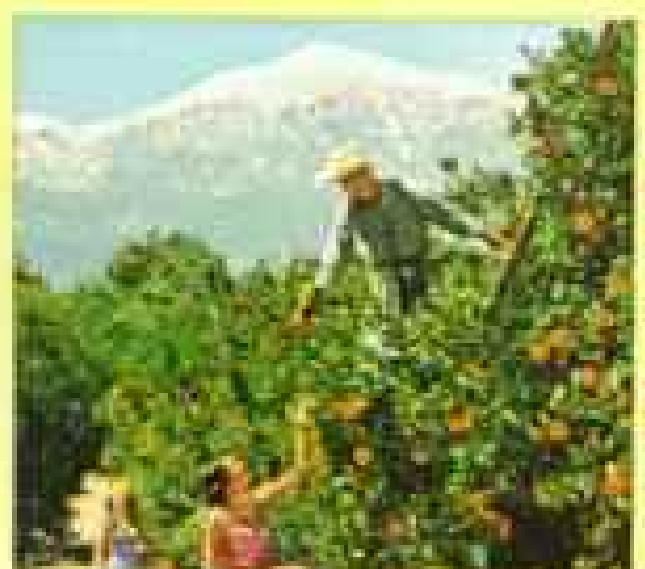
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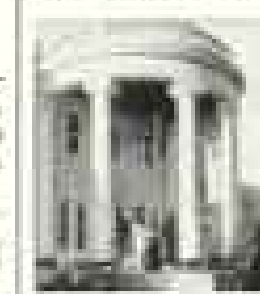
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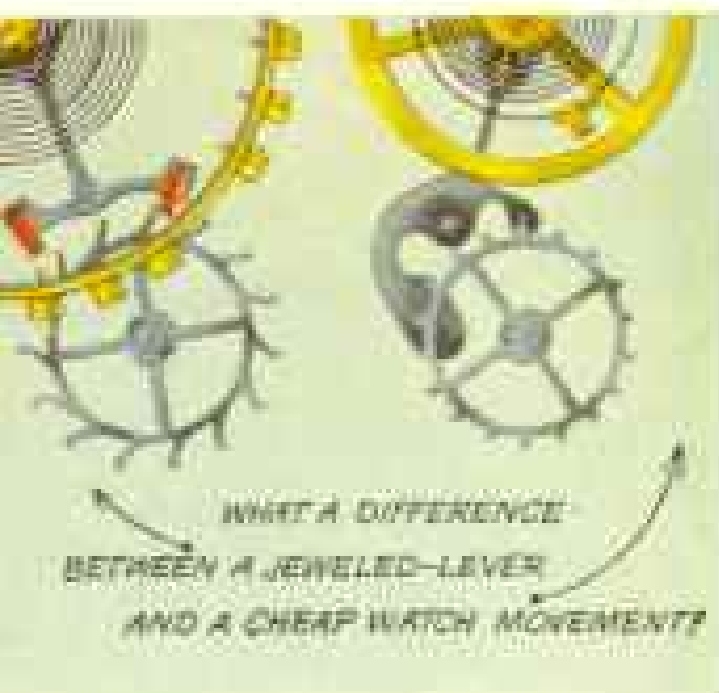


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