

VOLUME CVI

NUMBER FOUR

THE NATIONAL GEOGRAPHIC MAGAZINE

OCTOBER, 1954

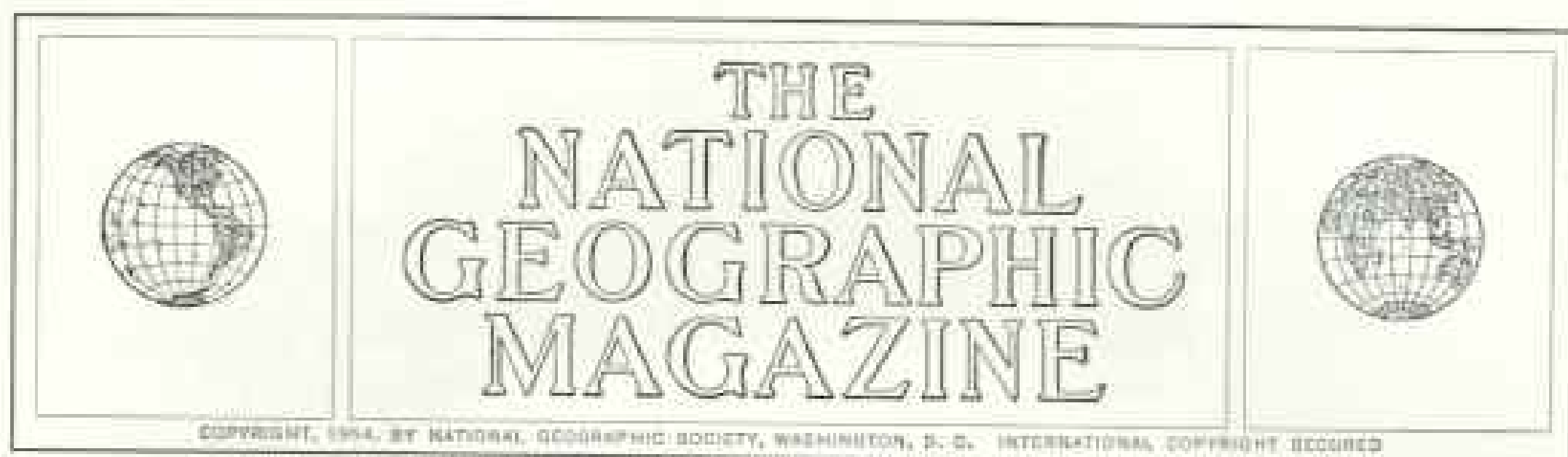
- Williamsburg: Its College and Its
Cinderella City 439
With 46 Illustrations
39 in Natural Colors BEVERLEY M. BOWIE
B. ANTHONY STEWART
- Spearing Lions with Africa's Masai 487
With Map and 35 Illustrations
24 in Natural Colors EDGAR MONSANTO QUEENY
- The Peary Flag Comes to Rest 519
With Map and 14 Illustrations
3 in Natural Colors MARIE PEARY STAFFORD
- Hunting Uranium Around the World 533
With 25 Illustrations
18 in Natural Colors ROBERT D. NININGER
VOLKMAR WENTZEL
- From Barra to Butt in the Hebrides 559
With Map and 19 Illustrations
7 in Natural Colors ISOBEL WYLIE HUTCHISON
J. ALLAN CASH

Sixty-four Pages of Illustrations in Color

PUBLISHED BY THE
NATIONAL GEOGRAPHIC SOCIETY
WASHINGTON, D. C.

\$6.50 A YEAR

65c THE COPY



Williamsburg: Its College and Its Cinderella City

Virginia's Colonial Capital, Complete from Apothecary to Wigmaker,
Flourishes Again as a Vivid Re-creation of the American Past

BY BEVERLEY M. BOWIE

National Geographic Magazine Staff

COCKING my tricorne over one eye and giving a tug to my blue-velvet coat, I quit my lodgings on Francis Street and strode down the Duke of Gloucester toward Chowning's Tavern. In the yellow glow of the lantern I carried, my brass shoe buckles winked up at me with every step, and from each Yule-decked window I passed, a candle shed its hospitable light.

I found Chowning's aswarm with a goodly company of Williamsburg's craftsmen, some 30 strong. Master Bootmaker Townsend, in sober homespuns, waved a tankard of ale in greeting; Mistress Bonnie Brown, the weaver and spinner, smiled demurely from a settle near the fire; Apothecary Marshall nodded to me over the long clay pipe he was puffing.

The genial hubbub rose in pitch as platters of steak arrived, and soon the paneled walls resounded to toasts of "The Queen, God bless her," "To the Ladies," and even "To ourselves—good men are scarce!"

Choristers Followed the Bookbinder

Once suitably warmed and refreshed, we formed behind Bookbinder Clem Samford and his fiddle and marched out of the tavern to the strains of "God Rest You Merry, Gentlemen." The night was crisp, but our caroling spirits were high, and what our chorus may have lacked in finesse we made up in volume. At more than one holly-garlanded door we found welcome and a great bowl of hot spiced punch.

It was outside John Blair House, however,

that time caught up with me. We had passed the Magazine where, next morning, guardsmen would fire the Christmas cannon; passed, too, the candlelit Governor's Palace, in whose ballroom the musicians would be tuning up for their holiday concert of Mozart and Vivaldi and Corelli. The bell of William and Mary, second oldest college in the Colonies, had clanged the hour from the Wren Building's slender tower down the street and quivered into silence. Grouped now about the little picket fence, we sang of another midnight clear, when "the world in solemn stillness lay."

20th Century Serves Notice

Then, ripping the evening sky with a sound of tearing silk, a jet plane roared by, and the stillness was no more. The 20th century was serving notice: it was not to be so wantonly ignored. I could don knee breeches and buckled shoes, it seemed to say, and traipse about the cobbled streets; but costumes cannot long defy the calendar, and all enchantments fade before the simple facts of here and now. The old brick walks I trod concealed cables for the telephone. My fellow carolers were craftsmen, yes, but on the payroll of Colonial Williamsburg, Inc. The date was 1953, not 1753.

Yet I was glad to have discarded, even for a few hours, some 200 troubled years and to have lived awhile under the innocent spell of Christmas Past. For Williamsburg, recalled to its 18th-century self at the behest of John D. Rockefeller, Jr., is not merely old; it is



← **Grand Union Flag
of the Colonies Waves
Over Williamsburg**

Each May 15, America's first national flag rises above colonial Virginia's Capitol to commemorate its defiant hoisting in 1776 by the Virginia Convention of Delegates. A pre-Revolutionary British Grand Union flag (upper right) normally flutters over this city restored to 18th-century grace and dignity through the generosity of John D. Rockefeller, Jr.

↑ Costumed students from the near-by College of William and Mary escort friends past the Capitol. Boy at left serves as a cabinetmaker's apprentice; the other waits on table at the King's Arms Tavern.

→ Members of the Governor's Council met in this Capitol room. Queen Anne and the Royal Arms adorn paneled walls; an old law book lies open on the carpeted table.

© Kofeletronus by National Geographic Photographer
B. Anthony Stewart



beautiful. And it is not merely beautiful; its every brick is steeped in history. When you stroll its lanes, great men walk beside you—Jefferson, Washington, Patrick Henry, George Mason, nine royal governors, a score of statesmen attendant here upon the birth pangs of the Republic.*

Not every visitor, of course, of the half million who stream to Williamsburg each year, can or will step back in spirit to these times. It is far from easy to link arms with these eminent ghosts at Easter or in the vacation months, when cars and buses clog the streets bumper to bumper around the Palace Green; when ladies in shorts, halters, and sunglasses far outnumber those in farthingales (pages 460, 470); when the Capitol looks like a school building one minute before recess.

I was lucky. I saw the town first on a morning in late November, still and warm, with the last wizened leaves of autumn drifting silently from the beech trees. From the doorstep of my cottage on Francis Street—the old Bracken-Carter House—I could see a boy sweeping out a stable yard, a warder in dun-brown redingote shuffling toward the Magazine and Guardhouse (page 450), and a few pigeons strutting the ridgepole of Captain Orr's Dwelling. For the rest, Williamsburg dozed serenely.

Master Baker Molds Gingerbread Men

A lane bordered by neatly patterned gardens of box and holly took me to Duke of Gloucester Street (color diagram, pages 446-7).

From in front of Orlando Jones Office I could look for three quarters of a mile down the broad, uncluttered street past old Bruton Parish Church (page 476) to the ancient brick buildings of the College of William and Mary.

To my right stood the rose-tinted Capitol, as "noble, beautiful, and commodious a Pile as any of its Kind," in the opinion of an early writer. On the face of its cupola flashes the colorful coat of arms of Her Britannic Majesty, Queen Anne, in whose reign the handsome H-shaped edifice was first built (page 440).

Crossing to the Raleigh Tavern, I pushed through a picket gate at one side and entered the brick courtyard next to the Bake Shop. Windows gave onto it from the tavern's Apollo Room, where young Tom Jefferson once danced with his Belinda and where, according to tradition, students from the college launched in 1776 the Phi Beta Kappa Society (page 486). I half nodded in deference; but

my goal lay in the small outbuilding from which emanated now a rich aroma of cinnamon, apples, molasses, yeast, and the smoke of hickory and oak (page 467).

Inside I found Master Baker Parker Crutchfield pressing dough for a gingerbread man into an elaborate wooden mold shaped as a cavalier, while his apprentice Victor raked hot coals from the waist-high oven and shoveled them into a great canister.

"How do you know when the oven is hot enough?" I asked in my ignorance.

"I just put my arm in," grunted Crutchfield. "If it comes out charred, the temperature's about right."

Bread Like Martha Washington's

I sat back in an old rush-bottomed chair and watched the morning's baking get under way—cookies, flat round loaves on a broad wooden paddle, a few tarts, some mincemeat pies. As he worked, unhurriedly, almost casually, and yet with a definite air of authority, Crutchfield talked of his trade.

"People seem to think all the baking in the 18th century was done in the home. Matter of fact, when I started my research, I wrote the American Baking Association. I asked 'em what they could tell me about commercial bakeries in the Colonies. They said: 'Nothing—there weren't any.' Fiddlesticks! I began digging into the old *Gazettes* and such, and found there were half a dozen in Williamsburg alone. Philadelphia had 33."

"Is your bread made just like theirs?"

"Martha Washington herself couldn't tell 'em apart. We get our unbleached flour from an old mill in Louisa County. It's stone-

* See "The Genesis of the Williamsburg Restoration," by John D. Rockefeller, Jr., NATIONAL GEOGRAPHIC MAGAZINE, April, 1937.

"Sir, I Find Your Arguments as Empty as Your Tankard..." →

Many a hot-tempered blast at tyranny and many a humorous quip once set the Raleigh Tavern's tap-room rocking. Planters in town for sessions of the General Assembly and the courts enjoyed themselves here to all hours, exchanged news, made bargains, debated politics, and finally mounted the stairs to sleep half a dozen to a room.

When Royal Governor Lord Dunmore dissolved the House of Burgesses in 1774, rebellious delegates promptly reassembled at the Raleigh to denounce him anew and begin correspondence with the other dissenting Colonies.





The Author Politely Declines to Chase a Greased Pig at a Colonial Festival

Each spring students at William and Mary stage an 18th-century fair, with "many curious events." Among them: juggling, fiddling, choral singing, dancing around the Maypole, pursuing "a Pig with his Tail soap'd," and a foot race from the college to the Capitol (page 434). Dazed by such varied entertainment, author Bowle (left) confessed himself "bewigged, bothered, and bewildered."

ground. The only thing different is we use modern dry yeast. The 18th-century fellows more than likely depended on scrapings from the beer vats."

A lady prettily attired in farthingale and lace cap put her head in the bakery door. "I'll take a couple of loaves today, Mr. Crutchfield."

"Ready at noon, ma'am." When she had gone, Crutchfield shoved the last paddle of bread into the oven and wiped his hands on

his apron. "Hostess up at the Capitol," he said with a nod toward the departing gentlewoman. "A lot of the folks in town drop by and leave their orders; keeps me busy as a bird dog. When you're the only 18th-century baker in the country, you have to stir your stumps."

On one whitewashed wall of the shop I noticed the smudged prints of three large hands. "What about those?" I asked Crutchfield,



Gay but Garrulous Girls Are Clapped into the Public Pillory to Repent

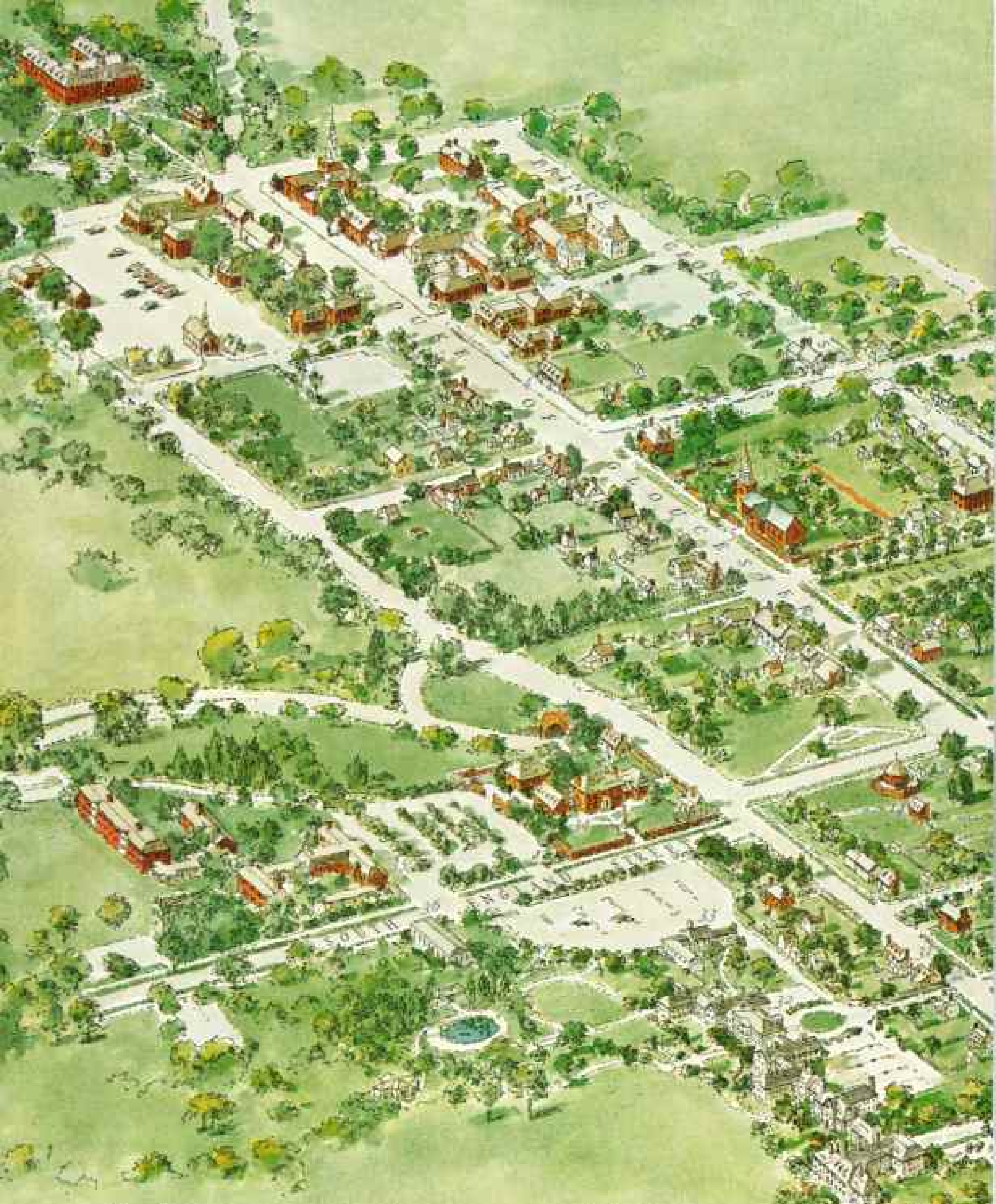
Handcuffed, leg-ironed, and chained in this "sweet strong prison," common criminals faced the 18th-century winter in unheated cells on a diet of "salt beef damaged" and corn meal. For lesser offenses the gaoler would dole out a fine, a lashing, a brand, or mutilation. For burglary, forgery, arson, horse stealing, or piracy: death. Williamsburg gossips, or "common scolds," might be locked in the pillory.

"Well, they're meant to be there. In the Middle Ages an apprentice or a journeyman would put his handprint on the wall when he left his master's service, to show he bore him no ill will. Actually, the top print is mine, the next is Victor's, and the third belongs to the president of the American Baking Association. We had him down when we opened the shop."

The master baker settled himself against the ledge of the brick oven, lit a long clay pipe,

and talked of colonial recipes and techniques, of Roman and Egyptian and medieval guilds, and of George Washington's baker general, Christopher Ludwick.

"Ludwick used portable sheet-iron ovens, you know. That gave the Continental Army a good deal of mobility. One of the first things Washington did after the surrender at Yorktown was to order Ludwick to bake bread for all Cornwallis's troops. They were half



- | | | |
|----------------------------|----------------------------------|---------------------------------|
| 1 Wren Building | 13 Courthouse of 1770 | 25 Raleigh Tavern |
| 2 The Brafferton | 14 Magazine & Guardhouse | 26 Raleigh Bake Shop |
| 3 President's House | 15 Chowning's Tavern | 27 Pafteur-Galt Apothecary Shop |
| 4 John Blair House | 16 Ludwell-Paradise House | 28 Publick Gaol |
| 5 Bruton Parish Church | 17 Printer's & Bookbinder's Shop | 29 Capitol |
| 6 Bootmaker's Shop | 18 Captain Orr's Dwelling | 30 Asfough House (Cabinetmaker) |
| 7 Weaving Shop | 19 Orlando Jones House & Office | 31 Bracken-Carter House |
| 8 George Wythe House | 20 Brick House Tavern | 32 Williamsburg Inn |
| 9 Deane Forge | 21 Milliner's Shop | 33 Craft House |
| 10 Governor's Palace | 22 Silversmith's Shop | 34 County Courthouse |
| 11 Bruff-Everard House | 23 King's Arms Barber Shop | 35 Williamsburg Lodge |
| 12 St. George Tucker House | 24 King's Arms Tavern | 36 Reception Center |

SPREAD here, for the Delectation of the Beholder, lies a Vista of *Williamsburg* in *Virginia*, early Seat of Royal Governors, Birthplace of a noble College, Forge of *American Liberties*. Dismay'd by the Fires, Pestilence, & *Indian Raids* which for nearly a Century had assail'd the first Capital at *Jamestown*, his Excellency, *Francis Nicholson*, Esq., in 1699 exhorted the Assembly to build a new City and to move his Government thereto. A Man of large Imagination and much Foresight, *Nicholson* urged that no Lot be less than half an Acre, that the Streets be of a generous Width, that Houses upon the main Way be

enclosed by a Wall or Fence, and that the principal Buildings be elegantly set off by Greens, Squares, or handsome Avenues.

Restored now by Grace of its great Benefactor, *John D. Rockefeller, Jr.*, and still as comely as in its Hey-day, *Colonial Williamsburg* covers two hundred and twenty Acres. Along its tree-bowered Lanes stand some four hundred Houses & Publick Edifices, from the commodious Capitol to the humble Shop of the Master Bootmaker. No Expence has here been spared, no Pains foregone, so that—in the Words of the Founder—"the Future may learn from the Past."



A Gentleman's Formal White Wig Gets an Informal Modeling Outside King's Arms Barber Shop

Peruke maker Robert White holds a colored wig for more casual wear; neither type was particularly comfortable in Virginia's sultry summer weather (pages 451 and 474). In costuming its hostesses within the restored area, Colonial Williamsburg thoughtfully chose as its model the decade 1760-70 when wigs were not in vogue. One of the window signs promises an 18th-century bargain: "Shave with Ease & Expedition for one penny."

National Geographic Photographer John E. Fitcher

starved, of course. But folks ate an awful amount of bread in those days, anyhow. Usually they didn't butter it or even slice it; just broke off a chunk and ate it with meat and cheese."

A while later, taking my leave of Master Crutchfield, I walked along Duke of Gloucester Street to the Pasteur-Galt Apothecary Shop. Norman Marshall, well turned out in his sober knee breeches and ruffled stock, greeted me on the doorstep and took me back into the office used by Dr. John Minson Galt when Williamsburg was young.

"Surgery was a bit rough in Dr. Galt's day," said the apothecary. "They had to strap the patient down. No anesthetics, of course. And no idea of antisepsis. The doc would whet his knife on his shoe, spit on his thread before putting it through the needle's eye. The mortality rate was about 60 percent, even for the simplest operations."

Marshall picked up a sort of brace and bit. "They used this for trepanning—boring holes in the skull. The idea was to let the hot air and vapors out. Prince Philip William of Orange had 17 holes in his head—said to be the most open-minded man in Europe!"

"Did Dr. Galt do any dentistry?"

"Dentistry really hadn't emerged as a branch of medicine. Pulling teeth was about all it amounted to, and anybody would do that, the barber, for instance. People had a good deal of trouble with their false teeth. Washington's plates, you know, would sometimes lock open when he was in the middle of a speech. Very embarrassing. But come into the front of the store; I want to show you something."

Pushing aside an old microscope ("Strictly a gentleman's toy at the time; no scientific use made of it"), he flipped the pages of a yellowing ledger and put his finger on one of the accounts due. It was an unpaid bill of 7 shillings, owed by Patrick Henry.

On the shelves around us sat jars of ancient



drugs, gallipots (medicine containers), draught bottles, herb cabinets, calf-bound books on alchemy, and tomes instructing the pharmacist in the art of ridding his patients of "pecculant humours and morbidic matters" (page 465).

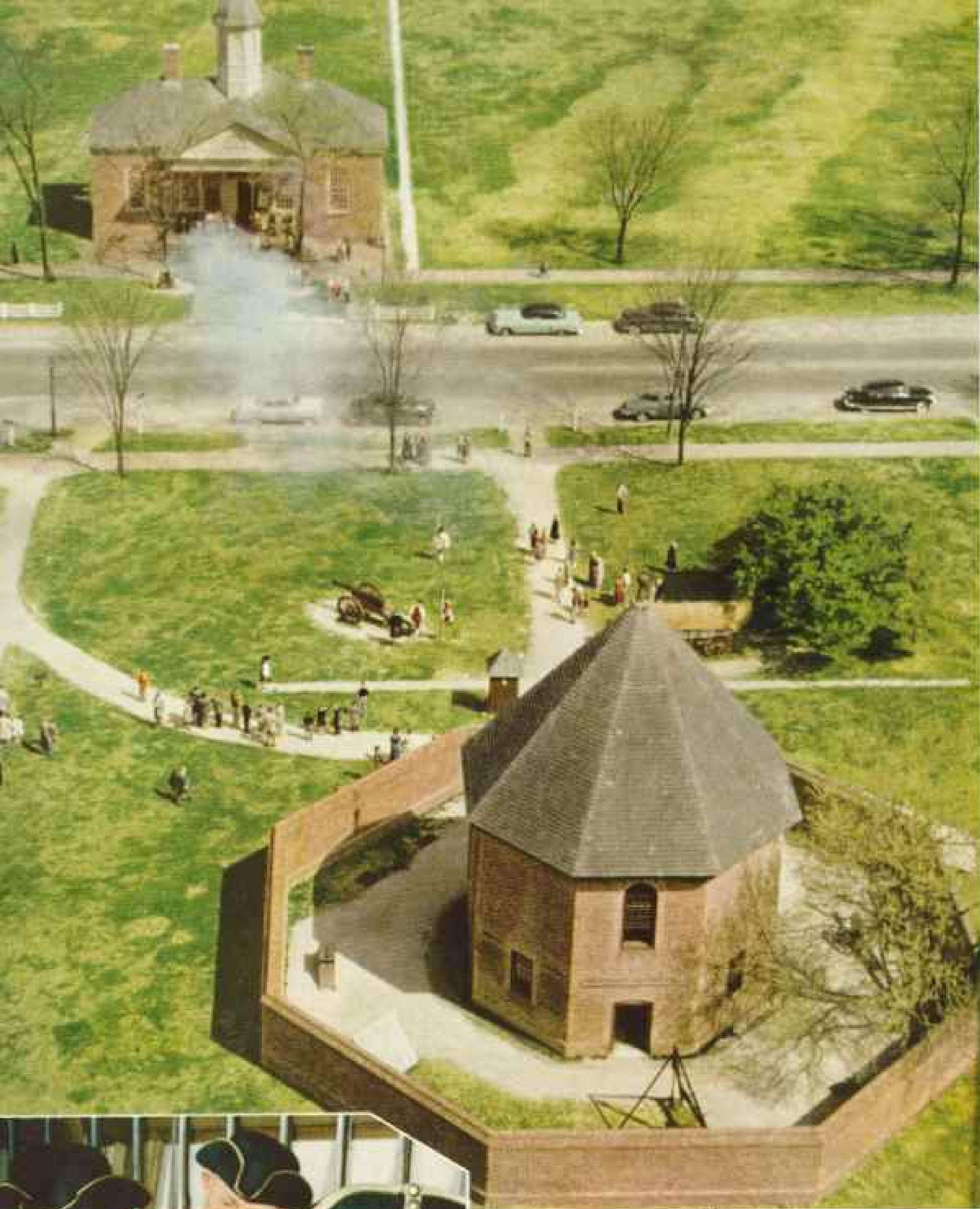
Thumbing Dr. Galt's Edinburgh pharmacopoeia, Marshall pointed out to me that the well-equipped apothecary of the 18th century was supposed to have in stock scorpions, vi-



pers, ants, earthworms, and even mummies. "They also prescribed opium and whisky," said Marshall. "Didn't cure you, but at least made you more resigned to dying. Oddly enough, they knew about digitalis. But where we use it as a heart stimulant, they thought of it only as a purge."

Ranged along the counter for sale I saw containers of bay leaves, caraway seed, nut-

megs, rubbed sage, poppy seed, cinnamon sticks, licorice root, slippery elm, thyme, lavender, pomanders, boxes of twist tobacco, and even some twigs labeled "a Good Wintergreen toothbrush, 5¢ lawful Money." Marshall dipped into one jar and came up with a pinch of snuff, which he inhaled expertly, detonating a violent sneeze. From another he produced some sweet horehound drops.



450

Guardsmen from the Public Magazine Fire a Hearty Salute to Visitors

On an April night in 1775, Lord Dunmore, fearful of the colonists' growing defiance, confiscated ammunition stored here in Virginia's chief arsenal. As a result, alarmed bands of volunteers marched on Williamsburg; the governor fled to his man-of-war lying off shore.

← Cavalrymen firing 18th-century pistols seldom had time to reload, a guardsman points out. After one shot they used the weapons as clubs.

© Kodachromes by National Geographic Photographer B. Arthur Stewart

"Try one," he urged me. "In one of Galt's old books it says, 'Horehound is everywhere commended for those who are bruised, burst, or fallen from high places.'"

Feeling none of these things, I declined, and thanked him for showing me about.

"It's I who should thank you," he said. "It was that article in your Magazine on Williamsburg, back in 1937, that brought me here. I read it in high school and said to myself, 'That's the place for me.'"

At the King's Arms Barber Shop across the street I paused briefly to chat with Master Robert White. Signs in his window proclaimed that "Robert White shaves right & powders white by day and night" and that one might here obtain "Wigs after the newest fashions and as reasonable as from London" (page 449).

"Well, how reasonable?" I asked him.

"Frankly, they were pretty expensive. A good white wig would have cost an 18th-century gentleman up to £3 (about \$8.40 in present dollar value, and much more in purchasing power then). For just a few more shillings he could have bought a whole suit. And a well-to-do planter would usually have two white wigs and several colored ones."

"They must have been pretty uncomfortable in summer."

"Frightful. I think that's why the pew for the governor and his council over in Bruton Parish Church has curtains around it—so that the gentlemen could doff their wigs during one of those long sermons."

"Self-Sharpening" Razors Exhibited

Over among the pewter and china shaving bowls I spotted a set of razors in a tooled leather box shaped like a book. Master White took one out and brandished it by its silver-and-tortoise-shell handle.

"They're numbered, d'you notice? One for each day of the week except Sunday, which was a day of rest. People used to think that if you turned the box toward the magnetic pole and let the razor lie unused for a week, the blade would regain its sharpness."

I tarried awhile, watching Master White building a wig on a "blockhead," a sort of wooden skull, sewing hair onto a net cap, combing and curling it (page 474). Then I strode down the street to drop in on August Klapper, the town printer (page 469), and Master Bookbinder Clem Samford (an ex-concert violinist and now a most skilled crafts-

man). Before the day was over, I had visited as well the blacksmith, John Allgood; the spinner and weaver, Mrs. Brown (page 467); bootmaker Ray Townsend, who kindly sewed tight a loose button on my overcoat (page 464); silversmith William DeMatteo; and the candlemakers, Mrs. Edmonia Jackson and Mrs. Martha Minns.

My first call on cabinetmaker Louis Bullman, however, yielded me only the sight of a printed notice pinned to his door:

"I have been obliged through the sheer Weight of Fatigue to quit my Post & repair to my Dwellinghouse until I have recovered my usual Composure."

Craftsmen Add Life to Restoration

Aware of a certain Weight of Fatigue myself, I sympathized and made a mental note to return on the morrow. Which I did (page 465). In fact, I returned again and again to the workbenches and shops of all these craftsmen, for it is they who bring the vast museum of Williamsburg to life. The Restoration has completely reconstructed 350 buildings, restored 82 others to their pristine beauty, and torn down 619 modern structures over a great 220-acre tract. But houses—even those as charming as the Ludwell-Paradise House or as impressive as the Palace—can seem a bit cold and dead. A hot glowing forge, however, or a printer's shop reeking of ink, a fragrant bakery, a great 4-harness loom clicking and clacking—these engage the eye and the imagination and re-create the past in warmly human terms.

The stage, in short, has been virtually completed; the main task of Colonial Williamsburg is now to use it as effectively as possible. The craftsmen play their part; but there are many other means of presenting the story of Williamsburg.

One is the Reception Center, where excellent films on 18th-century life, on the capital's crucial role in the American Revolution, on the process and purpose of the Restoration itself are shown continuously to visitors.

Another is the Craft House near by, in which faithful reproductions of colonial glassware, pewter, silver, copper, linens, wallpaper, paint, and furniture are on display—and on sale. Here those who want to carry home with them some tangible remembrance of the 18th century can purchase anything from a child's

* See "Restoration of Colonial Williamsburg," by Dr. W. A. R. Goodwin, NATIONAL GEOGRAPHIC MAGAZINE, April, 1937.



♣ In the Historic House of Burgesses, Legend Relates that Patrick Henry Thundered: "If This Be Treason, Make the Most of It!"

Candlelight gleams on a silver mace resting on the table with books of minutes and proceedings, record box, and bell for convening legislators. A costumed model sits in the original Speaker's chair (background). On this spot, debates over the Stamp Act led to Henry's defiance of King George III.

♣ In these richly furnished chambers of the Capitol's west wing the General Court of the Colony pronounced sentence on such culprits as Blackbeard's pirate gang.

453

© Kodachrome by National Geographic Photographers Nathaniel Berlin and Donald Methala



tricorn (\$1.25) to a magnificent mahogany break front (\$1,230).

Throughout the spring and fall, students from the William and Mary Theatre perform old farces and dramas, such as *The Clondestine Marriage* and *Doctor Last and His Chariot*. In the gracious ballroom of the Palace musicians in period costume give concerts on 18th-century instruments (page 458).

On any day from January to December, hostesses in lace caps and farthingales stand ready to conduct the visitor through the town's great houses and public buildings with such a pleasant informality and ready flow of anecdote that you might imagine they are the proprietors, which in a real sense they are. Thoroughly grounded in the history both of colonial times and of every hand-wrought nail or ancient portrait in the Restoration, they take an evident pride and relish in their work.

Everywhere in the restored area, in fact, an effort is made to thaw the polite frost which so easily forms over any museum. In the George Wythe House, evening visitors see the dining room as if the family had just left the table—rumpled napkins tossed upon it, chairs pulled back, wineglasses still rosy-damp; upstairs they find night clothes laid out upon the beds, slippers ready, a candle guttering beside an open book.

At the Magazine, guards showing off the guns and powder kegs startle youngsters by firing old horse pistols with a satisfying roar (page 450). At the Public Gaol, the keeper obligingly leads any parties stricken by guilt to the stocks or the pillory, where they may savor the awkward punishment that awaited colonial culprits (page 445). Under a tree near the Courthouse of 1770 a carriage and coachman await those who wish to rattle about behind a spanking pair of high-stepping bays.

Come to the Fair—and Chase a Pig!

Colonial Williamsburg's "stage" may see even more intensive use in the future. The spring festival now put on by William and Mary students may soon be considerably elaborated. A great wheel, the granddaddy of all Ferris wheels, will creak away on the Market Square; there will be also a merry-go-round, stalls for meat pies, peep shows, wrestling and fencing, a foot race from the college to the Capitol, and, as heralded in the *Virginia Gazette* of 1739, "a Pig, with his Tail soap'd, to be run after" (page 444).

Other schemes call for bowling on the town's

many greens and for country dances. The Nation's first playhouse, which once stood near the Brush-Everard House, may be rebuilt. Several lower-class dwellings are to be reconstructed and humbly furnished. A great new Reception Center (with the latest in audio-visual techniques) and a 150-room motel are on the drawing boards, to be placed north of the Palace and securely screened from the restored area. Cars and buses, it is hoped, will soon be diverted from the old streets, with carriages and oxcarts more in evidence to supplement plain shanks' mare.

One addition in particular should mean a great deal to the school children: a 200-bed dormitory just for them and their chaperons. For they, among all groups coming on pilgrimage to Williamsburg, are reckoned by the Restoration as truly Very Important Persons. Forty-two thousand of them came last year.

Good History Is Live History

Helmuth W. Joel, a teacher who brings a contingent each year from a Bronxville, New York, high school, told the Restoration that "in the mile-square classroom of Williamsburg" he can acquaint his charges with a whole early-American community in action. "Their houses are open to us, as are their shops, their place of worship, and their parliament. Here you see it, feel it, discuss it, and you say, 'This is *good* history because it is *live* history.'"

It is not only live history but comprehensive and crucial history. Standing in Williamsburg, the student commands a panorama of American times that stretches back three and a half centuries to the founding of the first permanent English colony on these shores.

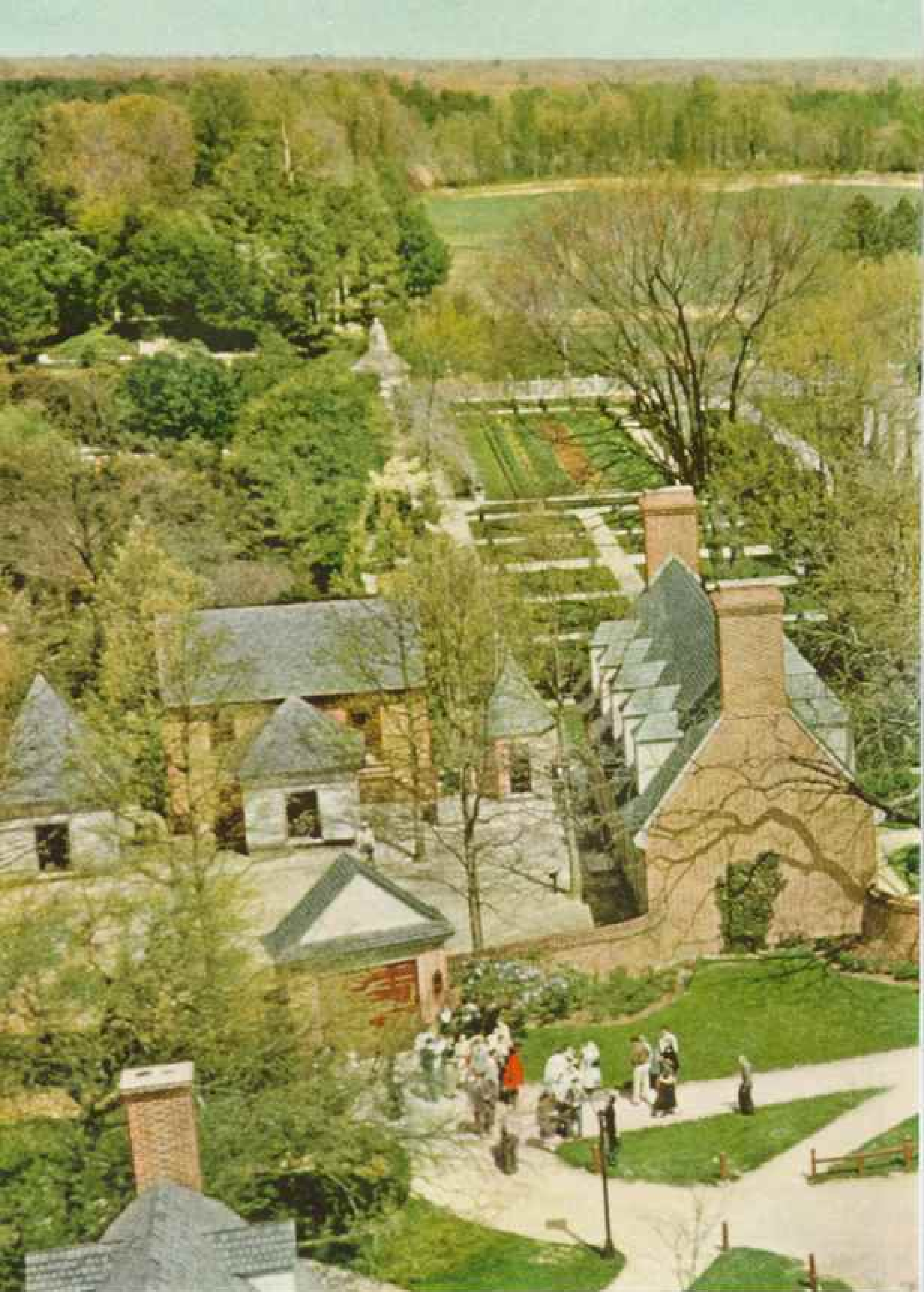
For it was at Jamestown, then a marshy, malarial peninsula, that the English settlers established their stockade in 1607. It was from that ill-favored site, after 92 thin years punctuated by Indian raids, "starving times," and ruinous fires, that the seat of government was moved to Middle Plantation, which was surveyed and laid out as the Town of Williamsburg. And it was in this, their second capital, that the planter aristocracy of Virginia demanded at last for themselves and sister Colonies the right to be "free and independent states, absolved from all allegiance to, or dependence upon... Great Britain."

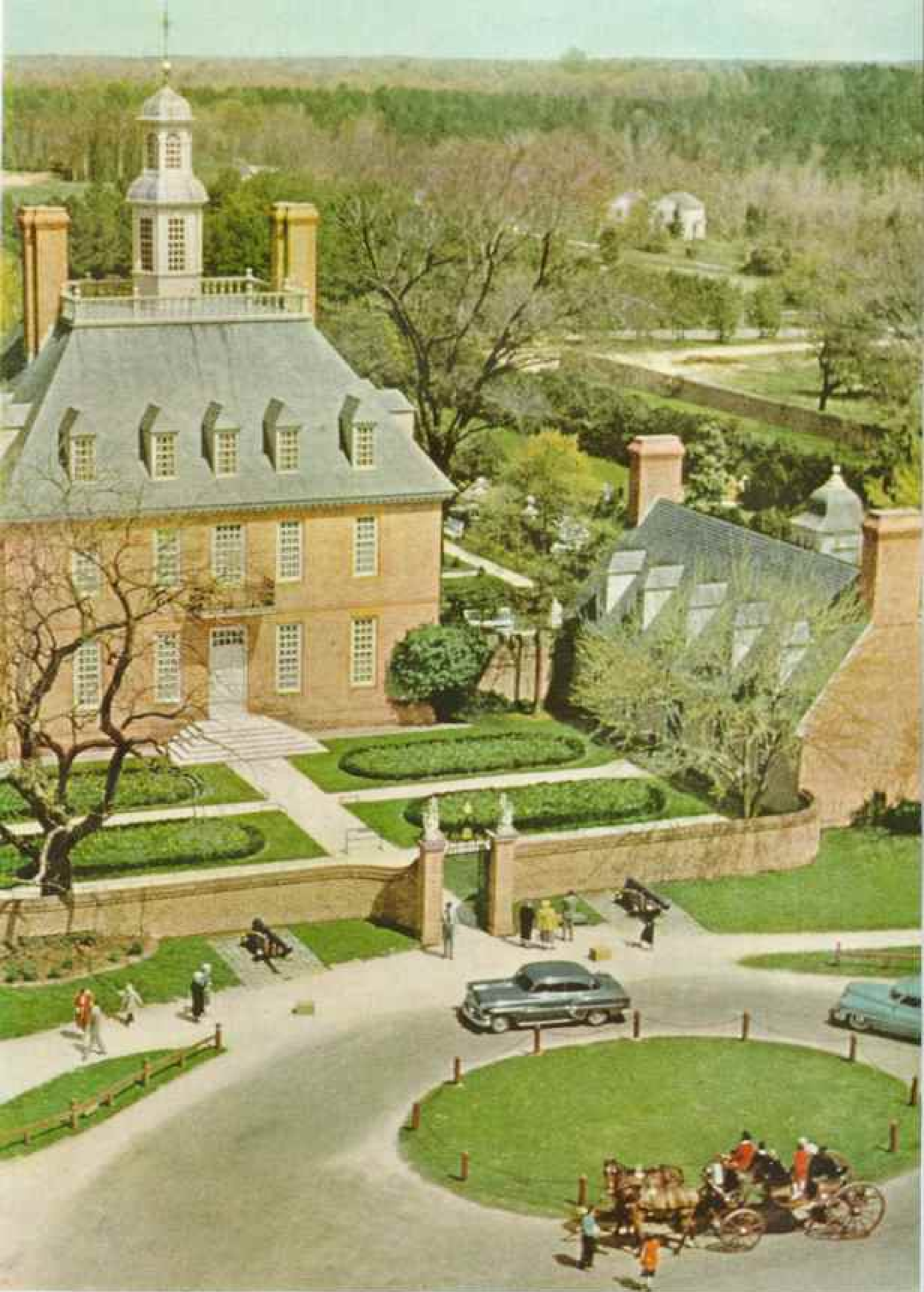
History could hardly have chosen a stranger town in which to hatch a revolution. Wil-

(Continued on page 463)



With Hoop and Hobbyhorse, Children in the Garb of Another Age Play by the Palace Gate





...Now Plays Host Each Year to Thousands of Williamsburg Visitors



Britain's Royal Lion and Unicorn Prance Again Above the Governor's Doorway

Virginians lived under the British Crown for 169 years. A venerable Williamsburg lady, asked if her family had always been there, replied quickly: "Oh, no! Only since the Revolution!"

This carved coat of arms of George II contains three fleurs-de-lis in upper right quarter, symbolizing the ancient claim of England's kings to the throne of France itself. Other quarters represent England and Scotland, Ireland, and the Electorate of Hanover. "Evil be to him who evil thinks" reads the "garter" surrounding the shield, motto of the Most Noble Order of the Garter. Scroll below declares: "God and My Right."





† Alarmed by Governor's Mounting Bills,
Closefisted Burgesses Began to Call
His Ever More Elegant House a Palace

Lt. Gov. Alexander Spotswood, the Palace's first tenant, wrote a friend in 1710 that he was living "rather after a quiet country manner" and found himself "sufficiently amused with planting Orchard and Gardens, & ~~with~~ finishing a large House ~~with~~ is design'd (at the Country's Charge) for the reception of their Governours."

It cost the colonists a pretty penny to keep Spotswood and his successors amused. But the fruits of their diversion proved handsome indeed. Brick offices and guardrooms, beautifully paneled, flank the great Georgian mansion; a smokehouse, laundry, wellhead, and salthouse cluster near by; terraced, formal gardens, bowered alleys, and orchards extend to an artificial canal and a holly maze.

← Serene airs of the 18th century resound once more through the Palace ballroom in weekly candlelit concerts each spring and fall. Young Tom Jefferson recalled that he used to play the violin of an evening with the amiable royal governor, Francis Fauquier, and "two or three other amateurs." Harpsichord in its polished walnut case was made by Jacobus Kirckman of London in 1762.

© Kodachromes by National Geographic Photographers R. Anthony Stewart (above), and Kathleen Davis and Donald Melvin (left).



← **Lemons and Limes
of West Indies Graced
Williamsburg Tables**

Ladies employed as hostesses in Colonial Williamsburg's restored show places get a thorough briefing on every aspect of 18th-century life, from the kind of snuff a gallant would inhale to the color of wig favored by Patrick Henry. In off-duty reading they delve further into the political background of the Revolution or the pedigrees of antique furniture.

Sidewise hoopskirts, or farthingales, may be a bit awkward in maneuvering through doorways, but panniers on either side provide deep, convenient pockets for a hostess's knitting, compact, or even a modern novel.

On special nights the Palace, the Capitol, and the Wythe House are still lit wholly by the soft gleam of wax candles.

© National Geographic Society



← **Virginian Colonists Provided
“Standing Furniture” for the Palace,
but Governors Had to Supply the Rest**

Fortunately for those who restored and redeco-
rated the Palace, its former tenants were meticulous
men. A couple of governors left precise inventories
of the furnishings they had inherited from their
predecessors or imported at their own expense.
Using these fragile, yellowed lists, agents of Colo-
nial Williamsburg scoured England and the United
States for just the type of chair or table or candle-
stick that adorned these rooms before their destruc-
tion by fire in 1781.

This great Tudor oak four-poster in the Palace's
northeast bedroom is hung with crewelwork curtains.
Yew-wood backs of Chinese Chippendale chairs
simulate bamboo.

✦ Hand-painted Chinese wallpaper from a house in
London's Grosvenor Square lends a gay touch to the
Governor's Supper Room. Loitering over his coffee
here of a summer evening, His Excellency could
savor the fragrance of his gardens—and fend off the
pestiferous flies that invaded his unscreened doors.

When dances were held in the adjoining ballroom,
guests would often drift in to refresh themselves at
the hospitable punch bowl. But the royal governors
took their minnets with due seriousness. Wrote
Governor William Gooch proudly: “Not an ill
Dancer in my Govmt.”

© Kodachromes by National Geographic Photographers
B. Anthony Stewart and Donald Melbata

461





Williamsburg, from its birth, was politically patriotic, socially festive, and economically stable. Virginia was acclaimed as being "the happy retreat of true Britons and true Churchmen." Its domain extended westward to the Mississippi and northward to Canada, an inland empire of nearly 360,000 square miles, three times as large as Great Britain herself. More populous than any other colony, it was also the richest, its income solidly based upon cultivation of that "Imperial weed," tobacco.*

As its capital, tiny Williamsburg threw a long shadow. Laid out as one of America's early and most felicitous experiments in town planning, the little city boasted an impressive grouping of public and private buildings, knit by broad avenues and handsomely set off by greens and Market Square. Fifteen hundred persons normally resided in it. But at "Publick Times," when the courts or the General Assembly convened, its population would be doubled or tripled by gentry in from the plantations, merchants, back-country farmers and hunters, sharpers and pickpockets, grooms and craftsmen, solemn Indians, and a sprinkling of slaves.

Over the Raleigh Tavern's chief mantel runs now, as it ran then, the Latin phrase *Hilaritas Sapientiae et Bonae Vitae Proles*—"Jollity, the Offspring of Wisdom and Good Living."

It might have been the motto of all Williamsburg. Gov. Sir William Gooch noted approvingly in 1727: "The Gentm. and Ladies here are perfectly well bred, not an ill Dancer in my Govmt." Lt. Gov. Spotswood thought nothing of entertaining hundreds of guests at the Palace, and the drain on his wine cellars and smokehouses was fabulous (pp. 455-462).

← Williamsburg's Many Gardens Stress 18th-century Regard for Beauty, Order, Utility

When Governor Nicholson had plans drawn up for his new capital at Williamsburg, he urged that town lots were to be no smaller than half an acre, so that each villager might have space enough for a garden and an orchard as well as a house site. Herbs and vegetables for the kitchen, flowers for the lady, and fruit trees to supply "most excellent and comfortable" drinks soon came from all parts of the world to begin a new life in Virginia soil.

Garden of King's Arms Tavern (upper) offers jonquils, dwarf boxwood, and flowering shadbush. Vegetable plot of the Palace, lightly shaded by peach trees in bloom, shows lettuce, radishes, and parsley in near bed, with cotton and parsnips beyond.

© National Geographic Society

Kodachromes by National Geographic Photographer B. Anthony Stewart

To celebrate a local minister's notice of ordination, 80 guests downed 30 bowls of punch before the meeting and those remaining drank 44 bowls afterwards.

Yet, underneath this festivity, serious matters were afoot. Bred in a long tradition of self-government, the Virginia planters were becoming increasingly restive. Great landholders with grants that ran into millions of acres were in no mood to play second fiddle indefinitely to the British Parliament or to their dictatorial representatives over here. Loyalty to the Crown, affinity with the old country—yes. But subservience to taxes imposed from abroad—no, gentle sirs.

Theft of Powder Ignites Rebellion

The panicky action of a royal governor converted the Virginians' smoldering resentment into fiery revolt. When Governor Dunmore on the night of April 20-21, 1775, had powder removed from the Colony's Magazine in Williamsburg, armed rebellion broke out.

Dunmore had once bellowed: "Damn Virginia! Did I ever seek it? Why was it forced on me?" Now, fleeing to his man-of-war lying off Yorktown, the governor could chew at leisure upon the fact that no one would ever again force the King's richest colony upon him.

The men of Williamsburg contributed a spark to the Revolution, but, more important, ideas. In the Raleigh Tavern, Jefferson and his friends set up Virginia's Committee of Correspondence to act as a clearinghouse of plans and proposals for all the Colonies.

Here, too, burgesses routed from the Capitol by the governor gathered to urge the convening of a Continental Congress. In the spring of '76, meeting once more in the House, they drew up three basic documents: the Virginia Resolution for American Independence of May 15, from which directly stemmed Jefferson's great Declaration of Independence; the Virginia Declaration of Rights of June 12, to which we largely owe our later Bill of Rights; and the Virginia Constitution of June 29, a forerunner of our Federal Constitution.

That was Williamsburg's finest hour. And almost in the next tick of history's clock, the town died. Newly elected Governor of Virginia in 1779, Jefferson helped move the capital up the James to Richmond, which was

* See "Stately Homes of Old Virginia," by Albert W. Atwood, NATIONAL GEOGRAPHIC MAGAZINE, June, 1953.



←“And Then What Did the Master Shoemaker Say to the Elves?”

As he tacks up a piece of fine leather, this craftsman at the Bootmaker's Shop spins a tale to a barefoot friend straddling the shoemaker's vise. With 18th-century tools the artisan demonstrates a trade that Williamsburg's George Wilson practiced on this spot in the 1770's.

Wilson's customers liked both shoes made on the same last, so that rights and lefts were interchangeable. A good pair could be had for 5½ shillings; Wilson's finest would cost no more than 12.

Today's kindly bootmaker grows a bit impatient with visitors who refer to him as a cobbler. In 18th-century terms, a cobbler is a mere repairman, heavy-handed and semiskilled.

© Reproductions by National Geographic
Photographer Kathleen Davis



← Cabinetmaker's "Great Wheel"
Spins Its Lathe at 1,500
Revolutions per Minute

Many of the 18th-century tools used in this shop would not look out of place on any carpenter's bench today. Master Cabinetmaker Louis Bullman, his journeymen and apprentices use these same planes, saws, chisels, hammers, braces, and bits to repair furniture on view in Colonial Williamsburg.

"If a craftsman in the old days wanted a certain tool," says Bullman, "he couldn't run downtown to a store. He had to import it or else design one himself and trot it over to the smithy for forging. An apprentice would spend most of his five years of training making his tools."

Fingering a post for a tilt-top table, Bullman cautiously appraises its workmanship, while the apprentice, fagged from turning the wheel, puffs and blows.

↓ Apothecary Norman Marshall dispenses a prescription guaranteed to cure anyone of "pecculant humours and morbid matters." Also for sale at his shop: slippery elm, choice cinnamon sticks, ginger root, and "a Good Wintergreen toothbrush, 5¢ lawful Money."

© Reproductions by National Geographic Photographers R. Anthony Stewart (left) and Bates Littlehale (right)



deemed "more safe and central than any other town situated on navigable water." Shorn of its status as a seat of government, Williamsburg dwindled year by year into genteel decay.

But even today Williamsburg warms her hands contentedly at the banked fires of the past. I took tea one afternoon with Mrs. George Coleman, who lives on with her sister as a life tenant in the family's old homestead, the St. George Tucker House, now a landmark of Colonial Williamsburg. Gray-haired, blue-eyed, her voice as delicate and true as a silver bell, Mrs. Coleman told me:

"I feel as if I'd lived here myself since the 17th century, I've spent so much time with my head in old letters and papers. Let me show you one I ran across just the other day."

Invitation from a General

She handed me a yellowed bit of foolscap on which General Washington in Yorktown had dashed off an invitation requesting the pleasure of St. George Tucker's company at dinner the following evening. I looked at the date: October 16, 1781.

"I presume Mr. Tucker accepted," said Mrs. Coleman. "Which means that he would have been at table with the General when the courier arrived from Cornwallis offering to surrender the next day."

We talked awhile of Williamsburg's long sleep; of how its historic buildings burned or fell apart; of how its major income came to stem from the presence of a State mental hospital, prompting the jibe that the town consisted of "five hundred lazy watching six hundred crazy"—and of how a city once a hotbed of politics could, by 1912, simply forget to open the polls on election day.

"It was a lovely little town, though, when I came to it as a bride in the spring of '99," Mrs. Coleman murmured. "Cows on the Palace Green. A riot of buttercups around the Courthouse. The Duke of Gloucester Street just a dusty track. Many of the sweet old cottages still left along Nicholson and Francis Streets.

"And then the first World War. They built a big supply base near by, over at Penniman, and, before we knew it, we had a concrete highway right down the Duke of Gloucester, hideous garages, false-front stores, telephone poles, and I don't know what all. That war disfigured us. The second would have finished us if Mr. Rockefeller hadn't stepped in."

The \$35,000,000 thus far pumped into the

work of restoration by John D. Rockefeller, Jr., and the additional sums spent by more than 6½ million visitors have given the old town a tremendous shot in the arm, providing jobs, rental incomes, and more varied activities for everyone in it. More than 1,500 persons work directly for Colonial Williamsburg.

It is ironical that the process of re-creating Williamsburg's architectural past should, at the same time, have recast its society into a thoroughly modern mold. A rural town in which one's standing depended almost wholly on one's family and its lineage has reluctantly given way to a highly specialized, urban community which recognizes not so much who you are—your relationship to a Randolph or a Lee—as what you do and how well you do it.

Holdouts there are; some families have refused to sell their homes to Colonial Williamsburg on even the most attractive terms. But many another lady who, a generation ago, would have raised shocked eyebrows at the notion, now lives as a Restoration tenant, or takes paying guests, or trips off to work each morning in colonial costume to play hostess at some tavern or exhibition building.

A whole new class of "outsiders"—from archivists to architects, from editors to costume designers, from motion-picture cameramen to music consultants—has infiltrated the social structure. Its members mingle with the older residents in myriad activities based no longer on family but on specialized interests; where the town once had half a dozen voluntary organizations, it now has 64.

Pirates Helped Pay for the College

The two strongest poles, toward which most of Williamsburg's social energies are attracted, lie at opposite ends of Duke of Gloucester Street—the Capitol, symbol of the Restoration; and the Wren Building, historic core of the College of William and Mary.

A coeducational, liberal arts, State-supported institution, William and Mary has had a row to hoe as hard as it has been long. Its president, Alvin Duke Chandler (page 486), remarked to me one day over our post-luncheon coffee cups, "This college has been built by blood, sweat, tears—and love."

He might have added also: ingenuity. For Dr. James Blair, its founder, was not merely one of the most tenacious men in the Old Dominion but one of its most resourceful. Sent to England in 1691 by the General



↑ **Master Crutchfield Fills
This Wicker Basket with
a Fragrant "Baker's Dozen"**

An authority on colonial breadmaking, the master of the Raleigh Bake Shop uses stone-ground unbleached flour from an old Virginia mill to turn out scores of white and whole-wheat loaves, gingerbread cavaliers, tarts, mincemeat pies, beaten biscuits, and even fruitcakes.

Building a hot fire of hickory and oak inside his brick oven, he heats it to about 600°, then rakes out the embers and pushes the dough in on a long paddle. Bread takes about 25 minutes and comes out with a crisp crust ready for buttering.

→ Few 18th-century crafts demand a more delicate, skilled touch than that of the spinner. Her fingers lightly controlling the long flaxen fibers as they run off the skein onto the wheel, this young helper in Mistress Bonnie Brown's shop tries to keep the thread continuous and uniform in thickness. Once spun, linen thread must be wound on reels to clock its yardage, then removed and bleached in the sun for a month before going to the loom.

© National Geographic Society

Illustrations by National Geographic Photographers
B. Anthony Stewart





A Colonial Gristmill Soon May Be Grinding Meal for Raleigh Tavern's Baker

Beneath a portrait of Dr. W. A. R. Goodwin, once rector of Bruton Parish Church and leading spirit in Williamsburg's restoration, architect A. Edwin Kendrew shows how the 18th-century mill worked. Model-maker Edward P. Hamilton spent more than 1,000 hours in painstakingly building the miniature shown. Full-scale, the 2-story mill will probably stand near the Palace Green, its cloth-covered sails providing power to turn the great millstones—when the wind blows. The entire structure can be turned to match the wind's direction.

Assembly to secure a charter for a college of liberal arts and sciences, Blair ran into formidable opposition. When he pleaded with the King's Attorney General that the new school would educate ministers to save Virginians who "had souls to save as well as the people of England," Seymour retorted, "Souls! Damn your souls! Make tobacco!"

But though it took him two years of hard plugging, Blair won his charter from King William and Queen Mary, plus £2,000 in quit-rents, 20,000 acres, a penny tax on every pound of tobacco exported from Maryland and Virginia to the other English colonies, and a share of the fees and profits of the office of Virginia's Surveyor General.

Not content with that, Blair got in touch with several English pirates awaiting trial and persuaded them to give the new college a cut of their loot if he secured their pardon or arranged lighter sentences. He also prevailed upon the executors of the estate of the great physicist Robert Boyle (discoverer of Boyle's law) to endow an Indian School to be run by the college.

Fittingly enough, the man selected to become William and Mary's first president was James Blair. Three buildings long comprised his entire institution: the Wren, described by a contemporary observer as "beautiful and commodious, being first modelled by Sir Christopher Wren, adapted to the nature of the

Country by the Gentlemen there"; the Brafferton, erected in 1723 through Boyle's bequest; and the President's House, in 1732. Handsome as these edifices were (and still are, thanks to Mr. Rockefeller's painstaking work of repair and restoration), William and Mary's glory lay rather in its boys than in its brick.

For, on its roll of fame, the college can number these: 15 members of the Continental Congress; four signers of the Declaration of Independence, as well as its author; four of the country's first 10 Presidents—Washington (though not an alumnus, he was commissioned a surveyor by William and Mary and later made its Chancellor), Jefferson, Monroe, and Tyler; four Justices of the Supreme Court (led by the majestic John Marshall); four Secretaries of State; three Speakers of the House of Representatives; 30 Governors; 30 Senators; and a host of other public servants.

No mean roster. But to such honors may be added others. In 1779 William and Mary became the first American college to develop into a university; to set up the elective system of studies; and to install an honor system.

It was also the first to confer medallic prizes, and to establish schools of modern languages, municipal and constitutional law, and modern history. And here Phi Beta Kappa was founded (page 486).

In quite another century President Dwight D. Eisenhower, accepting a degree from William and Mary, defined a university as "a place where young minds are exposed to great minds" (page 480). The little college at the foot of Duke of Gloucester Street could qualify from the first. It may have lacked central heating, electricity, laboratories, card-index



469

National Geographic Photographer H. Arthur Stewart

Buckskin Pads Rock Red Ink Across Caslon Type

August Klapper and his printer's devil keep this faithful replica of an 18th-century press busy turning out handbills, Christmas verses, bookplates, and proclamations for Colonial Williamsburg. In older days a master printer might also sell false teeth and surveyor's instruments, act as middleman in cattle bargaining, and operate an informal post office.

files, a football team, and other facilities now reckoned indispensable. But it had a faculty that could rouse and inspire young minds.

Take the experience of youthful Tom Jefferson, as I learned of it one afternoon from William and Mary's beloved librarian emeritus, Dr. Earl Gregg Swem, retired but still very much a part of the college.

"Jefferson was only 17 when he came to Williamsburg," said Swem. "He'd had a pretty good classical education already. But he was curious—terribly curious. Well, he found three men here who could answer most of his questions about life and men and politics, and even suggest a few he'd forgotten.

"They were George Wythe and William



© National Geographic Society

470

Children in Smart Phaetons Ride Past the Palace Green Where Royal Governors Promenaded

"Insatiable little sponges," said one official proudly of the 42,000 youngsters who invaded Colonial Williamsburg's streets last year, armed with a hundred unpredictable questions apiece.



Flowering Catalpas Frame Counselor George Wythe's Primly Handsome Town House

Adviser to two governors, signer of the Declaration of Independence, first professor of law in any American college, tutor to Jefferson and Marshall, Wythe stands out as one of Williamsburg's most distinguished citizens.



A Man-size Napkin, Worn in Colonial Style, Amuses the Queen of Greece

A two-day tour of Williamsburg climaxed a transcontinental tour of the United States for King Paul (not shown) and Queen Frederika last November. Crowds lined the streets as the royal couple drove through the restored city; King Paul received a scroll from the College of William and Mary. Here at dinner in the King's Arms Tavern, Kenneth Chorley, president of Colonial Williamsburg, Inc., shows the Queen how napkins were worn about the neck. At left is Williamsburg's mayor, H. M. Stryker.

Small and Governor Fauquier. Wythe, you know, was America's first and greatest college professor of law, the man who trained not only Jefferson but Marshall and Henry Clay and Edmund Randolph. Small was professor of mathematics and natural philosophy—"an enlarged & liberal mind," according to Tom. As for Governor Fauquier, Jefferson called him 'the ablest man who had ever filled that office.'

"And where d'you suppose they all met? Walking around town or sitting at the governor's table, conversing night after night on all manner of subjects. It makes quite a picture: the professor, the jurist, the King's personal representative, and the 17-year-old student who was to eclipse them all. I don't suppose a college can offer that kind of education to every student, but I'm glad we did to this one."

Oddly enough, it was Jefferson himself who struck three of the worst blows his alma mater

suffered: he helped sever the Colony's bonds with Great Britain, which promptly cut off as well the college's main endowment; he helped shift the capital to Richmond, which removed Williamsburg's most potent stimulant; and he was instrumental in the founding of the University of Virginia, which became a magnet for the State's funds, interest, and students.

College Marches Off to War

Wounded but still vital, William and Mary nevertheless grew slowly in numbers and in academic prestige. Then, on a morning in April, 1861, the fourth and nearly fatal stroke descended: civil war.

"The president, the faculty, the boys—all dropped their books and picked up their guns," Dr. Swem related. "And when the last shot died away at Appomattox, four years later, it looked as if William and Mary had been a casualty of the war, too. Some drunken Union troops had set fire to the Wren Building and

guttled the library. The faculty had scattered; the students who might have come back were impoverished or dead or preoccupied.

"Only one man kept William and Mary and its charter alive: President Benjamin S. Ewell. Funds ran out in 1881, and regular sessions had to be abandoned; but for eight years Colonel Ewell rode in from his farm anyway, on the first day of each term, rang the old college bell, and taught a handful of youngsters who had no money but were nearly as stubborn as he was. In 1888 the State came through with a grant of \$10,000, which was increased biennially."

William and Mary never looked back. In 1906, under President Lyon G. Tyler, it became a State institution; in 1918 it went coeducational; and under Julian Alvin Carroll Chandler it grew from 130 students in 1919 to 1,300 in 1954, with 15 new buildings added. President John Stewart Bryan greatly raised the college's standards of scholarship, and his successor, John Edwin Pomfret, consolidated these gains.

Now, with retired Vice Adm. Alvin Duke Chandler, son of former President Julian Chandler, at the helm, the college seems headed for dynamic days. As one of his aides remarked to me, "The 'Duke' is as full of ideas as a Christmas goose. Gets along on about four hours' sleep. He drives us hard, but nobody harder than himself."

Governor's Pistols Barred the Faculty

A stocky, direct, but affable gentleman, Chandler laughs easily, and especially at the notion that William and Mary constitutes some sort of ivory tower. "Don't let anybody ever tell you a college is a place to retire to," he said to me one day. "Some of my predecessors, back in the old days, were burned in effigy by the students. And Dr. Blair, who founded this college—d'you remember what happened to him? Governor Nicholson handed out three pairs of his pistols to a bunch of the boys, so that they could bar the faculty from the grammar school and even blast away at Dr. Blair—just to get a longer Christmas vacation! I just hope the present Governor of Virginia doesn't get any merry ideas like that."

William and Mary's campus is considered one of the most impressive and well-ordered in the country. In addition to its three pre-Revolutionary gems—the Wren Building, the Brafferton, and the President's House—there are 18 other great buildings (dormitories,

classrooms, a library, a gymnasium, academic offices), grouped around a sunken garden where Patrick Henry once drilled his "Patriot Boys." But with a student body now of some 1,600, the college is popping at the seams.

"We hold classes everywhere," said President Chandler, "in the gym, in the Wren Building from its cellar to its attic, anywhere we can find a desk and some chairs. The library is bulging with about 300,000 volumes; we need a new home for it. And we need a Student Union. Outside of the fraternity lodges and sorority houses, there is no real place for the youngsters to get together socially. Well, we'll get all of these things... in time."

Students Stole the Bell Clapper

At the president's suggestion, I had a chat the next day with a man whose service to William and Mary spans not only Chandler's career but that of four other presidents, back to 1888: Henry Billups, the college's old Negro bell ringer, mail carrier, and general factotum. I found him in the Wren Building, ringing the 7:55 bell that summons the morning's first classes. A venerable felt hat sat squarely on his grizzled head; from his vest dangled the gold bell given him by the college alumni after the first 45 of his 66 years on duty.

Henry gave a final tug at the rope. As the last peal up above us died away, he turned to shake hands.

"I rung that bell when this young Chandler got to be president, and I rung it for his father when he was a student. Had to take care of this whole building then, the onliest building there was on the campus for teaching. Had to build all the fires for the professors by 8 o'clock and saw the wood—I used to saw 30, 40 cords of wood every winter—but I never got tired."

We talked awhile of changes he had seen; of students, long dead, who had stolen his bell clapper, compelling him to climb the steeple and strike the hour with a hammer; and of Dr. Hall who felt he couldn't smoke in the presence of ladies and so, at faculty meetings, would sit outside and listen through the half-open door, puffing at his pipe and occasionally bellowing an apt comment at the chairman. Then Henry nodded a courtly goodbye and shuffled down the hall to take breakfast before resuming the day's chores.

I went out onto the balcony that projects above the Wren Building's main entrance.



↑ **"Beyond Question, My Lady,
'Tis a True Beau Catcher!"**

In Mistress Hunter's millinery shop on Duke of Gloucester Street, ladies of Williamsburg could find anything from a fetching informal bonnet to "black love ribands," riding habits, toys, and busts of the well-beloved governor, Lord Botetourt.

↓ **Doll's Hair or Formal Wig,
Peruke Maker Obliges Cheerily**

Few gentlemen drop in nowadays at the King's Arms Barber Shop for a shave, a wig fitting, the extraction of a tooth, or a little bloodletting, so Master Robert White has time to spruce up the coiffure of Susie Schlesinger's young friend.



Running my eye along the walls to either side, I could see plainly the odd curvature and some of the blackened brick that are the Wren's honorable scars left by three fires. Below me stood the graceful though somewhat battered statue of the royal governor, Lord Botetourt (pronounced Bottytot), great and good friend of the college; and near it the Revolutionary cannon which the first President Chandler had to have plugged with lead so exuberant students could no longer fire it (page 483).

Rambling back through the Wren—this oldest of America's academic buildings and oldest building in Williamsburg—I found it already murmurous with activity.

Students All Know Each Other

In the Great Hall, beneath the serried portraits of Randolphs and Bollings, a bevy of girls in gym shorts were strenuously studying modern dance (page 485). In the old kitchen three actors ran through their lines on the stage while six others in the audience took notes and nodded sagely. Up on the third floor a professor droned a passage from Pope to a class arrayed on old pine benches.

I left, and strolled along one of the many brick walks that interlace the campus. Students, singly and in couples, tossed me an invariable "Hi!" or a genial grin, underscoring my own impression of William and Mary: that it must be a singularly relaxed, informal, and friendly place in which to live and work. Hugh De Samper, a young alumnus working as news editor up the street at the *Virginia Gazette*, put it this way for me:

"I suppose we like the old place because everyone we pass is a person, not a mask. Everyone in a class knows everybody else; if he doesn't, he hasn't tried. And the faculty—they're our friends, not our wardens. Look at the soft-ball league in the spring."

"What about it?"

"Well, the faculty has its own team, playing against the fraternities. I used to know the line-up. Chemistry on first base, Mathematics on second, Psychology on third and short, Physical Education, Modern Languages, and Sociology in the outfield, Physics pitching, and—let's see—Fine Arts catching."

Divisions and cliques along economic lines don't form easily at William and Mary, according to John Laughlin, an honor student and fraternity president. Over a Coke at the Corner Greek's he told me: "Nobody can have a car. We all dress pretty casually. The

fraternity lodges are built alike, give much the same kind of dance, and don't put any great emphasis on money or social position. Even if a fellow had a big allowance to spend, he couldn't throw it around very far in Williamsburg, and he'd look rather odd if he did. A lot of us work our way through, you know."

One story they tell of Dean "Texas Joe" Farrar, though it has a legendary flavor, illustrates at least that this friendliness and democratic spirit haven't led to any mollycoddling of the boys. Sometime back, when a few students were still living off campus in a boardinghouse, two of them came to Farrar and complained of their living conditions. They said that, the night before, they'd even seen two rats scrapping in their room.

Texas Joe looked at them calmly. "How much are you fellows paying for those rooms?"

"Forty dollars."

"Well, what do you expect for \$40—a bullfight?"

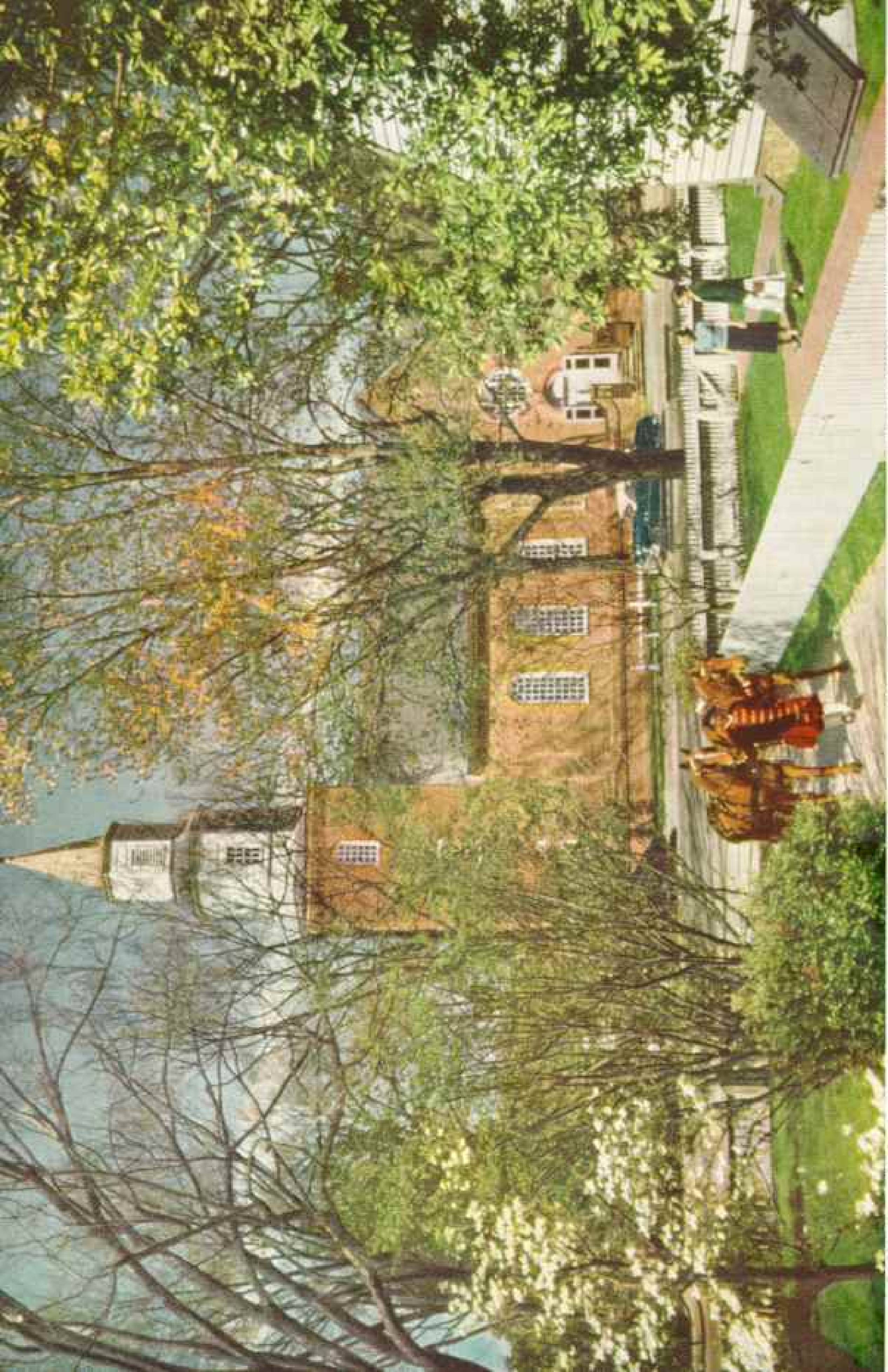
Many of the girls live in sorority houses in their senior year, but a growing number, like Elizabeth Lewis, are declining the privilege. Libby, an auburn-haired, brown-eyed Phi Beta Kappa from Bethesda, Maryland, told me she was staying on at her dormitory "because there are still a lot of girls I don't know, or know well enough, and I don't want to miss the chance."

Spring Plays Hob with Studies

President of the Women's Honor Council, active in many student affairs, and top scholar in mathematics, Libby complained of nothing about Williamsburg but its beauty. "You should be here in the spring! There's nothing like it anywhere. We have to do all our work in the first semester; after March it's just impossible to concentrate."

To John Marsh, a premedical student and holder of a Chancellor Scholarship, Williamsburg and the Restoration are an old story: he grew up in the town. "The 18th century was always home to me," he said. "It used to amaze me when I'd take a trip to some other city and see all the neon signs and hot-dog stands and traffic lights, and so forth."

John's schedule leaves him little time to brood over such contrasts, however. The day I met him for breakfast at 7, he had classes scheduled from 8 to 11, then he was to give a Red Cross blood donation. From 1 to 4 he would be working in the embryology lab, then practicing with the college choir till 5:15. At



♣ Bells of Venerable Bruton Parish Church Rang Out News of America's Declaration of Independence

♣ Oldest Episcopal church continuously in use in Virginia, Bruton antedates Williamsburg itself. Here, as young men, worshipped Presidents Washington, Jefferson, Monroe, and Tyler. Tablet to right of pulpit, erected by John D. Rockefeller, Jr., honors memory of the late rector, Dr. W. A. R. Goodwin, "in whose Heart and Mind was conceived the Thought of restoring the Beauty of this Ancient City and who was himself the Inspiration of its Fulfillment."

177

© Rockefeller for National Geographic Photographers Dr. Anthony Henry and Donald Stobbs



5:30 he would eat supper, attend a Wesley Foundation meeting, and spend the small hours of the evening studying philosophy.

On other days he would have to squeeze in his duties as a fraternity secretary, a member of the Men's Honor Council, and vice president of the Student Religious Union. Only on Saturday nights could he be sure of finding a free moment to date his girl.

John wasn't complaining about his curriculum. "I almost wish I could have another four years of it," he confided to me. But I wondered what young Tom Jefferson would have thought of such a treadmill—Tom, who could get his education in political science by walking up to the House of Burgesses to listen outside the door as Patrick Henry ("the very Devil in Politicks—a son of Thunder") orated within (page 452); or by strolling over to Counselor Wythe's parlor for a discussion of Voltaire's new theories (page 470); or by sitting down with the governor to speculate upon parliamentary maneuvers in London.

College and Restoration Cooperate

President Chandler would like nothing better than to make William and Mary once again the kind of training ground in leadership that it was in Jefferson's day. As he remarked to me: "We're rededicating the School of Law this September, you know. It's called the Marshall-Wythe School of Law; Wythe held the first Chair of Law in an American college, here at William and Mary, and Marshall took his formal training from Wythe."

Many bridges already connect President Chandler's college with the restoration of the town that Jefferson, Marshall, and Wythe knew so well. The Institute of Early American History and Culture fuses some of the resources and research capacities of William and Mary and of Colonial Williamsburg, Inc., and is sponsored by them both; its distinguished publications reflect credit on everyone concerned. Students find part-time jobs in almost every phase of the Restoration's work, from serving at the King's Arms Tavern to pumping the bellows at Deane Forge. Last year Colonial Williamsburg, Inc., accounted for nearly half of the \$135,000 that undergraduates earned.

For its part, the college has offered its steady cooperation to the Restoration's program with its own dramatic troupe, its excellent choir, its richly stocked library,

Next year will mark the 200th anniversary of John Marshall's birth. To celebrate it and to honor at the same time the Chief Justice's distinguished teacher, a committee headed by Dean Dudley W. Woodbridge of the Law School has raised money from American members of the bar to have busts made of both Marshall and Wythe, for display in the College building that bears their names.

"We think of Marshall," Woodbridge reminded me, "as a man who laid down the principle that the Supreme Court can overrule any law that conflicts with the Constitution. And rightly. But Marshall was only following a precedent set by Wythe when he was chancellor of a court of equity in 1782. Case of *Commonwealth v. Caton*. Funny thing is that most of the lawyers I've been writing to about these busts never even heard of Wythe."

Turning to the restoration of Wythe's hometown, the Dean grinned wryly, "Lots of people appreciate what's been done, and the meaning of it. Lots of others are like pigeons on a statue, you know. To them it's just a place to sit down and rest their feet."

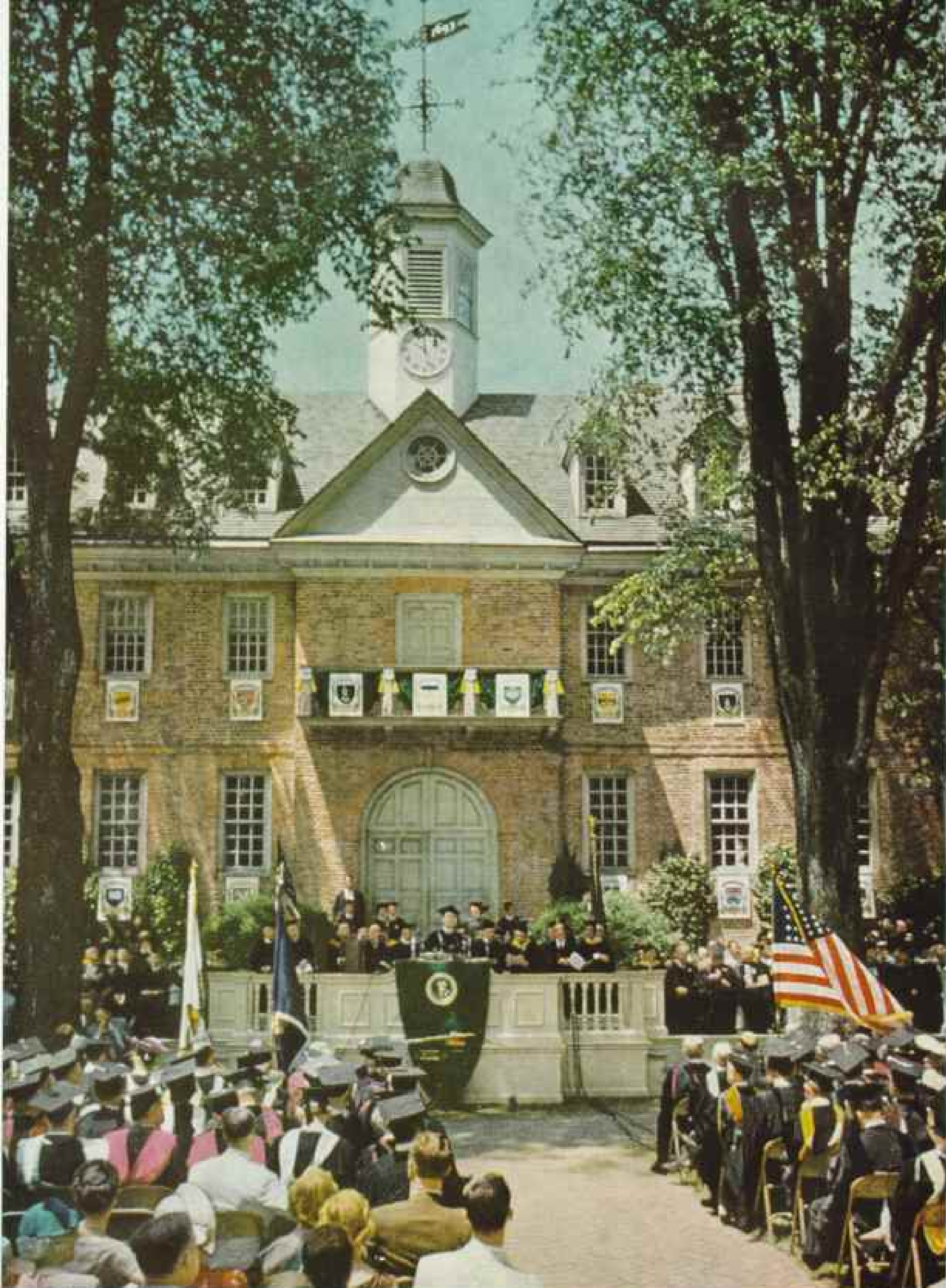
The innocence of history of some visitors is fantastic. Every year an appallingly large number of Americans ask the information clerks at the Reception Center: "Can you show me the way to Grant's Tomb?" or "Which street do I take to Mount Vernon?"

The GI and General Washington

But for each indifferent or ignorant visitor to the Restoration there are 10 who bring an informed curiosity and take back with them—well, a measure of inspiration. Kenneth Chorley, husky, perceptive president of Colonial Williamsburg, Inc., told me of one of these (pages 472, 480).

"He was a GI," said Chorley. "A soldier from Fort Eustis down the road, who'd come up in a truck with the rest of his unit to tour Williamsburg. Part of our wartime program. I saw this boy in the Clerk's Office at the Capitol. He'd become separated from his buddies, and he was standing all alone in front of that Peale portrait of Washington. Suddenly I heard him mutter, 'You got it for us, General. And, by God, we're going to keep it!' And he saluted."

Chorley paused a moment. "You know, I told that story to Mr. Rockefeller a few weeks later. When I'd finished, he looked up at me, and there were tears in his eyes, and he said quietly, 'Then it was all worth while.'"



Beneath Wren's Historic Façade, Dignitaries Honor One President, Inaugurate Another

In a ceremony of double significance, America's second oldest college, William and Mary, bestowed in May, 1953, an honorary Doctorate of Laws upon Dwight D. Eisenhower and inducted Alvin Duke Chandler as its 23d president.



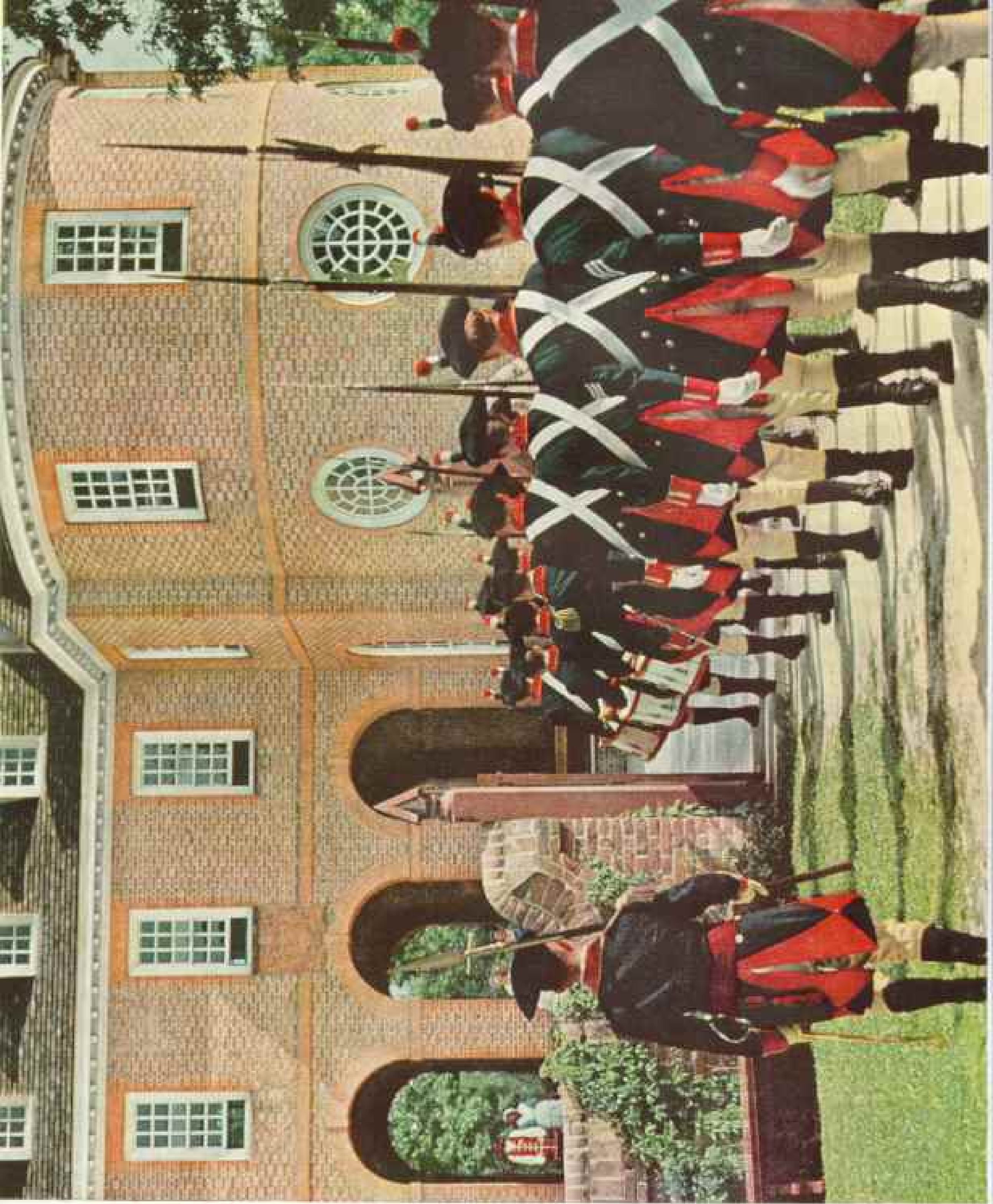
↑ Guard Presents Arms as Commander in Chief Leaves the Capitol

Buff- and -blue - uniformed Monticello Guard, formed in 1745 from "The Gentleman Volunteers of Albemarle," claims service in every major American war from the French and Indian border fights to the Normandy beachhead. Here, bearing muskets and spearlike halberds and spontoons, it acts as honor guard for President and Mr. Eisenhower on the 177th anniversary of the Virginia Resolution for American Independence.

Winthrop Rockefeller (left), bearded chairman of Colonial Williamsburg, Inc., and Kenneth Chorley, its president, accompany the Chief Executive. A key figure in the restoration project, Chorley is still preoccupied with new means of making historic Williamsburg "come alive" for its visitors.

→ Graceful facade of the reconstructed Capitol is laid up in Flemish bond from hand-made bricks kilned at Williamsburg. Clay is dug from vacant lots within the town itself. Hauled to the brickyard, the clay is churned in a horse-powered "pug mill," then poured into sanded wooden molds, dried for several weeks, and then baked.

© ROBERTSON by National Geographic
Photographer H. Aubrey Stewart



Pirates Helped to Finance Historic Wren Building, Oldest U. S. College Hall

Sent to England in 1691 to secure a charter and an endowment for a Virginia college, Dr. James Blair overlooked no opportunities for fund collecting. He even wrung loot from British pirates awaiting trial, promising to intervene in their behalf.

Still the architectural jewel of the William and Mary campus, Blair's first building was described by an early commentator as "beautiful and commodious, being first modelled by Sir Christopher Wren, adapted to the nature of the Country by the Gentlemen there."

Revolutionary cannon is now safely plugged with lead. William and Mary students of an earlier day enjoyed firing it to celebrate victories or just to awaken the president.

↓ A freshman in green-and-gold cap gives the traditional autumn curtsy to the statue of Lord Botetourt, benevolent patron of the College. Men students must bow and doff their hats, sweeping their headgear low enough to hit the sidewalk. The battered statue, dated 1773, once stood in the breezeway of the Capitol. After reins of government were removed to Richmond, it was bought by the William and Mary faculty. Its inscription fondly advises: "America, Behold Your Friend."

© National Geographic Society

482





483

On Wren's Stiff Benches → a New Generation of Students Sits Uneasily

Still on active duty after two and a half centuries, the 21-room Wren Building serves today as a major academic hive. "It's absolutely impossible to dose on those seats," say students.

Thrice burned, the Wren Building was restored to its original beauty in 1928-32.

First college in America to receive a royal charter, William and Mary was established to ensure—among other objectives—"that the youth may be piously educated in good letters and manners."



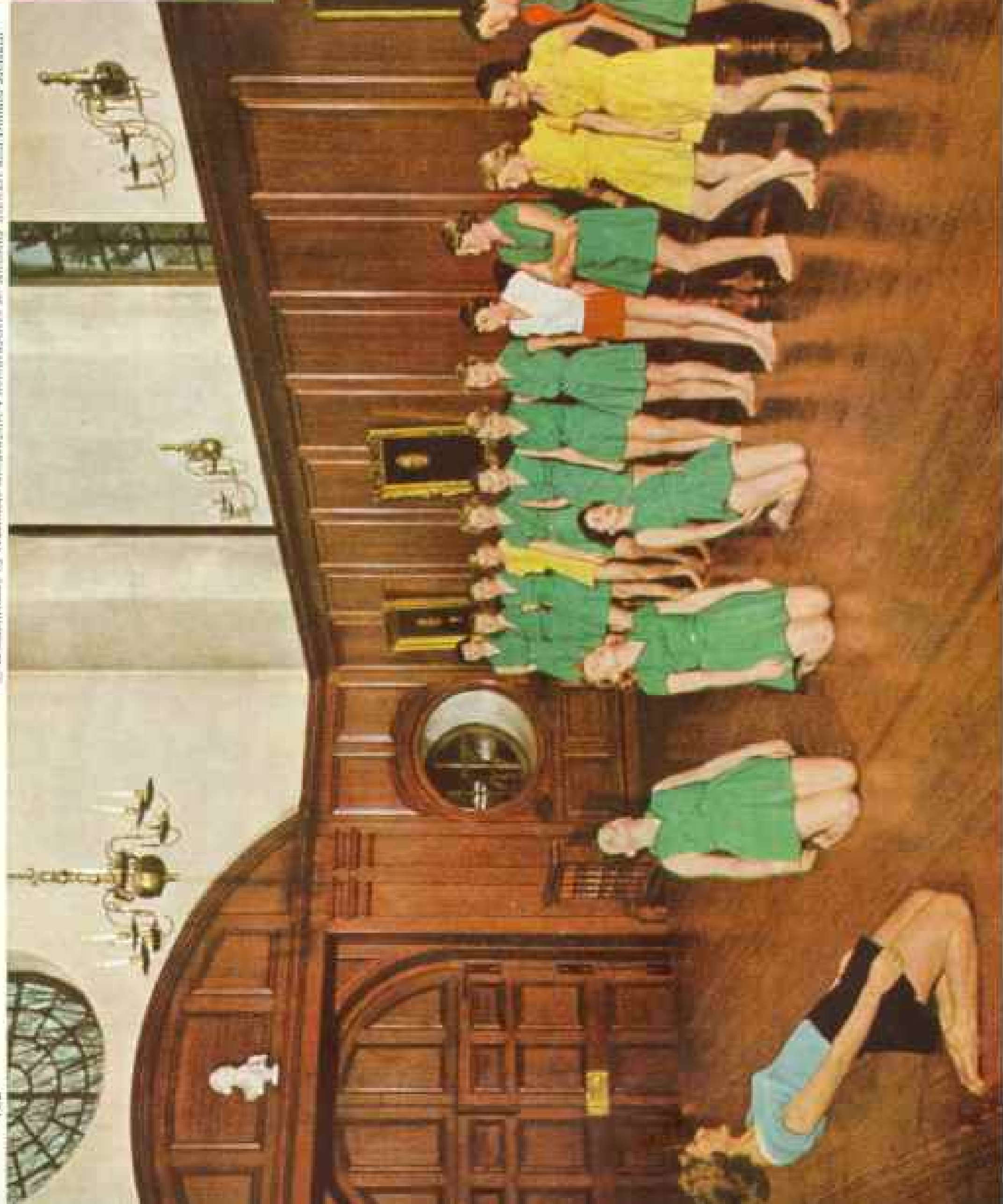


College Choir's Anthem Peals Across Oak-paneled Chapel of Wren Building

Built in 1732 in the style of a Church of England chantry, this Georgian chapel now brings William and Mary students together for weekly services. Open on the altar is the "Booke of Common Prayer, Imprinted at London by Robert Barker, Printer to the Kings Most Excellent Majestie, 1616." Buried in a crypt below are such illustrious colonial figures as Sir John Randolph, Peyton Randolph, and Lord Botetourt.

For last-minute cramming, a student curls up in one of the Great Hall's circular windows.

© Easthouse for National Geographic Photographers B. Arthur Hewett and Donald Moffatt



Splinter-free Floor of Wren's Great Hall Is Kind to Bare Feet

Where Virginia's House of Burgesses met in solemn session before completion of the Capitol in 1704, William and Mary girls now learn modern dance. Here an instructor (left) leads pupils in a body-control exercise.

Paneled in native pine, this wing of the Wren Building has been used also as the college refectory, a hospital ward in Revolutionary times, barracks for Confederate troops, a ballroom, and a classroom. Portraits of the Randolphs and the Bollings, long prominent in Virginia affairs, look down gravely upon the barefoot coeds.



These Spartan, Aristocratic Warriors, Scornful of Civilization,
Fearlessly Hunt Big Game with Spears and Swords

BY EDGAR MONSANTO QUEENY

*With Illustrations from Photographs by the Edgar M. Queeny—American
Museum of Natural History Expedition*

IT was a black African night. The air was heavy with the odor of rancid sheep fat smeared over a thousand African bodies.

A thousand African minds were wondering for what purpose the big square white cloth and small box had been erected on top of one of our trucks; why another box with two projecting wheels had been placed on the top of a second truck a hundred feet away; why a generator was "putt-putting" noisily.

Masai Outrout the Lion

We were in the vicinity of Narok, about 100 air miles from East Africa's modern city of Nairobi. The date was January 18, 1953. But the customs and spiritual concepts of the Masai tribesmen crowded about us were separated from Nairobi by thousands of years: from the Iron Age to the Atomic Age.*

We were about to bridge the gap by showing the Masai a motion picture of themselves, in color and with sound, which we had made three years before.

Then it happened. On the screen their own warriors, their *moran*, danced before them; out of the sound box came Masai words and Masai chants. Lions appeared on the cloth and roared! The result was electrifying.

Their expression of glee, "ooooh-eeh! oooooh-eeh!" was repeated ten times a thousand times. The din drowned our sound; we increased voltage, turned up amplifiers, all to

no avail. Showing the first motion picture ever seen in this part of Masailand had been an unforgettable experience (page 504).

Anyone who has been to East Africa on safari has probably seen something of the Masai, for they live in big-game country; their reservations meet along the border between southern Kenya and northern Tanganyika (map, page 491).

Here old Masai men and boys, spears in hand, guard herds of cattle whose long, curving horns, prominent humps, and pendulous dewlaps suggest zebu ancestry (page 488). In circular encampments of dung-plastered huts, Masai women go about their household tasks wearing huge beaded necklaces and leggings and armlets of wire (pages 492 and 501). Near them play timid children whose eyes are often covered with flies.

Raiding Bands Once Roamed East Africa

But most impressive are the *moran*—the warriors—stately young men carrying long-bladed spears. Their heavily greased and red-ochered hair is braided into pigtails; their ocher-painted bodies are partially covered by two yards of ocher-stained calico knotted over their right shoulders. Projecting ominously at each man's right side is his *olalem*—a short, wicked-looking sword (page 496).

The *moran*, once the scourge of East Africa, used to raid neighboring tribes and other Masai encampments for cattle. Even now occasional raids are staged. Masai warriors spear lions and leopards molesting their stock, and tackle an occasional rhino gone berserk.

Only the pure Masai of the hinterland observe all the old customs our film had recorded. Masai living on the fringes of the reservations have had contact with Europeans, or have intermarried with other tribes, and are much less strict.

They are a temperamental, sullen, difficult,

* See "Safari Through Changing Africa," by Elsie May Bell Grosvenor, NATIONAL GEOGRAPHIC MAGAZINE, August, 1953.

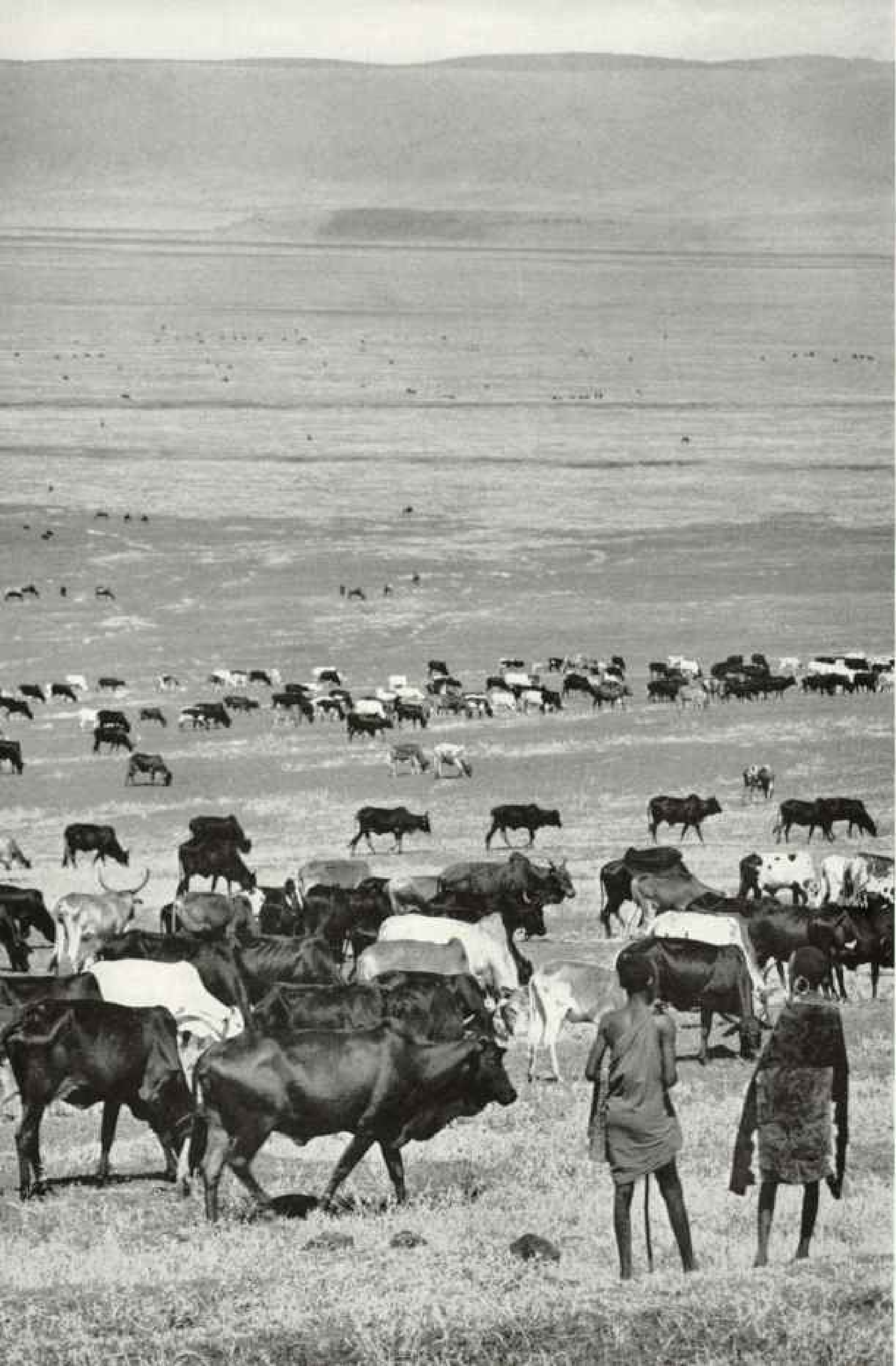
← Among William and Mary's "Firsts": In December, 1776, Its Students Formed Alpha Chapter of Phi Beta Kappa

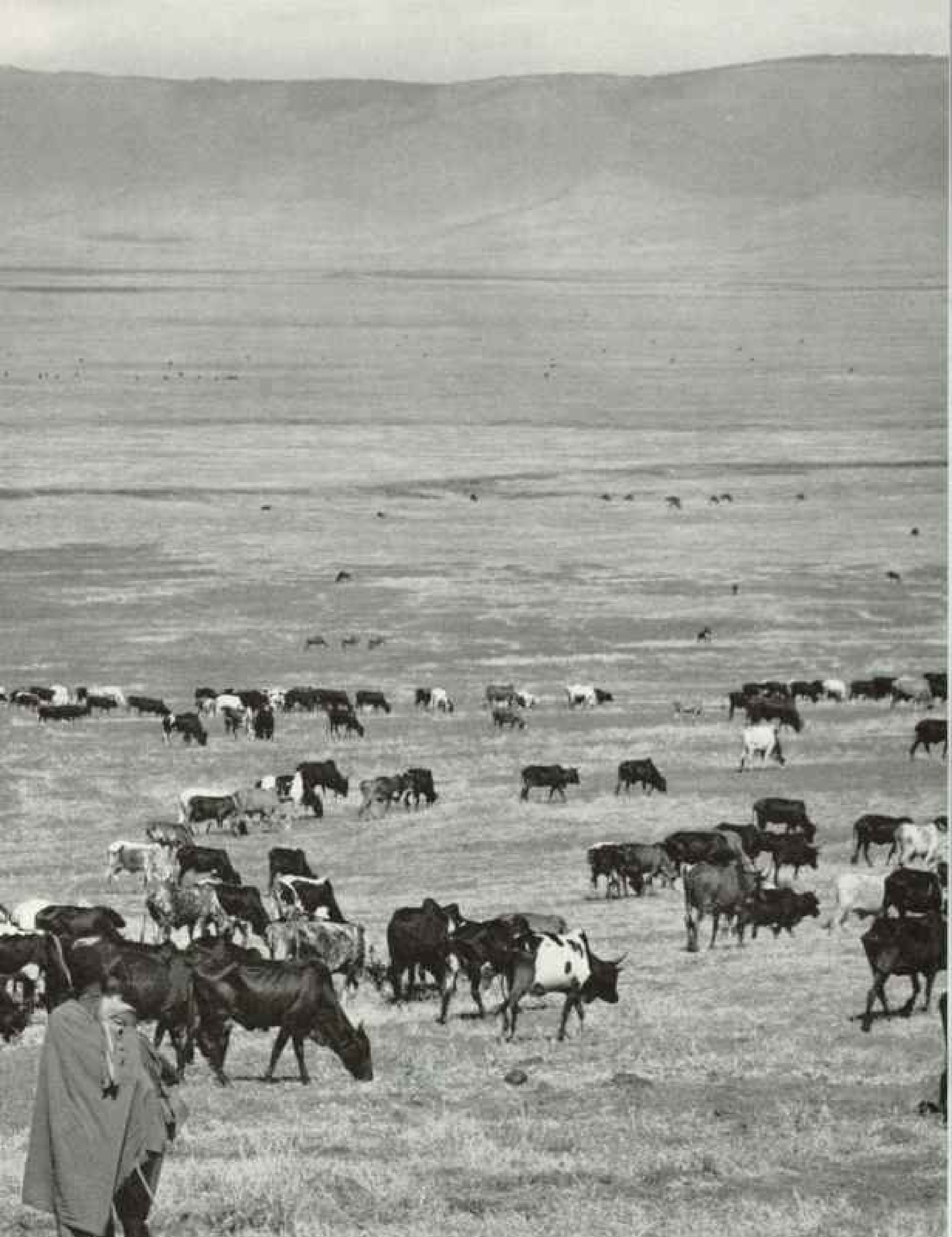
A small group of William and Mary undergraduates formed America's most famed honor society. Traditionally, the first meeting was held in the Raleigh Tavern's Apollo Room. Scholarly initiates of 1954 listen (upper) as Dr. A. P. Wagener explains the society's key.

Lower: Alvin D. Chandler and his wife entertain two young "Phi Bete's" at tea in the President's House, home of every head of the college since its founding in 1693.

© National Geographic Society

Kodachromes by National Geographic Photographer B. Anthony Stewart





Humped Cattle Roam the Plains of Masailand

In Kenya and Tanganyika 100,000 nomadic Masai graze approximately a million animals, seriously overpopulating existing grasslands. To the tribesmen, quantity instead of quality is important; they show little interest in British efforts to aid them in improving stock. Here in Tanganyika's Ngorongoro Crater, zebu-like cattle share pasture with wild game (background).

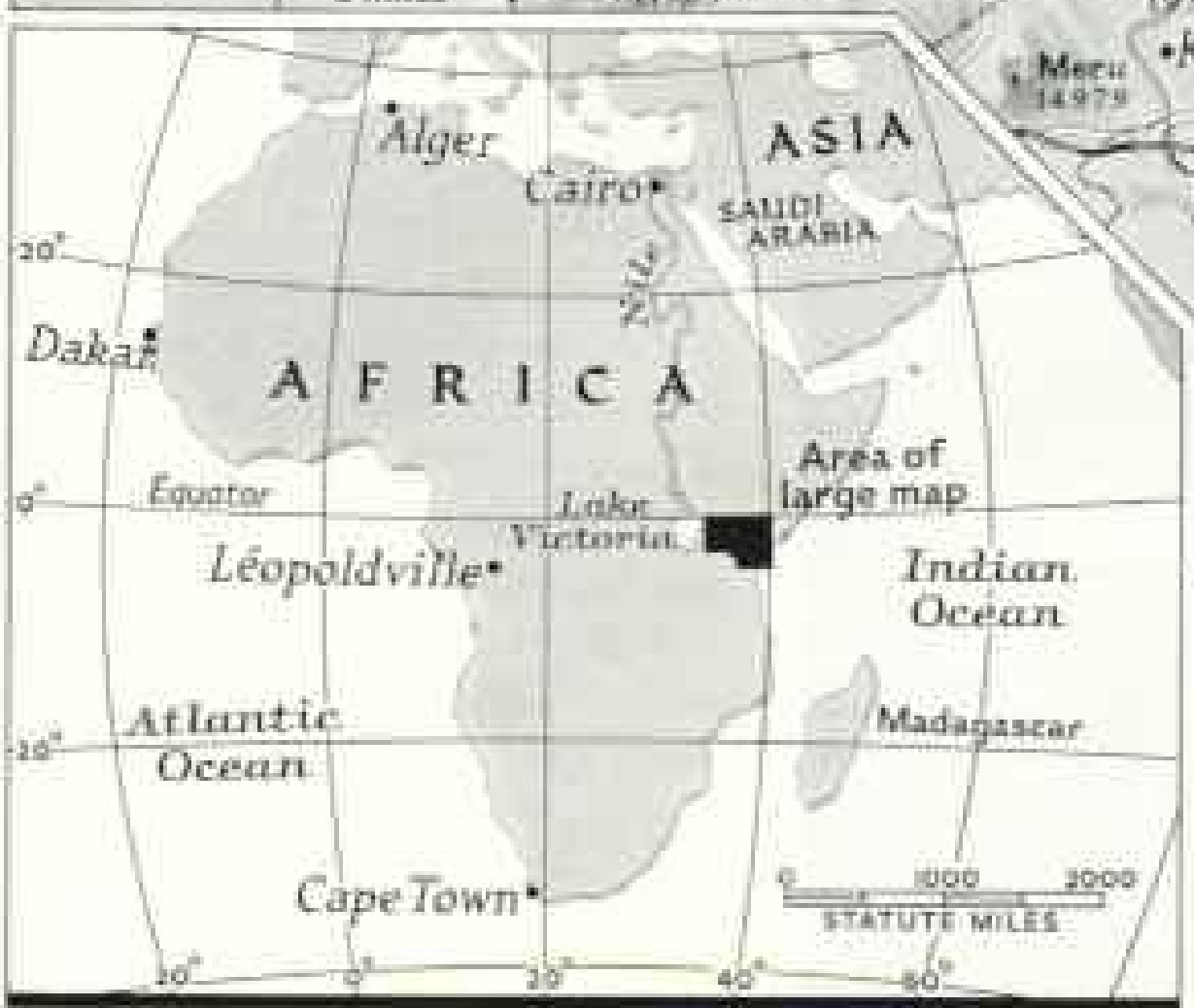


Rapierlike Pigtails Flying, Lanky Warriors Work Up Fervor for a Lion Hunt

Taller than many African tribesmen, Masai develop powerful physiques on a diet mainly of meat and milk. These spearmen of Kenya dance the *namba*. They take turns jumping, each trying to outdo the other, and land stiff-legged, coughing like the king of beasts. Those not dancing chant the cadences.



The dashed lines indicate Masai tribal reserves. In addition to the area shown here, the Tanganyika reserve extends 195 miles farther south.



Masai, Once Terrors of East Africa, Live Today on a Vast Reserve

British administrators allot the wide-ranging tribesmen a 38,000-square-mile reservation, much of it arid. To film Masai life for the American Museum of Natural History, the author led an expedition to tribal areas deep in East Africa's hinterland.

and diffident people. The haughty moran eyes the visitor and his entourage with disdain.

Beneath the forbidding surface of the Masai, however, lie substrata of warmth, humor, fidelity, and integrity. This deeper character is discovered only through prolonged and rather intimate association. The casual visitor never sees it.

I first met the Masai in 1950, when I spent several weeks in their country, photographing the story of the honey-guide for New York City's American Museum of Natural History.* This bird has a unique partnership with African natives. When a honey-guide finds a bee tree, it flies to the natives and leads them to the tree. The tough-skinned Africans ignore stings by the score as they chop out the hive and, to reward the bird, leave a bit of the honeycomb near the tree. Honey beer is the favorite drink of Masai elders.

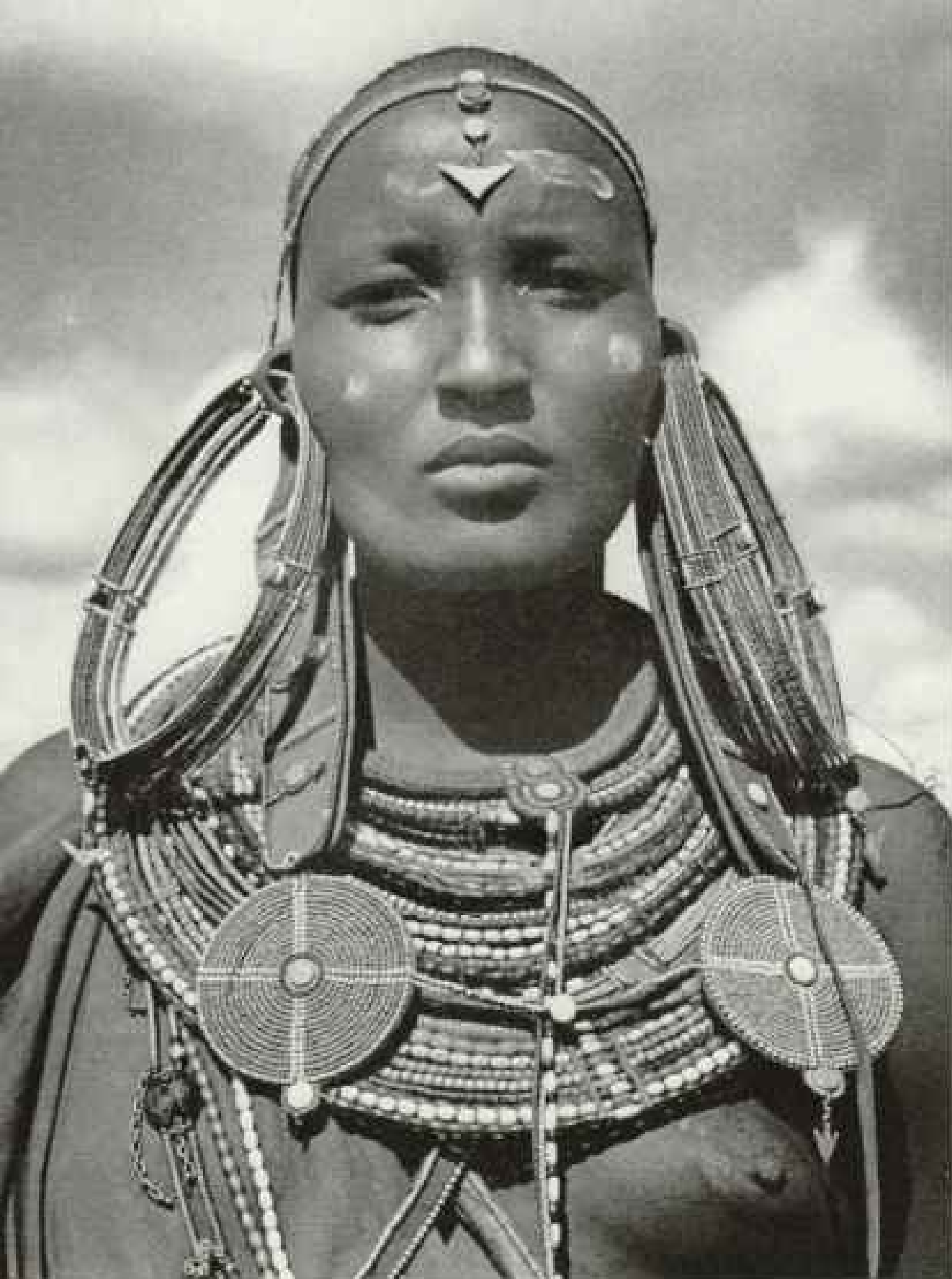
During that safari Masai visited our camp

occasionally, listened with obvious pleasure to our sound recordings, and displayed a rather sophisticated interest in us. Their demeanor made me want to know them better. Opportunity came when the museum commissioned me a field associate to make a documentary movie of the Masai.

I engaged Donald Ker, dean of East African white hunters, who had been so helpful during my previous trip. Through his good offices, the project received enthusiastic cooperation from both Kenya and Tanganyika civil authorities. It was Ker who, during the safari, conducted with diplomacy and tact the frequent and necessary *barazas*, or long palavers, with the Masai.

Other members of the safari were Anthony J. Dyer and Myles Turner, white hunters;

* See "Honey-Guide: The Bird That Eats Wax," by Herbert Friedmann, NATIONAL GEOGRAPHIC MAGAZINE, April, 1954.



Massive Jewelry Proclaims: "I'm a Married Woman!"

Sharply defined features hint at Masai descent from Hamites who migrated to Africa thousands of years ago. This woman tries never to let her husband see her without her earrings, which often weigh more than a pound. Unmarried girls wear similar but far less elaborate beadwork (page 511).

Jack Clink, who became assistant motion-picture cameraman; Bill Woeger, our still cameraman, who processed in Nairobi the first color film (Ektachrome) ever developed in Kenya; and Dick Bishop, an artist friend.

We reached Kenya in time to photograph the greatest event in a moran's life. Near Narok the Purko section of the Masai were holding a ceremony known as *unoto*, a rite celebrated about every seven years.

During the *unoto* 500 junior moran, of an age grade called *Il Kamanike*, "those who approach suddenly," were to become seniors, acquiring privileges denied them in their junior status. Among those privileges is freedom to marry and establish their own families. The

seniors in turn would graduate from the active warrior group to become elders. The process goes on generation after generation.

Few Masai know their own age, but most of the moran being promoted at this *unoto* appeared to be in their early twenties.

More than 2,000 Masai—moran, their parents, sweethearts, spokesmen, elders, and medicine men—were assembled in a huge *manyatta*, or village, built for the occasion (page 514). Approximately 160 huts, each housing two to four families, formed a circle 300 yards in diameter.

The people had walked to the *unoto* driving donkeys laden with gourds, skins used as bedding, and other necessities. Some had come from parts of Tanganyika, 200 miles away. These we were to meet again a few weeks later.

We pitched camp two miles from the *manyatta*. Then, with guidance from John Pinney, District Commissioner of Narok, and Geoffrey Mackley, Kenya moran officer, we undertook a ticklish bit of diplomacy. We had to

change our status from unwelcome interlopers in a private Masai affair to well-meaning, harmless spectators.

We had plenty of time. The main *unoto* ceremonies were postponed while the medicine men and elders held palaver after palaver, trying to agree on a propitious starting date. This gave us almost three weeks to win them over.

Our trucks earned the gratitude of the women, sparing them backbreaking work by hauling water to the village. When elders exhausted their supply of honey beer, we fetched from an Indian traders' store in Narok almost a ton of sugar which the elders had bought and which they now brewed into an

ersatz beverage. We also bought up the store's supply of hard candy, which women and children ate with gusto, and of red ocher, which the moran condescended to accept.

But it was not until we had shown our sound motion picture of a story they all knew and in which Masai participated, the story of the honey-guide, that we were fully accepted.

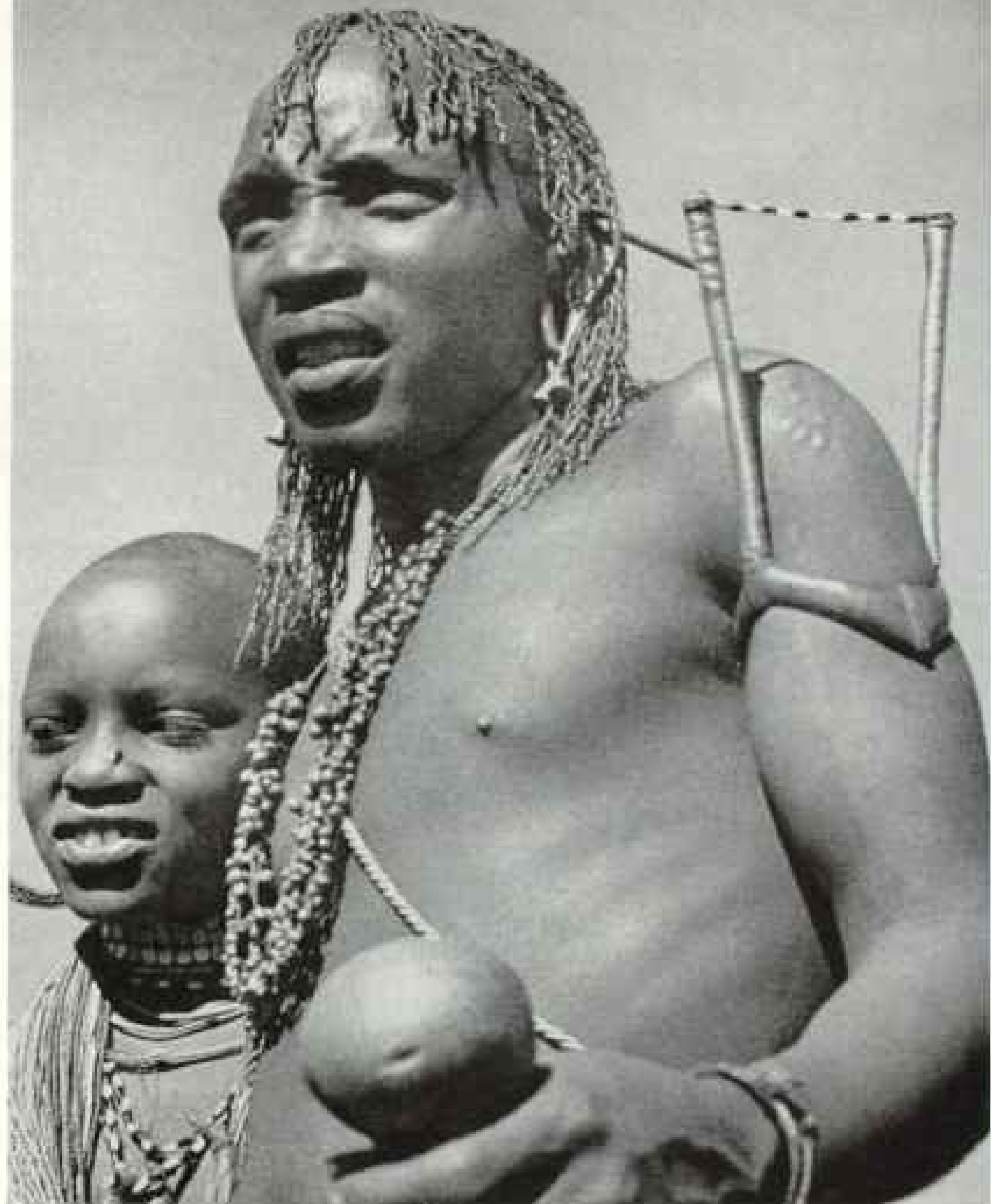
On following nights we projected films of other tribes: the neighboring Wakamba, whom the Masai disdain, and the Latuka and Dinka. Gradually they understood that we wanted to record in similar fashion their own ways of life. This softening up process took two weeks. Then we brought out our cameras.

In appearance, Masai differ markedly from neighboring Bantu tribes, whose wide nostrils and thick lips are characteristically Negroid. Many Masai are well built and have strong, aquiline noses and classic features. Their skin is chocolate-brown rather than black (page 497).

One theory is that long ago the Masai migrated from the north, perhaps the Nile basin, and conquered the less civilized natives of the highlands. They had an invincible military organization in their Spartan warriors, who could not marry, smoke, or drink intoxicants, who ate only beef and drank nothing but milk, blood, and bark brews.

Pure Masai Scorn Civilization

Tribal discipline has always been rigorous: age-old customs are observed rigidly by pure Masai. They regard their code and way of life as supreme, and consider all other people, including whites, inferior. Even now, in some sections, any Masai known to accept employment from whites is looked down upon. If he



493

Armlet of Buffalo Horn Denotes Warriorhood or Wealth

Only in remotest Masailand does the old way of life persist; even there, civilization encroaches. The author's safari into country later closed by Mau Mau uprisings may have afforded a last opportunity to document a vanishing culture. This warrior wears ringlets; his girl friend shaves her tresses.

returns to his village, he can never take part in the council of elders.

Missionaries have made almost no Masai converts. Nor has the white man offered much in a material way that attracts them. The only concessions I observed were occasional incongruous aluminum pots; woolen blankets were used as capes by some elders in place of hyrax or blue monkey skins. Moran warriors, too, have substituted calico for old-time skin garments.

These have been gradual changes, beginning no doubt through contact with Arab traders and slave hunters. Masai themselves were never held in slavery. Arabs feared the moran; any Masai they did capture pined



Leather-clad Girl Totes a Milk Gourd

In her right hand she holds copper wire for a new armband. Her sandals are cowhide.

away and died before the slave caravans reached the coast.

Masai have no written language. They have never adopted the wheel; donkeys provide transport during migrations. Nor do they build boats of any kind, since they do not dwell near any large body of water.

Serving the Masai as blacksmiths is a subtribe whose status is so inferior that intermarriage is forbidden. These are the Kunono, with whom pure Masai scarcely condescend to speak. Another subtribe, the Dorobo, kill game with poisoned arrows, hunt wild honey, perform circumcisions, and provide other services.

Dances and Sacrifices Mark Unoto

The unoto rites have evolved out of centuries of mysticism. They involve, among other things, much dancing, elaborate costumes and headdresses, and frequent use of the mystical number 49.

There were numerous sacrifices of sacred oxen, and presacrificial rites were complicated and symbolic. Black oxen, for example, were fed large quantities of honey beer, then smothered to death with beaded hides. One was striped with white chalk before it was killed. Fires were ceremoniously kindled in the age-old fashion (opposite page).

Forty-nine oxen were driven to a specially selected site. On this spot, toward the end of the unoto, Masai women erected the *esingera*, a large, circular temporary hut made of branches and dung. It was surrounded by 49 smaller huts to be occupied by 49 leaders of the age grade. Only those moran who had observed all tribal laws and customs could enter the *esingera* (page 512).

Special unoto dances were performed almost continuously (page 516). The dancers wore colorful flowing capes, ostrich-feather headdresses, vulture-feather neckpieces, colobus monkey skins, and bells on their legs. Some wore the coveted lion-maned headdress called *olowaru*.

The *olowaru* wearers constitute an elite corps. In each lion hunt, two men's special bravery is acknowledged: the one who throws the first spear, and the one who rushes in and grabs the lion's tail.

Near Narok we were told that the man who caught the lion's tail was awarded the mane, but this custom seems to vary. In hunts we witnessed later in Tanganyika, the man who threw the first spear won the mane, while the tail was awarded to the hunter who grabbed it.



Virile Warriors in Earrings and Hair Braids Kindle a Fire with Iron Age Tools

Masai fire makers drill a piece of soft wood with a hardwood stick; friction produces enough heat to light dried grass. The pierced block rests on a sword blade. This pair had the grass blazing in one minute.

In any case, an olowaru is a mark of bravery, and no football star on any American campus receives more adulation than did those warriors who wore the olowaru at the unoto. One, ole Lasadera, who killed a lion single-handed, was revered wherever he went (page 509). Little children besieged him for a pat on the head.

An olowaru is worn only by the man who earns it. It cannot be handed down to a junior brother or relative. It is not worn after the unoto. Hence, after the ceremonies, when I expressed an interest in buying several for the museum's collection, we were almost deluged by sellers. Of the many offered, we purchased seven.

Ole Lasadera's singlehanded encounter with a lion is worth relating. He had made an appointment with other moran to hunt near the Telek River. They were late in coming, so he decided to return to his village at Maji ya Moto.

On the way he encountered a large lion eating an antelope. He crept up and threw his spear into the lion. The lion ran off, the spear fell out. Ole Lasadera retrieved the spear, followed the mortally wounded beast into the bush, and killed it with another thrust of his spear and jabs with his sword.

This account was verified to us by the other warriors who, arriving later, found him standing beside the dead lion.

Other Masai we met who wore the lion's mane will carry to their graves the evidence of their prowess. One bore a deep cleft in his skull where his lion bit him; a second had a stiff leg, broken by a swipe of his lion's paw; a third was badly scarred on stomach and legs where a lion's claws raked him (page 509).

Before the unoto the Moran would not have parted with their olowarus at any price. Even when it was over I was reluctant to take possession of such hard-won trophies, but I knew





Masai Warriors Take Up Arms for a Lion Hunt

The *woran*, a tribal class in which each male spends some 10 to 15 years, dominates Masai society. When marauding lions molest their cattle, these young stalwarts hunt down the predators with spears and short swords (page 503). Twice the author kept his camera grinding while such a fearsome group chased a lion into thick bush, surrounded him, and killed him without incurring a casualty.

In Kenya, only a junior warrior who grabs the tail in a lion hunt may wear the shakolike *olewara*, a headdress made from the lion's mane. Others wear ostrich-plume headpieces. Buffalo-hide shields and calico togas complete the party's costume.

© National Geographic Society

A Fighting Man → Favors a Feather Halo and Henna Hue

The haughty Masai consider themselves superior to other African tribesmen. Until recent years they disdained to serve Europeans.

This warrior hopes to swap his plumed headdress for a coveted lion mane during the forthcoming hunt (page 506).

← Hunt Council: Masai Spearmen Plot a Lion's Death

Masai men perforate their ears, stretching the lobes with wooden plugs and copper weights hanging like fishing sinkers. Warriors also wear necklaces, bracelets, and beaded rings looped through the ear's upper cartilage.

Illustrations by the Edgar M. Querry-
American Museum of Natural
History Expedition



our money would probably be well used by the warriors in purchasing their first wives. Masai, like many African tribes, are polygamous.

We let it be known that we wanted a few moran to accompany us through Masailand and play roles in our picture of their tribe. Very few approached us, and these came only when we were well away from the unoto. They came in pairs, because moran practice their proverb: "No matter how brave a man may be, two brave men are better."

Warriors Eager for Lion Hunt

When we asked if they would join us in a hunt for *ngatuny*—the Masai word for lion—every one of them answered: "Of course." We selected four. They agreed to come to our camp at the conclusion of the unoto, after their heads had been shaved.

They showed almost no interest in what was to them the munificent pay of \$5.00 a month, plus a bonus if merited. But they laid down two conditions. First they should not be seen leaving with us. Even though the adventure excited their interest, their friends must not learn that they were working for us. Second, they must be returned to the vicinity of Narok together. Otherwise, by custom, the earliest to return could drink no milk until the others should arrive, for a moran may accept milk only from a fellow warrior.

We agreed, and shook hands to seal the pact, both sides uttering what sounded like "Missouri, Missouri." In Swahili, the lingua franca of East Africa, this is the equivalent of "O.K."

Not having much confidence in a Masai's word at that time, I expected one or more to disappoint us. But at the appointed dawn, five days later, three warriors appeared in camp. The fourth had given prior notice that his family objected too vigorously to his employment by white men, even for so worthy a purpose.

While Ker spirited the three away under a truck's tarpaulin, I lingered at the site of the unoto purchasing the olowarus, spears, buffalo-hide shields, ostrich headdresses, and other objects of value to the museum.

As we prepared to leave camp the following day, an elder Purko moran, whose unoto had taken place some years earlier, climbed into the back seat of my hunting car and refused to get out. Thinking Ker had hired him, we let him stay. When we stopped at the Narok

Indians' store for last-minute provisions, he bought, without our knowledge, what he thought he might need for the journey.

Later we learned that Ker had not engaged him. The warrior neither knew nor cared where we were going, nor for how long, nor what the pay might be. He wanted adventure and was determined to pay his way. Gradually we accepted the fact that Kazino was going to be a member of our safari. And he was, to the end, genial, willing, and intelligent like all of our seven "actors."

In addition to the recruits from the unoto, our cast included Lamagera, Turner's Masai gunbearer, who proved invaluable as interpreter and group leader; an English-speaking youth who was not pure-blooded Masai; and a Masai Dorobo servant.

A couple of months later, after our entourage had covered several hundred miles of East Africa, Kazino asked Ker, "Are we not now in your country—England?"

Kazino made other amusing remarks. Once when I wanted to make pictures of elephants watering in a pool about 200 miles away, I chartered a plane to fly us there. Because I wanted Masai in the picture, I took Kazino and Lamagera along.

It was the first time either of them had been near a plane. I asked Kazino if he really wanted to fly. Having watched the pilot emerge from the plane, he pointed to him and to me and replied: "Yes, if either of you will go with me!"

Kazino Tries Air Travel

Kenya is mountainous; during the heat of the day thermals and downdrafts often cause rough air, and this day was a bad one. When the little four-passenger airplane began bucking and tossing, Kazino put his cape over his head and kept it there until we landed. But Lamagera often called out, "ooooh-eeh! ooooo-eeh!" Neither seemed to realize that the pilot had any particular connection with the flight.

Kazino spoke a little Swahili, but many Masai do not; hence our conversations were cumbersome. By the time a question and answer went from Masai through upcountry pidgin Swahili into English and back, thoughts and ideas were often twisted or lost, and a straightforward reply might have no meaning. Gestures often proved a simpler language.

On our way to Tanganyika, where authorities had approved our filming of a lion hunt,

Charging Lions Demand → a Practiced Aim

Until half a century ago, Masai constantly raided cattle-owning neighbors and attacked caravans and safaris for added sport.

Today European rule forbids raiding, but isolated instances still occur. Lion hunts afford a warrior his greatest opportunity to exhibit daring and courage.

A subtribe, the Kunono, serve as blacksmiths and fashion all weapons. Kunono are considered inferior; pure Masai scarcely condescend to speak to them and forbid intermarriage.

✦ A Warrior Need Not Be an Artist—but It Helps!

Sticks serve as brushes. Paints applied to buffalo-hide shields are made of charcoal, red stone, bone, and ochre. Patterns designate age grades and sections of the tribe. Small circular paintings signify outstanding bravery; consent of all moran in a village must be obtained before such marks are inscribed.

© National Geographic Society

Photographs by the Edgar M. Querry-
American Museum of Natural
History Expedition





Flies, Bane of Cattle Country, Crown a Masai Woman

Fortunately, no tsetse flies help make up this swarm attracted by milk spilled from a gourd the woman carried on her back. Tsetses, bearers of disease to man and cattle, live only in the bushy part of the Masai highlands.

we camped for two weeks in the picturesque Loita Hills, good leopard country. While photographing scenes of typical village life, we found in one of the huts two horribly wounded moran.

A leopard, we learned, had recently killed a cow. The warriors had speared the beast, but it had given both men a terrible chewing before it died. We brought them to camp and filled them with penicillin and chloromycetin. They recovered; I am certain that we saved two brave lives.

We crossed the Tanganyika border near Loliondo. Here Richard Brayne, District Commissioner of the area, introduced us to Chief Takuya ole Parmat, who said he could arrange for us to photograph a lion hunt and that he would accompany us (page 505). He took us some 40 miles southwest of Loliondo to an area the Masai call Kirtaalo.

It was evidently good lion country, for the local warriors displayed lion-maned headdresses. The warriors here we had recently met at the unoto—a fortunate circumstance, for no pro-

tracted introductory period was required. But almost half of the moran were now away again; the previous day a rhino had killed a woman and they were in pursuit.

Each Masai village has its *laigwanan*, or spokesman. His authority over the other moran seems almost unquestioned. After the usual protracted palaver, an agreement was made between Ker, the chief, and the village spokesman. The terms: They would stay with our safari, wherever we went, until we found lions and they speared one. We would supply them with oxen to eat.

If they speared a lion in the open where we could photograph it, the group was to be paid 600 shillings, or about \$4.00 each. But if the lion ran into the bush where we could not photograph the spearing, the pay would be reduced to 100 shillings, or 69 cents each. In addition,

each was to receive two yards of calico.

In Hollywood these rates would not be deemed exorbitant. However, Chief ole Parmat thought that the warriors had done quite well for themselves—and so it turned out, by their standards, some three weeks, two lions, and 11 oxen later. Twenty-one experienced lion hunters, all there were in the village at the time, volunteered for the hunt.

White Hunters Bait Lions

The big-game hunter's method of securing a trophy lion is usually not a very sporting proposition. One or more animals—zebras, topis, or wildebeest—are shot and dragged to a place where lions have been seen. At dawn the hunters visit these kills, and if a desirable lion is enjoying a free meal, he is carefully stalked and shot.

If the hunter only wounds the quarry, a professional white hunter by his side quickly makes certain that it will not be necessary to trail an angry lion whose breakfast has been disturbed in a very painful manner.



501

Gleaming Spirals Adorn Legs and Arms of Masai Belles

Polygamous tribesmen leave most household chores to their wives and sometimes beat them, but women enjoy a comfortable niche in Masai society. They control family supplies of milk and honey beer, and are never divorced. Their husbands show little jealousy.

Between childhood and warriorhood, the toddler above will spend a busy life: Boys traditionally tend the cattle, milk the goats, fetch water, and clean the cooking pots.

Girls and women wear heavy arm and leg decorations of iron, copper, or brass wire bought from traders. They make these ornaments themselves, using no tools (above).

Before they were able to buy coils of springy metal, Masai women sometimes damaged arms and legs with permanent ornaments of stolen telegraph wire. Now a tribal belle can uncoil the wire until the ornament is loose enough to slip over feet or hands.





A Man Armed with a Puny Spear Dares to Chase a Racing Lion

The author estimates that this lion was pressing 40 miles an hour during a hunt southwest of Loliondo, Tanganyika. Although a swift moran can run exceptionally long distances, the animal outdistanced his pursuers and gained the shelter of the bush. There the spears brought him down. A score of comrades, out of camera range, supported the running warrior.

← Thorn-bush Fences Bar Prowling Beasts and Prying Women

Since it is taboo for a moran to eat meat inside the villages, warriors shield themselves in a thorny enclosure. Over fires kindled by rubbing sticks, they roast oxen and wash down the meat with warm ox blood.

↓ Seeking lions, a scouting party moves into the brush. Resting warriors will shortly strike out in other directions.

© National Geographic Society

Illustrations by the Editor M. Quoy—American
Museum of Natural History Expedition

503





Masai warriors, however, are old-fashioned. Their quarry is a particular lion or lioness that has been killing cattle. The hunted animal is stalked wherever found, encircled, and speared. Sometimes it breaks through the circle of moran; then it is followed up and the process repeated. Casualties are not as frequent as the hazards suggest, but they do occur. If death results, the victim's body is not carried back to the village. Except for the bodies of distinguished elders or medicine men, Masai do not bury their dead.

If a moran is killed by a lion, he receives a warrior's last rites on the spot. His body is placed on its left side, head to the north, face to the east. The left arm is bent under the head, right arm over the chest, the legs drawn up. That is all, Masai traditionally

give the same rites to an enemy who has exhibited great courage.

Happily, we were not called upon to witness this grim ritual. Before embarking on our hunts, we paid a visit to ole Leshura, the Kirtaalo medicine man. He wisely refused to advise where lions should be hunted, but did prophesy correctly that no one would be injured. He gave the moran a charm—a goat's stomach filled with yellow powder which they dabbed on their noses and chests.

The lion population in the vicinity of this village was understandably thin, so we moved our camp some 20 miles into better game country. Close by, under the shelter of a huge fig tree, the moran built a circular thorn-bush enclosure, which they term *olpul*.

Such enclosures ward off animals prowling



at night and by day shield the hunters from women, who must not see them eating meat (page 502). In the center of their *olpul* the Masai kindled fires by rubbing a round hardwood stick against one of soft wood. They roasted oxen and ate lustily, washing down the meat with warm ox blood to which powdered berries had been added. They also drank a brew made from the bark of an acacia tree.

Berries and Bark Make Warriors Brave

For most Masai, cattle blood, often drawn from the neck of the living animal, is their only source of salt. The berries and bark brew are excitants. The Masai maintain that such excitants make them fearless. After reaching a high pitch in a dance or after a lion hunt, some go into fits, frothing at the mouth and often barking like dogs. Others fall to the ground in a stupor. At such moments they are out of their minds, and any target may seem appropriate for spear or sword.

Several evenings we strolled over to their *olpul*. Quite contented, the huntsmen were feasting and singing. The Bible advises: "Take therefore no thought for the morrow; for the morrow shall take thought for the things of itself." On the eve of what might

Tribesmen Clutch an Arsenal of Weapons as They Attend Their First Movie

To amuse the moran during the filming of lion hunts, the author put on movie shows after sundown. "The result was electrifying," he reports (page 487). "Their expression of glee, 'oooh-eeh! oooh-eeh!' was repeated ten times a thousand times. The din drowned our sound." Here Chief *ole Parmat* (below, right) watches a show; beyond him are moran and safari boys.

505





© National Geographic Society

506

Etchings by the Edgar M. Queen-American Museum of Natural History, Edinburgh

↑ **Bent and Bloody Spears Attest
a Lion's Frenzied Fight**

Masai spears have iron blades forged by native smiths and honed to razor sharpness before a hunt. Warriors throw the wooden knobkerrie or wield it like a club.

↓ **Death Stills the Roar of Mighty
Ngatuny, King of Beasts**

Ole Manyik, who first grabbed the snarling lion's tail, assumes the conqueror's stance. For his bravery he gets the tail; others take mane and paws.



be a fatal encounter with lions, they were unknowingly putting a bit of Christianity into practice.

Even in good lion country one seldom sees lions in the open. An hour or two after sunrise, they normally seek the shade of the bush. For photography, however, we needed open country. Hence we decided to introduce the moran to the big-game hunter's methods.

Animals were killed in the evening and dragged around to give any near-by lion the scent of an easy meal, then placed in a position favorable to photography. Before day-break we left camp in hunting cars to scout the hills in the very first light. The moran, with spears and shields, followed in two trucks.

Scarcely a day passed without our finding lions or lionesses, or both together, attracted by our bait. Lionesses we did not molest, but when a male lion was seen, an attempt was made to bag him. However, when lions saw two or three hunting cars and two big, noisy trucks approach, they retreated to their normal daytime habitat in the bush.

Lion Killers Have Fits

Day after day for almost two weeks we experienced the same routine—the anticipation, the careful approach, and then the disappointment. Once a lion left a kill and ran between two hunting cars. Two of our unoto warriors had to be forcefully restrained from giving chase.

Finally, one dawn disclosed that each of three widely separated kills was host to a photogenic lion. We approached the likeliest one, hunting cars in the middle, one truckload of moran on the right flank, another on the left.

As we drew near, the lion displayed concern. His tail came up. It twitched. Then the moran, out of control, leaped out of the trucks. The lion ran off. He took to a small thicket and, before our cameras could be properly trained, spears were flying.

Through my view finder I saw the lion rampant, standing on his hind legs, forelegs raised as in a heraldic emblazonment. He roared, not the earth-shaking roar often heard at night, but one blended with a moan. He turned. Another shower of spears from the left! More roaring groans in quick succession. He fell! And it was over. Not 10 seconds had elapsed since the first spear was thrown.

Several overexcited moran were having fits. One fell to the ground in a coma. Other

warriors came out of the thicket proudly displaying their soft iron spears bent, twisted, and bloody. In his agony the lion had rolled over and over, making the spears do double duty by tearing his entrails as they bent (opposite).

Tail, Mane, and Paws Reward Bravery

The moran overcome by fits were disarmed and held firmly by their calmer companions while they frothed, swayed, and barked. After the fits subsided, the lion's mutilated body was pulled into the clear.

The mane was cut off and awarded, with no ceremony whatever, to the moran who threw the first spear. The tail was handed to the one who had grabbed it; paws to others who had earned them by bravery. It was a businesslike routine. There was no argument. All seemed to know who merited each particular honor (page 509).

Then, led by ole Manyik, one of our friends from the unoto, they marched in single file around the carcass. Ole Manyik carried the tail stuck on top of his spear; behind him came another moran with the mane. As they marched, they chanted in a haunting, minor key, "*hooo-hooo . . . hooo-hooo.*" Finally they took off in the direction of camp, the song fading with the distance.

Had we been near their village, the triumphant warriors would have chanted their way through one of the gates, where women would have emptied gourds of milk over them.

Upon our return to camp, we explained to the moran that their premature charge had interfered with our photography and, furthermore, the lion had been speared in the bush. We asked if they would make another effort. The village spokesman, who bore huge scars on his abdomen from clawings in two past hunts, held the usual palaver with his chief and lieutenants. Yes, if we would pay 600 shillings for this morning's lion, they would tackle a second on the original terms.

Warriors Agree to New Hunt

The Kirtaalo moran had refused to allow the warriors we had brought with us from the unoto to participate in the first hunt. The spokesman had maintained 21 men were enough. He had even refused to allow other moran from his own village, who had returned after the unsuccessful rhino hunt, to join.

Now he appeared to realize that the first lion was really a 100-shilling one, so he threw



← Stretched on Sticks,
a Lion Mane Dries in
the Torrid African Sun

Masai traditionally eat little wild game, but fearlessly hunt dangerous beasts, including leopards and rhinos, that molest their herds and families. Buffalo hides for warriors' shields come from animals killed by the Dorobo, a hunting tribe.

When about 16 to 20 years old, male Masai leave their parents' huts and take up residence with other youths of their age grade. After some seven years as junior warriors, they graduate to senior, or "reserve" warriorhood. Seniors may marry and cut off their hair.

The shorn senior moran at left threw the first spear in the second hunt witnessed by the author in Tanganyika and hence received the olowaru. Because he is a senior, he will not wear his prize, but keep it as a souvenir of his latest hunt.

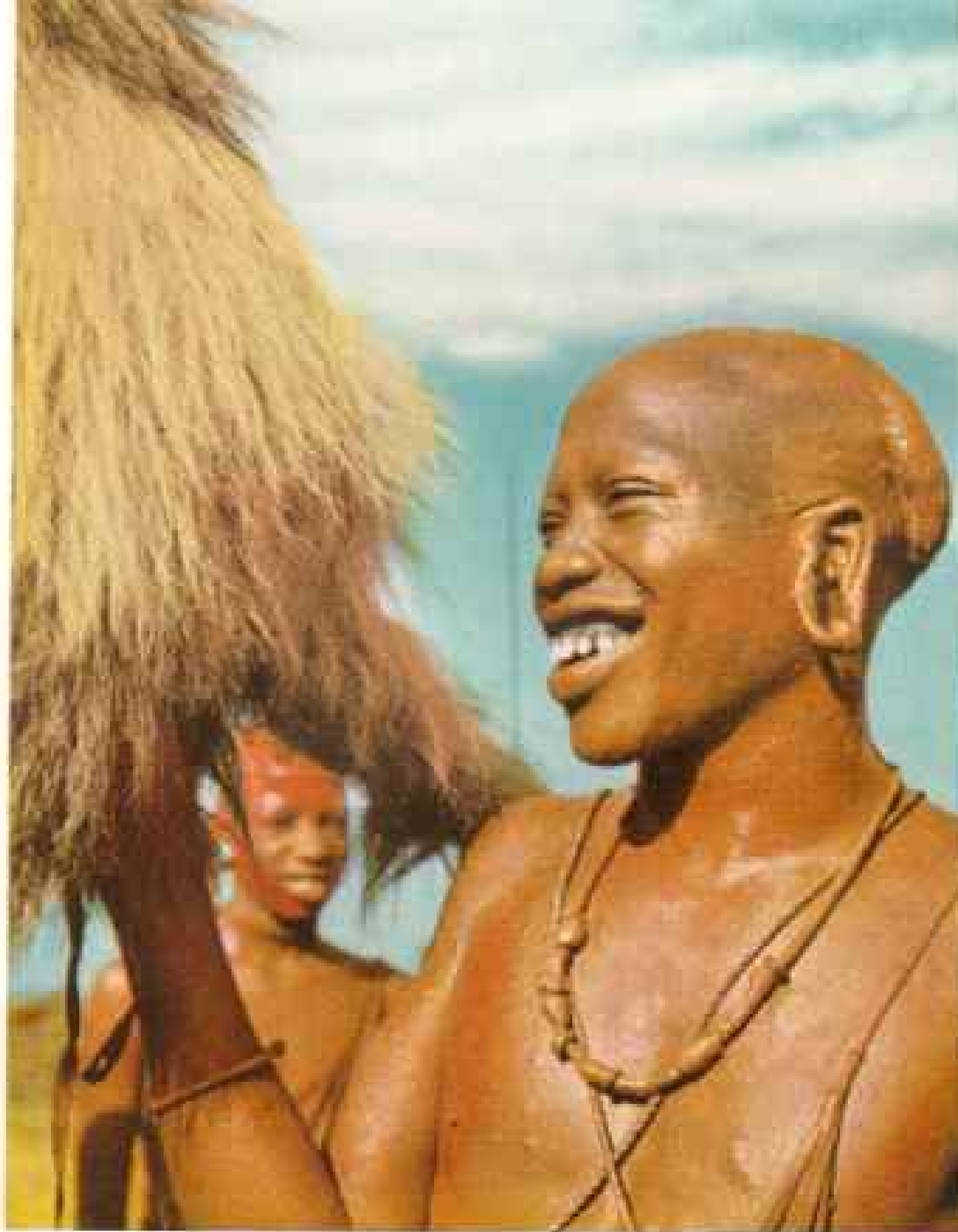
© National Geographic Society

"Sell This Mane? →
Never! Well, Perhaps...
...if the Price
Is Right!"

A century ago not even the slave-trading Arabs challenged Masai supremacy in the Kenya highlands. European explorers paid the barbaric herdsmen elaborate homage. Joseph Thomson, first white man to traverse northern Masai country, in 1885 let tribesmen take out his false teeth and pull his nose to see if that would come off.

Theodore Roosevelt, leading an 11-months' Smithsonian Institution expedition through East Africa in 1909-10, admired the Masai. In the January, 1911, *National Geographic Magazine* he wrote: "I hate to shock the vegetarians, but I am bound to say that these people, who never eat anything but meat, blood, and milk, are as hearty and strong a set of people as I have ever seen in my life."





To the Victors Go the Spoils— and the Sears of Battle

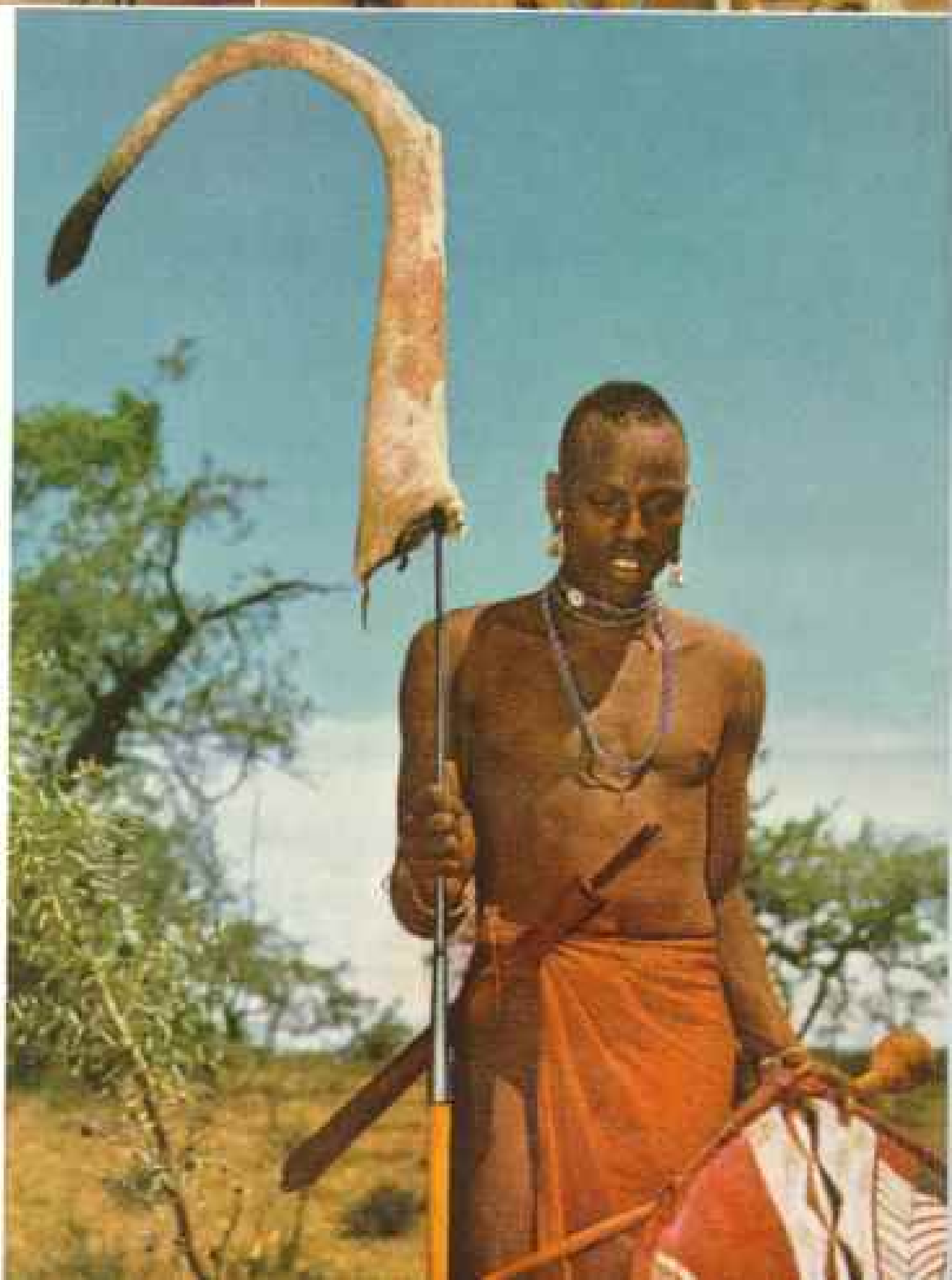
A Kenya Masai, Shurake ole Mboke, smiles as he dons the lion-maned headpiece that almost cost his life. The beast bit deep into the moran's skull; claws inflicted severe body wounds.

A fellow tribesman, Lekeme ole Lasudern (above, right), is rated a hero for his feat of singlehandedly killing a lion. Masai tribal songs recall his remarkable deed. Children besiege him for a pat on the head. At dances he is privileged to lead all olowaru wearers.

"I Led the Charge," His Tail-capped Spear Proclaims

Custom varies among the Masai as to bravery awards after a lion hunt. In Tanganyika the man throwing the first spear receives the mane; the tail goes to the one who first grabs it, but in Kenya the mane is granted the tail grabber.

Following a kill, moran march single file around the carcass, chanting loudly. The triumphant procession often continues into the village; women empty gourds of milk over the warriors as they pass through the gate. This Tanganyika Masai will eat no lion meat except possibly the heart.



into the bargain permission for our men to come along for the second.

This was good news, for our unoto boys had clicked their tongues and sucked their teeth when they saw the dead lion. This was a bad sign. Even though Don Ker promised them a lion hunt of their own later, they remained disgruntled. Now, with the Kirtaalo spokesman's acceptance of them, everything was auspicious.

Another Lion Meets Its Match

A few mornings later a beautiful black-maned lion and a lioness were seen on a zebra kill. As we drove up, both moved toward the bush. But when vultures, which had been watching them feast, flopped down from their trees and approached the kill, the male returned in a defiant mood. Vultures were not invited to partake of his dish!

Quickly the moran charged, yelling like Apaches. The lion broke through them and disappeared into thick bush bordering a ravine.

With spears poised and shields set, the moran gave chase and disappeared into the ravine. We glimpsed them from time to time, beating it as though trying to flush a rabbit. Two, who had thrown their spears when the lion broke through, did not even stop to retrieve them. They hunted on with their short swords—their *olalem*—drawn and ready. After a few minutes, piercing yells came from the thickest bush. Then the same moaning roars! In a few seconds they ceased.

There was a dispute, which for a time looked serious, as to whether Seyobey, one of the unoto moran, or the spokesman of the Kirtaalo moran had thrown the first spear. Chief ole Parmat settled the argument in favor of the latter.

Warriors Sing of Lion Hunt

The mane went to the Kirtaalo spokesman, the tail to ole Manyik again, a forepaw to one of our safari moran, remaining paws to other deserving ones. The single-file procession began again around the carcass, with the haunting "hooo-hooo . . . hooo-hooo."

That night there was much singing in the thorn-bush enclosure. The chief translated to Ker, who translated to us:

The vultures are eating the meat.
The vultures are on the left hand.
The vultures will eat this one and more.
Our village has killed the lion
And we moran are the left hand.
We are of the Purko who killed the lion alone.

Dyer made a recording of their song. But no machine could record its impact on my mind. In this setting, it was more than a song. It was the music of all Africa's primeval elements, with its mystic overtones and nuances, made poignant by memories of the day then passing.

As they sang, thin blue smoke rose from their fire and disappeared into the gloom of the huge fig tree. The dancing flames illuminated two dozen merry brown faces circling the fire. Behind them were ox stomachs filled with bark brew, the lion's drying mane stretched over branches, and white shields and stacked spears standing against the thorn bush. The pungent smells of the warriors' sheep-fatted bodies, their ox blood, and their meat lay heavy in the still of the night. Outside, Africa was mute. Even the hyenas were silent.

"All Things Have an End"

I regretted the nearness of the morrow, and I like to believe that these proud hunters shared my regrets because tomorrow they would return to their village. They had more than fulfilled their end of the bargain, and we had fulfilled ours. However, the Masai have a proverb:

"*Aiya* . . . All things have an end."

Our sojourn with them had been a happy one, as indeed was our association with most of the Masai we came to know. The cooperation we received varied only in the degree of excellence. With the single exception of an English-speaking Masai interpreter who had been "educated," their word to us was always kept.

We had been most fortunate in those who were attached to our safari. Their good humor never failed. They anticipated our wants beyond any reasonable expectation, and their manner and natural impulses were those which in our own society we would attribute to gentlemen.

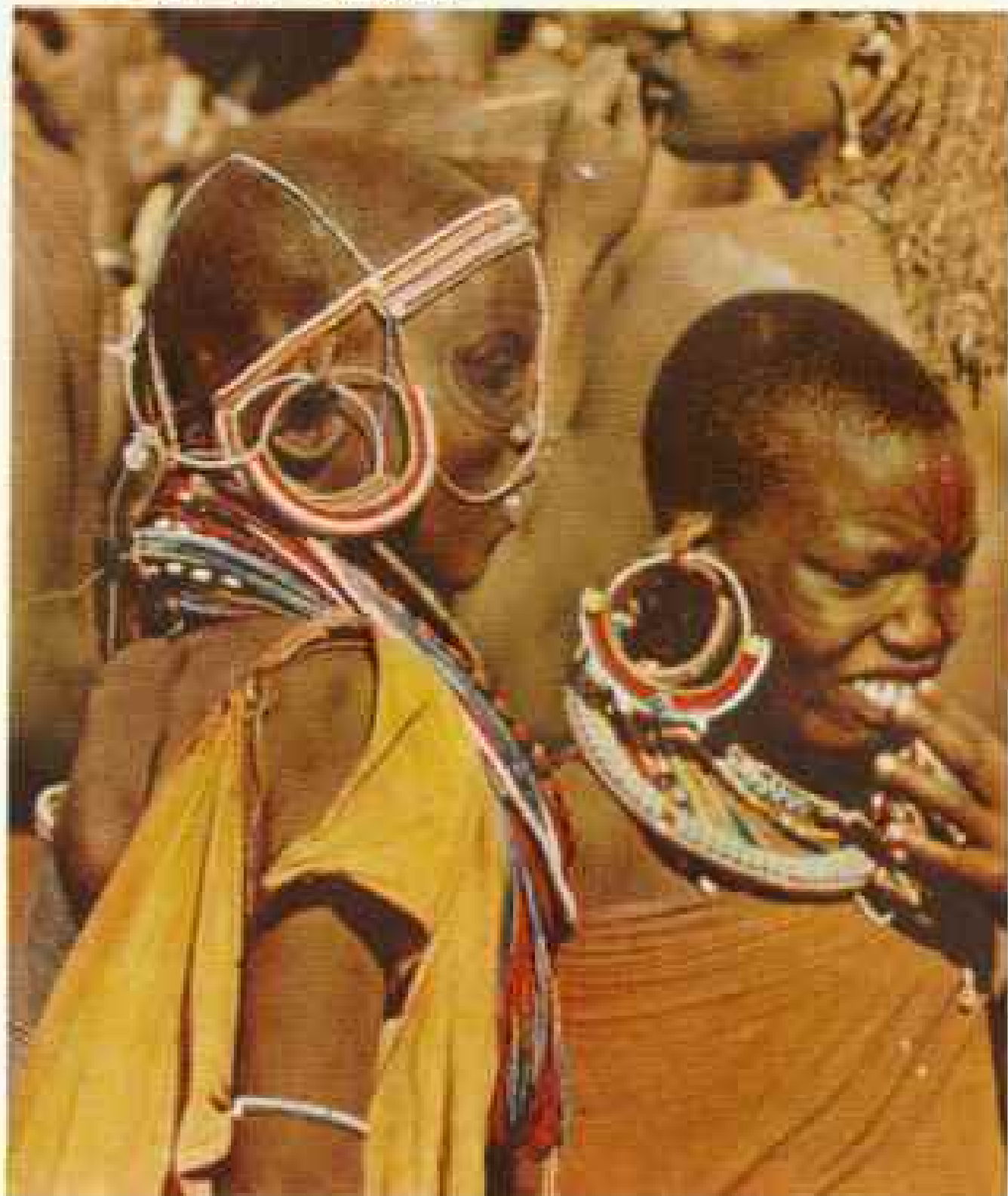
Around the turn of the century, Sidney Hinde, Britain's first Resident among these warrior tribesmen, observed: "The Masai are quick at learning . . . As a race they are intelligent and truthful, and a grown Masai will neither thief nor lie. He may refuse to answer a question, but, once given, his word can be depended on."

Masai character is still being cast in the same mold.

**Baubled and Bangled, a Young Matron →
Watches the Unoto**

Near Narok, Kenya, this Masai woman attends the festive rites marking the promotion of tribesmen to senior warriorhood (page 514). Huge collars, resembling Elizabethan ruffs, stretch shoulder wide.

© National Geographic Society



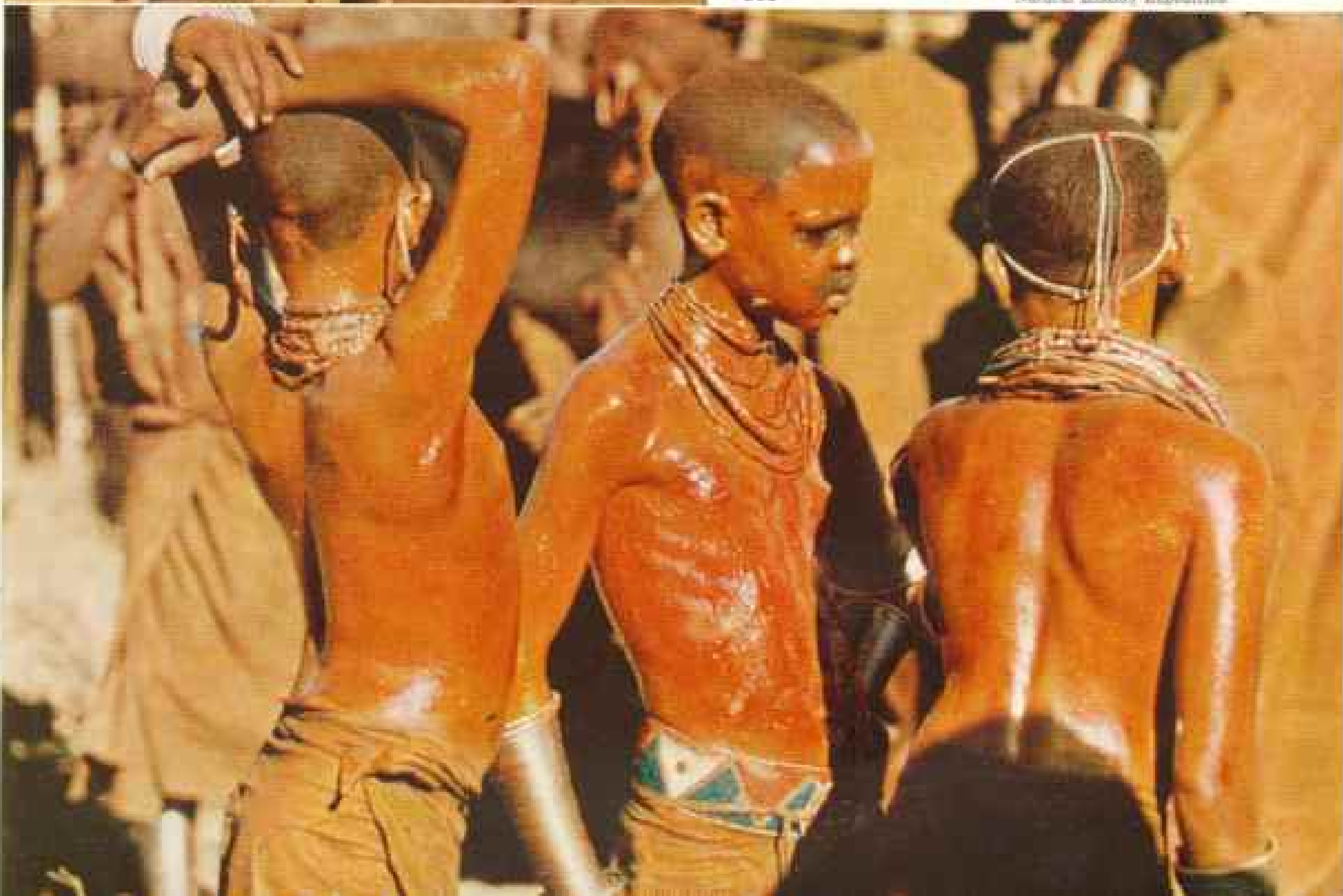
**Eligible Belles Hope Fashion Finery
Will Catch a Roving Eye**

↔ At the festival girls compete for male attention, although Masai men do not marry during their service as junior warriors. Necklaces, earrings, and headbands are made of wire and sinew strung with beads.

↓ In the younger set, a generous coating of red ochre and sheep fat highlights the costume.

*Photographs (above) and Kodachrome by
the Edgar M. Queeny-American Museum of
Natural History Expedition*

511





**Sidewalk Superintendents,
Blanket Draped, Look on
as a Ritual Hut Goes Up**

Masai of the Purko section worked feverishly to complete this huge wattle-and-daub house, which became the center of the unoto the author witnessed at Narok. Before building began, 49 oxen were driven about the chosen site in deference to a Masai belief that the number 49 has magic powers.

The finished hut measured 40 feet in diameter. Its walls, made of branches calked with leaves and plastered with cattle dung, stood 10 feet high. Women did the building, using forked tree limbs for scaffolds (right). Only warriors who had not transgressed certain Masai precepts were permitted to enter the hut, called an *eringera*. They used it as a sort of clubhouse during the unoto.

Around the gloomy shelter swirled colorful ceremonies. Shouting warriors danced in bright costumes (page 517). They sacrificed cattle, kindled ceremonial fires, and feasted.

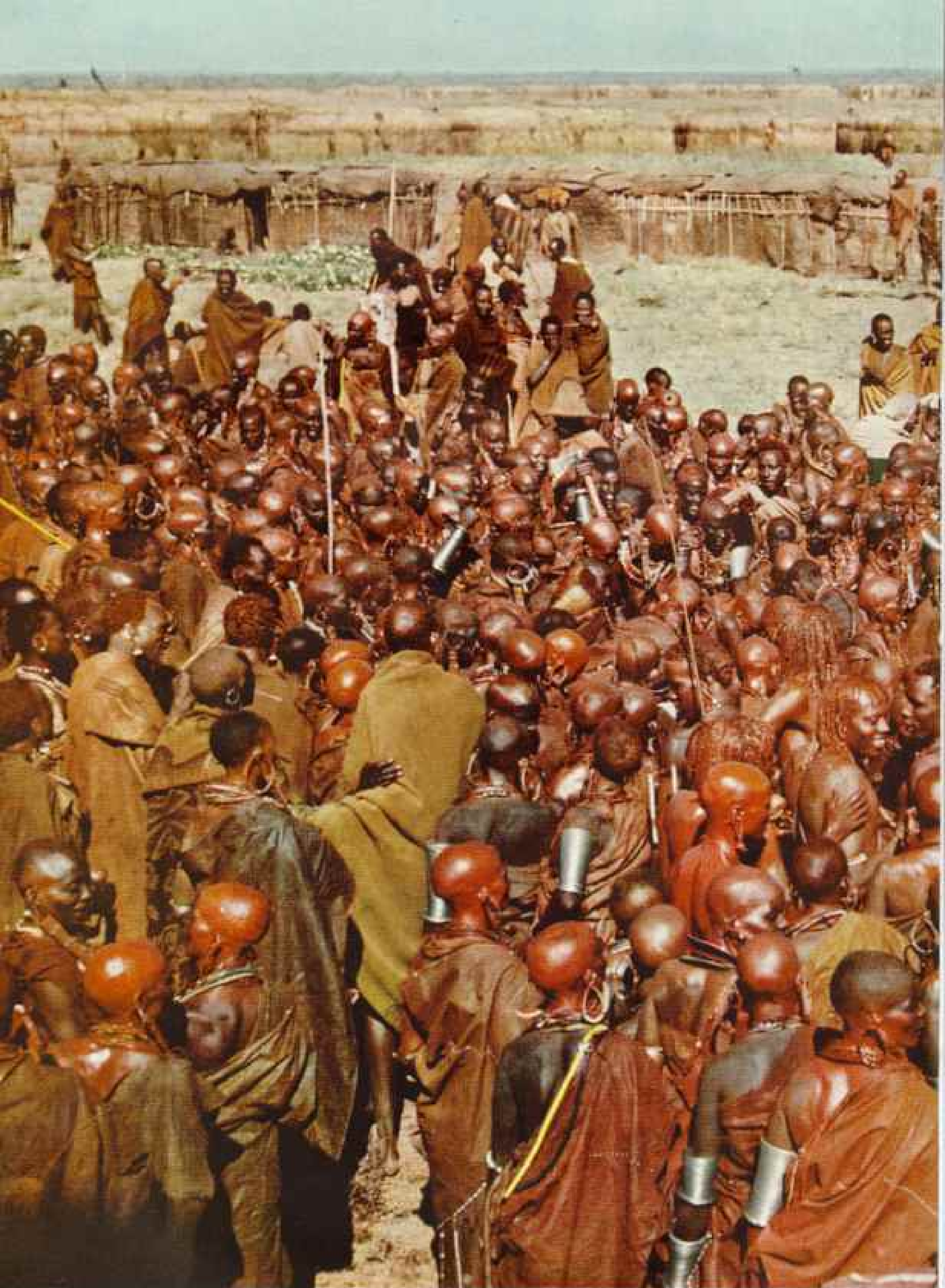
After a period as senior warriors, Masai become elders and hold judicial, legislative, and advisory authority.

© National Geographic Society

Photochrome (above) and Kodachrome by the Edgar M. Queeny-American Museum of Natural History Expedition







Carnival in Kenya: Glistening Heads and Painted Bodies Splash Red Across a Dusty Plain
From 200 miles away, parents, sweethearts, elders, and medicine men gather for the Narok unoto. Families of 49 warriors chosen as leaders lived in a ring of tiny hide-covered huts erected near the esingera.



Eager for Excitement, the Jovial Horde Almost Crushes Performers as Rites Begin

The author estimated that 500 juniors were promoted to senior warriorhood during this unoto. Women, children, and elders always shave their heads; long hair identifies junior warriors.





Warriors Burst into a Running Dance as a Spectacle Changes Tempo

This ceremonial dance, performed only at unotos, starts slowly with elaborate tableaux (below and opposite); then suddenly the men break ranks, prancing and jumping across open fields. Elders shout and blow on kudu horns, sole musical instruments of the Masai, meanwhile clapping and waving their hands to sustain the rhythm. Masai never dance to drums (page 490).

Flowing capes of bright calico purchased from Arab and Indian traders enhance the pageantry. Colorful cloaks also serve as banners (left). Warriors wear cherished lion-maned and ostrich-plume headdresses (page 497) and attach jingling bells to legs. Sticks substitute for spears.





518

Peary's Patched Flag, Eloquent of Arctic Discovery

Mrs. Robert E. Peary, widow of the North Pole's discoverer, has decided to present to the National Geographic Society the historic taffeta Stars and Stripes which she made for her explorer husband in 1898 and which he wore about his body while in the field. At five objectives he cached small pieces. Bits pictured here were found at Cape Thomas Hubbard (below) and Cape Columbia. Other pieces, including the diagonal slash deposited at the North Pole, have never been recovered.

© National Geographic Society



Dauntless Robert E. Peary's Daughter Tells the Story of the Historic Standard Presented by Her Mother to the National Geographic Society

BY MARIE PEARY STAFFORD

"STARS and Stripes nailed to the Pole" were the thrilling words that came winging through the air from the wireless station at Smoky Tickle, near Indian Harbour, Labrador, on the 5th of September, 1909. Although the word "nailed" was not literally true, the rest of the message was. For on the 6th of April of that year, Robert Edwin Peary, with four Eskimo companions and the Negro, Matt Henson, had stood at the North Pole, and the dreams and aspirations and patriotic ambitions of one man's lifetime were realized.

Never, in the centuries of world history which preceded that day, had a human being set foot upon a pole of the earth. Never, in the nearly half a century which has followed, has any man walked to the North Pole and back. It is a feat which was then, and remains today, unique (map, page 521).*

What the Flag Meant to Peary

The wording of that triumphant message was characteristic of my father. Another man would probably have said, "Have discovered the North Pole," or "Have reached the Pole at last," but the flag of his country had a certain sacred symbolism to my father; in a sense, the flag *was* the country, and flags had always played an important and thrilling part in his exploration work.

The first reference to flags that I can find in family annals is in *My Arctic Journal*, my mother's account of the first winter she spent in the Arctic, the winter of 1891-92. She describes the redecorating of her tiny bedroom and says: "I placed a bamboo pole across the front of our bed and draped the two United States flags (one belonging to the National Geographic Society of Washington, and the other to the Philadelphia Academy of Natural Sciences) *à la portière* across the front..."

Later she mentions the Christmas gift she made for her husband. From a large silk handkerchief and a piece of her blue silk tea gown she fashioned a sledge flag, or guidon. Rectangular in shape, it was divided diagonally from the lower left-hand corner to the

upper right-hand corner; one triangle was blue and the other white. On the white triangle was a blue P; on the blue was a white star, the polar star. Every stitch was put in by hand, and every stitch is a work of art.

A Guide and Beacon "in Gray Space"

This guidon was later fastened to the tall bamboo pole which my father carried in his hand as he broke trail for the sledges in his history-making crossing of the vast Greenland icecap in 1892, and served as a guide and beacon for the men following him.

Travel on the surface of the icecap is hazardous in the extreme. Atmospheric conditions cannot be imagined by those who have not experienced them. Peary described them in Mother's book as follows:

"Many a time I have found myself... traveling in gray space. Not only was there no object to be seen, but in the entire sphere of vision there was no difference in intensity of light. My feet and snow-shoes were sharp and clear as silhouettes, and I was sensible of contact with the snow at every step. Yet as far as my eyes gave me evidence to the contrary, I was walking upon nothing. The space

* For other articles by and about Robert E. Peary, see the 2-volume NATIONAL GEOGRAPHIC MAGAZINE Cumulative Index, 1899-1953.

The Author

Marie Ahnighito Peary Stafford was born in Greenland on September 12, 1893, at 77° 44' north latitude, closer to the Pole than the birthplace of any other white child. The Eskimos called her Ah-poo Mickaninny, "Snowbaby" (page 532). She accompanied her mother to Greenland on expeditions in 1897, 1900, and 1902; in 1932 she led an expedition to the Arctic, with Capt. Robert A. Bartlett as her skipper, to build the 60-foot memorial to her father which now stands at Kap York, Greenland.

Mrs. Stafford was decorated in 1946 by the King of Denmark for her work with the Danish-American Greenland Commission during World War II. In 1949 she received an honorary Master of Arts degree from Bowdoin College, Maine. She served from 1948 to 1951 as president of the international Society of Woman Geographers, and recently was awarded the Henry Grier Bryant Gold Medal "for distinguished services to geography" by the Geographical Society of Philadelphia.



← Discoverer's
Portrait: Robert
Edwin Peary

No elation, only the fatigue and nervous tension of a thousand miles of sledging show in the face of the man who has just found the North Pole. The photograph was taken aboard the expedition ship *Roosevelt* at Cape Sheridan soon after Peary returned from the Pole in April, 1909. White foxtails trim the hood of the explorer's sheepskin jacket.

Before selecting this and the other historic pictures that accompany Mrs. Stafford's article, *National Geographic* illustrations editors scanned more than 6,000 priceless Peary negatives given to The Society many years ago by Admiral Peary's widow.

Peary's work in the Far North actually began in 1886 with an expedition to southern Greenland, not shown on the map (opposite). He never returned to the Arctic after discovering the North Pole.

520

between my snow-shoes was as light as the zenith. The opaque light which filled the sphere of vision might come from below as well as above. A curious mental as well as physical strain resulted from this blindness with wide-open eyes, and sometimes we were obliged to stop and await a change."

What a blessing the little guidon proved under such conditions, its deep blue etched sharp and clear against the misty void.

U. S. Flag a Labor of Love and Faith

This was Mother's first attempt at flag-making, but it was not to be her last. To me, Betsy Ross has always seemed one of the most human and appealing characters in United States history; so it is particularly thrilling to have a Betsy Ross right in our own family, with the added attraction that there is no question of her flagmaking being just a romantic legend—it is actually true!

In 1898 my father was preparing an expedition into the Arctic which would last four years. In previous explorations my parents had worked together, Mother as enthusiastic and eager as he. This would be the first time that she would not take an active part. The

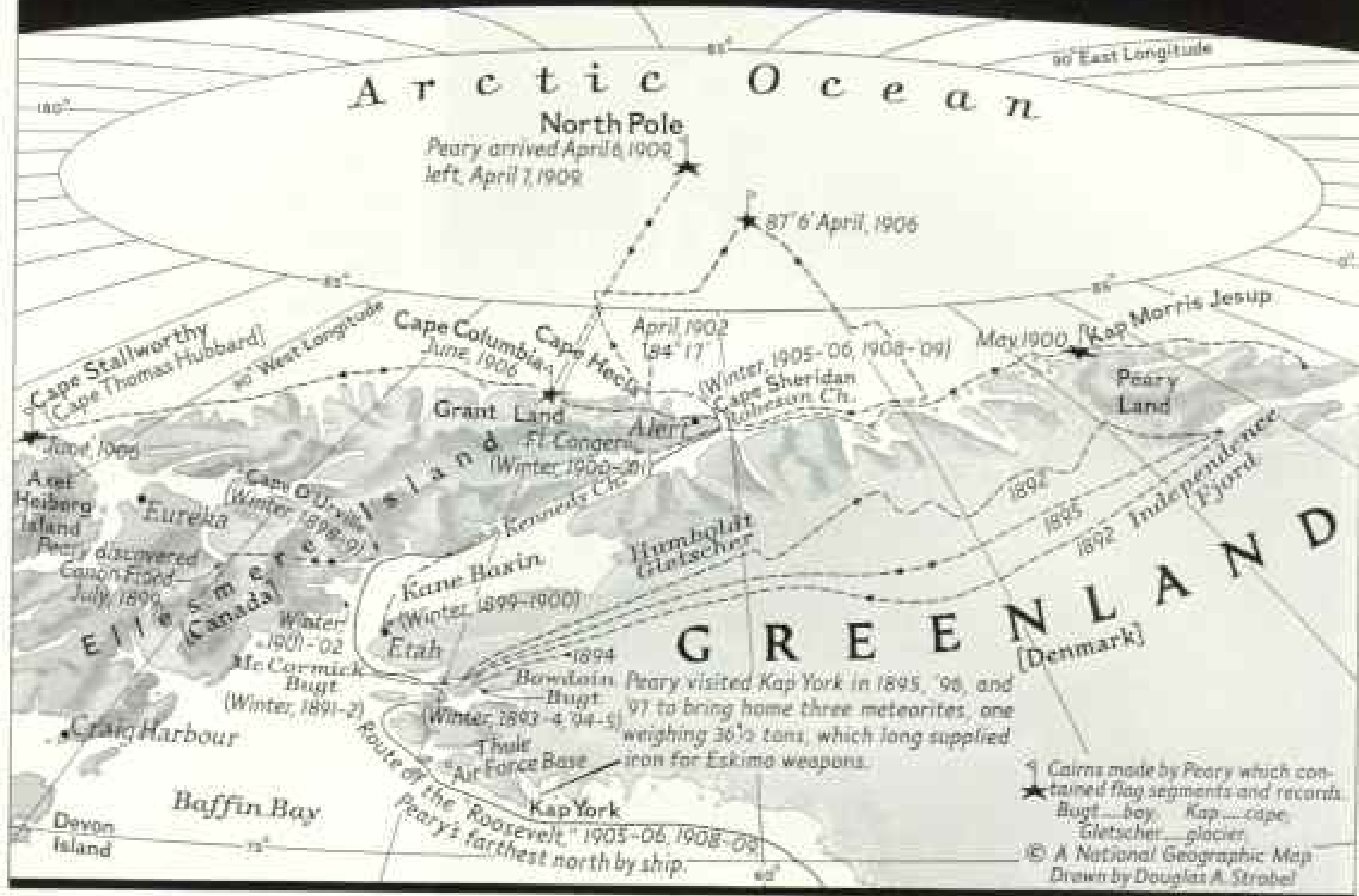
decision was a real hardship to them both.

In casting about for something she might give him, something that he would always have with him as a constant and heart-warming reminder of her and her belief in him, Mother evolved the idea of making my father a large United States flag. It proved to be an inspiration (pages 518, 531).

The red and white taffeta for the stripes was bought by the yard and carefully measured and stitched together. This stitching was done by machine for greater strength, because both knew the flag would have hard wear. But on the blue taffeta field each star of the then 45 was painstakingly embroidered by hand, with stitches so even and so meticulously set that one side of the field is exactly like the other. There is no "wrong" side.

So the flag went with my father in 1898 on that 4-year expedition for which he had such high hopes and which proved to be a series of disasters appalling even to those familiar with the malevolence of the Arctic. The puny engines of the expedition ship were not strong enough to force her to the northern point which Peary had hoped to make his base; and so, in compromise, a location much

PEARY'S EXPLORATIONS IN THE ARCTIC



farther south was used, thus lengthening considerably the sledge journeys north.

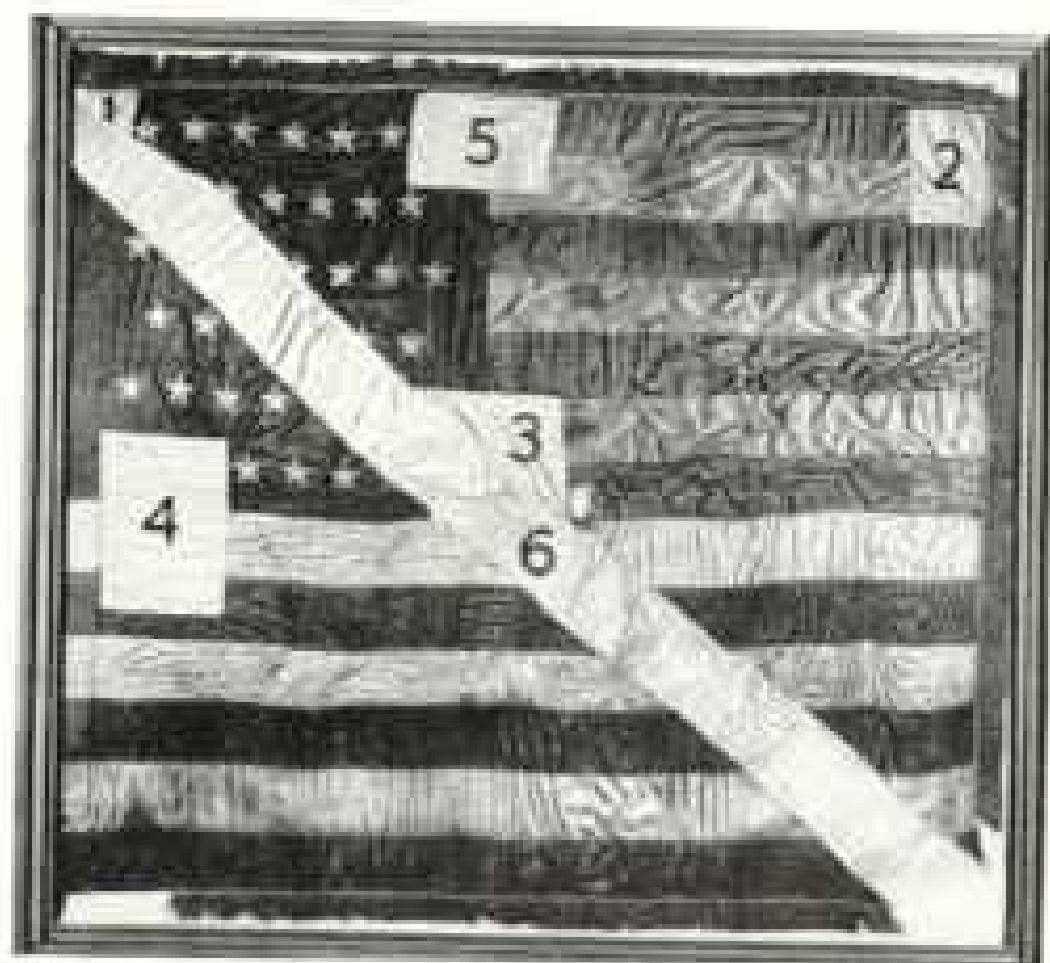
But the crushing blow, the obstacle which would have been insurmountable to almost any man other than Peary, was the freezing of his feet and the subsequent amputation, under horrifyingly primitive conditions, of all but the smallest toe on each foot. William Herbert Hobbs describes this very movingly in his biography of Peary:*

"From January 6th to February 18th Peary lay upon his back in the dreary camp racked with pain from his frozen feet, but in mental anguish far more difficult to endure. With the loss of his toes... what could he hope to accomplish? The attempt on the Pole from his remote base at Cape D'Urville had seemed all but impossible, even when he was in perfect physical condition....

"Was another defeat to be added to the many he had already suffered?... The outlook seemed all but hopeless, yet he refused to despair. On the wall of the old cabin within his reach he wrote the line from Seneca which

↓ Numbers Show How the Polar Flag Acquired Its Honorable Patches

1 and 2: Fragments deposited together at Kap (Cape) Morris Jesup in May, 1900. Never recovered. 3: On Arctic Ocean ice at 87° 06' N., April, 1906. Never recovered. 4: Cape Columbia, June, 1906. Recovered 1953 by Canadian scientists. 5: Cape Thomas Hubbard, June, 1906 (following Peary's Cape Columbia visit). Recovered 1914 by Donald B. MacMillan. 6: North Pole, April 6, 1909. Never recovered. (Mrs. Peary's 45-star flag represents the States of the Union in 1898.)



*Peary, published by the Macmillan Company, New York, 1936. This and other passages from the book are quoted by courtesy of the publisher.



The Pearys, at Niagara Falls, Smile Like Honeymooners:

It was 1904. Commander Peary of the Navy's Corps of Civil Engineers, famous for Greenland explorations and Nicaragua surveys, was president of the Eighth International Geographic Congress. At Niagara Falls, where the Congress held a session, Dr. Gilbert Grosvenor took this informal snapshot of the beaming Commander and Mrs. Peary. They were married in 1888.

had long been his guiding motto, *'Inveniam viam aut faciam,'* 'I shall find a way or make one.'

"After six weeks on his back at [Fort] Conger, Peary was barely able to stand for even a moment, but he decided to be taken back to the ship where his toes could be amputated. . . With feet and legs wrapped in heavy furs, and with himself lashed firmly to the sledge, the party set out from Conger in midwinter for the two hundred and fifty mile journey to the ship along the terrible ice foot.

"What Peary endured of racking pain as the sledge banged and slid and toppled over during the eleven days of this gruelling experience it is difficult even to imagine. . . .

"The final operation made in the North on Peary's toes was performed at the ship on

March 13th. . . . Even when healed, this mutilation was a very serious handicap in walking and particularly when on snowshoes, which require effective use of the toes."

To attempt to reach the Pole under such adverse circumstances seemed out of the question, but there was a great deal of valuable exploration work to be done in the time which remained to Peary. To this he devoted himself, with such success that he was able to surpass all previous sledging records and, in the words of Hobbs, to "plant the Stars and Stripes in new and advanced positions."

Notably, in May of 1900, Peary reached a cape on the northern shore of Greenland; his observations showed him that this was undoubtedly the northernmost point of land in all the world. He named it Cape Morris Jesup after one of his benefactors, the then president of the Peary Arctic Club, and there

he built a cairn and left a record.

Previous explorers, whenever possible, had accompanied their records with a small replica of the flag of their country. But Peary had with him the flag made especially for him by his devoted wife, and that meant more to him than all the replicas in the world. He carried it with him always when in the field, wrapped around his body underneath his fur clothing because he did not wish to trust it to a sledge, which might break through the treacherous sea ice and be lost.

But that flag was too precious to be left in a cairn in its entirety. He then and there decided upon the course which he followed in the future whenever he had attained one of his objectives. From the upper left-hand corner he cut a small piece of the blue field



523

June 28, 1906: Four Pieces Already Missing, Peary's Flag Waves Above Cape Thomas Hubbard

Peary displayed the banner before he cut the fragment he was to leave in this cairn atop a peak at his "farthest west" (pages 518, 521, 529). From this 1,600-foot vantage point the explorer thought he saw "Crocker Land," which may have been an ice island. Peary's field-glass case rests on loose rock in the foreground.



Cape Sheridan: Polar Sea Ice Locks the *Roosevelt* in a Perilous Embrace

Designed by Peary, the 184-foot steamer of the Peary Arctic Club carried the explorer north on his last two expeditions. Powerfully engined, she had sides 30 inches thick in places. The photograph, one of the first ever made by light of the moon and aurora borealis, shows the vessel in winter quarters, 1905-06. Unusually savage weather that season kept Peary from reaching the Pole and almost wrecked the ship.

and one star; from the upper right-hand corner he cut a piece which included the ends of one red and one white stripe. Together, these two pieces represented unmistakably the Stars and Stripes, and he placed them, with his record, in the cairn.

In 1921, one year after my father's death, the distinguished Danish explorer, Dr. Lauge Koch, visited the Peary cairn at Kap (Cape) Morris Jesup. On his return to Denmark he wrote my mother a most friendly letter and sent her a sledge board, with my father's name carved in it, which he had found in the vicinity of the cairn. It has always been supposed in Arctic circles that he also sent her the pieces of the flag, but this is not so. We have never seen them.

When I was in Denmark in 1948, I tried to locate the pieces and have them sent to Mother so that she might have the pleasure of having them come back during her lifetime.

But these efforts were unavailing. In the fall of 1953, during the visit of the Danish Count Eigil Knuth to this country, I took the matter up with him, and he said in amazement, "Why, didn't you know? There was nothing in the cairn when Dr. Koch reached it. It had evidently been demolished by polar bears, and he found no record, no pieces of flag, nothing."

The third piece to be left will almost certainly never be recovered. This was cut with the blue field and stars and the red and white stripes all in one piece, from the lower right-hand corner of the star-spangled field, and was left at north latitude 87° 06' on the 21st of April, 1906, after my father's heartbreaking failure to reach the Pole that year.

That was the expedition when, for a change, everything seemed favorable. Leave from the Navy had been obtained with the minimum of difficulty. The Peary Arctic Club had provided adequate funds. An operation on my

June 8th 1906

Arrived here midnight
June 7th from the Peary
Arctic Club's S. S. Roar-
nely which wintered
at C. S. Herdow.

Am on my way north
along the coast with 3
Esquimaux + 3 sledges.
Last night I killed 6
muskoxen just east of
here.

There is nearly con-
tinuous water along
the icefoot, a lane
running directly north

from here, + several
lakes to the N.E. + N.W.
(true)

In April of this
year I reached the high-
est north yet attained,
going north on the
meridian of this Cape
+ returning upon the
Greenland coast a little
east of 50° W. Long.

I build this monument
+ leave this record, with
a portion of my U. S. flag
as a permanent mark
of my visit.
R. E. Peary, U. S. N.

From Mrs. Edward Hafford

Peary Records His First Visit to Cape Columbia, Northernmost Point in America

The explorer left this document and a piece of his flag in a rock cairn on an 1,800-foot peak just behind the cape; the Cape Columbia guidepost, which stands on the Ellesmere Island foreshore, was not built until three years later (page 526). Canadian scientists Geoffrey Hattersley-Smith and Robert Blackadar recovered document and flag fragment last year (page 528).

father's feet by the skillful surgeon Dr. William Williams Keen, of Philadelphia, had enabled him to walk with no pain and no difficulty. And he had a new, powerfully engined ship, the *Roosevelt*, which he had been able to force to the northern shores of Grant Land, farther north than any other ship had ever penetrated under her own steam (opposite). The future looked rosy indeed.

But conditions in the Arctic are always unpredictable, and no conditions more so than the ice of the Arctic Ocean. That early spring of 1906 was one of unexplainable and violent convulsions. Gigantic floes crashed together, leaving pressure ridges 15 to 30 feet high as evidence of the impact. Over these the sledge parties had to pickax their way, sometimes unloading the sledges on one side, reloading them on the other, and dragging the dogs up and over by sheer strength.

Just as suddenly, wide and impassable leads

—lanes of black water—would open before the parties, and then there was nothing to do but camp and wait, until either the floes came together again or the open water froze over.

Such constant obstacles and delays played havoc with the strict time schedule of the expedition, and the slender stock of food was unfortunately consumed whether the party was advancing or sitting idle in camp.

Finally, at 87° 06', having broken the record and established a new Farthest North, Peary decided to turn back. In his diary he wrote:

"I thanked God with as good a grace as possible, though I felt that the mere beating of the record was but an empty bauble compared with the splendid jewel on which I had set my heart for years, and for which, on this expedition, I had almost literally been straining my life out...."

"I was more than anxious to keep on, but as I looked at the drawn faces of my com-



Peary's Monument Points to the Four Winds

After discovering the earth's northernmost point, Peary had this guidepost built at Cape Columbia. Inscriptions punched in sheet copper tacked to the pointing arms showed distances to the North Pole, Kap Morris Jesup (east), Cape Thomas Hubbard (west), and Cape Columbia (south). Peary's negative fails to show the wording. American airmen found the structure half toppled in 1952. Canadians rebuilt it last year.

rades, at the skeleton figures of my few remaining dogs, at my nearly empty sledges, and remembered the drifting ice over which we had come and the unknown quantity of the 'big lead' between us and the nearest land, I felt that I had cut the margin as narrow as could reasonably be expected."

So it was here, with an aching heart, that Peary deposited his record and another piece of his precious flag in a bottle. Unless a miracle has intervened, the sea ice on which

the bottle was left has long since drifted into warmer waters and disintegrated, and the record and piece of flag have sunk to the bottom.

No story of that Farthest North expedition would be complete without an account of the return journey to the ship.

All Peary's worst fears were realized. The "big lead" was encountered, and for a while it seemed as if the little party would never get beyond it. It was far worse than it had been when they crossed it on their way north, and during their five days' wait at its side provisions were used up, the dogs that gave out were consumed, and sledges were broken up to be used as fuel to cook them.

Finally two of the scouting Eskimos led eagerly to a place where thin new ice was forming on the black water. It was a chance, though a very slim one, and it might not come again.

At Peary's orders the men lashed on their snowshoes and in a widely separated line began the dangerous crossing. At the toe of each snowshoe a little undulating wave spread out; one misstep and the fragile bridge would be shattered.

They got across, saved by the fact that sea ice is much more flexible than fresh-water ice, but it was a harrowing experience. Peary, with his usual habit of understatement, remarks in his journal, "I do not care for more similar experiences."

Behind them as they looked back from the southern shore, the film of ice was already separating and the lead was widening again.

After the superhuman physical exertion of that sledge trip out over the polar sea, the

PEARY ARCTIC CLUB
NORTH POLAR EXPEDITION
1908

PEARY ARCTIC CLUB
NORTH POLAR EXPEDITION
1908

E. B. ROOSEVELT June 12th 1909

E. B. ROOSEVELT

This Announcement marks the point of departure and return of the sledge expeditions of the Peary Arctic Club, which in the spring of 1909 attained the North Pole.

The members of the expedition taking part in the sledge work were Prof. Bartlett, Fordell, Martin, Jack Killian, Roup, Husod.

The various sledge divisions left here January 20th and March 10th, and returned from March 10th to April 22nd.

The sledge steamer 'Roosevelt' wintered at Etah, 75 miles east of here.

Rear Admiral U.S.N.

Commodore Peary
Lieutenant
Chief Mate George
Sergeant
Dr. Cook
Prof. Bartlett
George Roup
Ed. H. Husod
Charles Fordell
Mate Thomas
Rear John
Sergeant
John
George
Chief Mate
Sergeant
John

5. Signed April 10th returning from Etah N. Et.

Altered Robert E. Peary

Few Ever Saw This First Announcement of the North Pole's Conquest

Three months before the outside world knew of the victory, Peary had this record nailed in a glass case on the Cape Columbia guidepost (opposite). Then he photographed it in place. Arctic storms eventually destroyed the document, which Rear Adm. Donald B. MacMillan, one of Peary's assistants, called "one of the most important in the world." Until The Society's editors recently found this negative in the Peary collection, no facsimile of the historic record was known to exist. Names of expedition members are cut off because the right edge of the old roll film was light-struck.

near-starvation, and the anguish of the long-drawn-out wait beside the big lead, it would seem that Peary and his party would have had enough.

But in just a week after his return, Peary

set out with three Eskimos to explore and map the northern coast of Grant Land. At Cape Columbia he climbed an 1,800-foot peak behind the cape. There he built a cairn and left a record telling of his Farthest North



Admiral Robert E. Peary

Pressure Ridges Like This Slowed, but Failed to Stop, the Dash to the Pole

Winds and tides, in 1909 as now, squeeze pack ice into jumbled, towering barriers. Nearing the Pole, Peary found these obstacles far less frequent than he had foreseen. Time after time his account of the journey speaks of fast marches over unexpectedly level floors. On his return trip he followed a trail carefully improved by his support parties. This pioneer group, outward bound, laboriously sledges supplies over a difficult place.

and also deposited with it the fourth piece of his flag (pages 518, 525, 526).

Fourth Bit Found at Cape Columbia

Not until the spring of 1953 was this cairn visited by the young Canadian scientists, Geoffrey Hattersley-Smith and Robert Blackadar. They removed the record and piece of flag and put a copy of the record in their place.*

Everyone acquainted with the history of exploration knows that from time immemorial

* See "Ontario, Pivot of Canada's Power," by Andrew H. Brown, NATIONAL GEOGRAPHIC MAGAZINE, December, 1953.

it has been recognized that all records and relics of any kind found by an exploring party belong by courtesy to the organization or society which has made the finder's expedition possible. Canada would have been well within its rights had it placed my father's record and the piece of flag in its polar archives.

Instead of this, Canada's Prime Minister, Louis St. Laurent, wrote me a very friendly and touching letter:

"Ottawa, September 25, 1953

"Dear Mrs. Stafford:

"...I was very pleased that you wrote about your father's flag and told the story

of how your mother made it. You can readily understand that, like most Canadians, I was most interested in the history of the flag and in the news that the Canadian expedition to Cape Columbia had recovered one of the pieces.

"Through the notable work of your father in the Canadian north the flag of which this is a fragment has assumed great historical interest in Canada, but I know that for your mother and you it has a special personal value which cannot be weighed. I am therefore happy to return this piece for your mother to replace on the flag which she made so long ago.

"I hope that she will derive pleasure not only from the return of this memento of her famous husband's exploits, but from the knowledge that we Canadians are deeply conscious of the contribution which Admiral Peary made to the knowledge of our Arctic lands. The Peary flag is a reminder of that contribution, and the gradual replacement of its missing pieces has been an indication of the paths which he opened to future generations. Citizens of our two countries can well look at your mother's flag as yet another symbol of the happy cooperation for mutual advantage which characterizes the relations of Canada and the United States....

"Yours sincerely,

Louis St. Laurent."

Not only did Canada's Prime Minister send the piece of flag to Mother, but Geoffrey Hattersley-Smith came to see her himself, bringing with him a photostat of the record and several small souvenirs of my father's last expedition, picked up at the *Roosevelt's* winter headquarters at Cape Sheridan.

Fifth Piece at Cape Thomas Hubbard

From Cape Columbia in that summer of 1906 Peary and his Eskimo companions pushed on along the northern coast of Grant Land, surveying and mapping as they went, even though hampered by almost continuous fog so that their course had to be kept by compass. Aldrich's farthest west* was passed on the 16th of June, but still they continued westward. Food, however, was running low, and frequent stops had to be made to secure game. With the advancing season, open water added to their problems.

Finally, on June 28, Peary decided to turn back toward the ship. He had reached a bold,

outflung cape and, climbing the peaks behind it, he built a cairn on the highest summit, 1,600 feet above the sea. In it he left a record and the fifth piece of his silk flag. This headland he named Cape Thomas Hubbard, now called Cape Stallworthy (page 523).

Peary's Hardest Journey

The return journey to the ship was the worst Peary had undertaken in all his years of Arctic exploration. Again I quote his biographer, William Herbert Hobbs:

"The hardships endured on this return journey of three hundred miles around and through the lakes and rivers of thaw water on the glacial fringe, have probably never been exceeded in Peary's long and arduous career as an explorer. On many days the men waded, often waist deep and sometimes chest deep, with the dogs swimming in the icy water and the sledges kept afloat by inflated sealskin balloons....

"Peary's narrative, usually so restrained in language when referring to hard punishment while sledging, here abounds in such expressions as: ... 'My clothes are now literally rotting from the constant wet, I have got used to the disagreeableness of the wet, but not yet to the stench of the last few days, especially when in camp and turned in....'

"Peary's kamiks, sodden and rotted, he had fitted with tin soles from food cans, and 'with feet almost useless' he was able to reach Cape Sheridan on July 26th. His kamiks were cut through, the tin soles broken in dozens of places, and feet hot, aching and throbbing till the pain reached to his knees....

"Thus came to an end a six hundred mile sledge journey of fifty-eight days, which for hardships endured can have few parallels in the history of polar exploration."

The record and piece of flag left at Cape Thomas Hubbard on this grueling trip were recovered by Donald B. MacMillan in 1914, during the exploring work of his 4-year Crocker Land Expedition. According to the custom mentioned previously, both were turned over to the American Geographical Society, of which my father was president at the time of the journey (pages 518, 521).

On the 6th of May, 1933—my father's birthday and 13 years after his death—a

*Senior Lieutenant Pelham Aldrich, Royal Navy, was a member of Capt. George Nares's expedition to the polar sea in 1875-76. His farthest west was 86° 30'.

luncheon was given by the American Geographical Society at which this piece of flag was presented to me, as representative of the Peary family. At that time Mr. Philip W. Henry, vice president of the Society, said in part:

"It gives me much satisfaction to return this relic to you now on behalf of the Society. What the flag of which this is a small fragment has meant in the life of your family is perhaps not generally known. Fashioned by your mother's hand, it was carried by your father, wrapped around his body, on all his expeditions. . . . With it was mantled the casket that bore your father's remains to Arlington. . . ."

Last Piece Marked North Pole's Conquest

The sixth and last piece of the flag is a diagonal strip, four inches wide, running from the upper left-hand corner to the lower right, and this strip was left at the North Pole itself on the 6th of April, 1909. The story of that final triumphant journey across the polar sea to the Pole and back again is too well known to need repetition here (page 527 and opposite). There are, however, a few points which later developments and exploration by plane in the Far North have brought out.

Peary's critics, of whom there were quite a number at the time of his discovery, took particular issue with the speed of his sledge journeys as he neared the Pole. They said such speed was impossible, considering the character of the ice of the Arctic Ocean. However, Peary himself pointed out, with delighted surprise, that the ice near the Pole was *not* the characteristic sea ice to which he was so unhappily accustomed. In fact, he goes even further and says: "The surface of the ice, except as interrupted by infrequent pressure ridges, was as level as the glacial fringe from Hecla to Cape Columbia." This is the telling phrase.

Detailed information on the recently discovered fresh-water ice "islands" in the polar sea is given in the NATIONAL GEOGRAPHIC MAGAZINE in the article by Dr. Gilbert Grosvenor and Dr. Thomas W. McKnew, "We Followed Peary to the Pole," October, 1953, and "Three Months on an Arctic Ice Island," by Joseph O. Fletcher, April, 1953. A recent paper on the ice islands of the Arctic Ocean gives a number of quotations from Peary's *Nearest the Pole*, showing that he had seen and recognized the different character of the

ice over which he traveled, although the necessary speed of Peary's journeys, before the spring breakup of the pack, left him no time for a close investigation.*

In this age of daily miracles, stranger things have happened than that Peary's North Pole record and the final piece of flag might have been deposited on an ice island similar to the now famous "T-5" and that they may one day be recovered.

And now for the ultimate disposition of this flag, so rich in historical significance to this country, so steeped in sentiment for the Peary family. On his return from the Pole, in an intimate, private ceremony, my father gave the flag to Mother, saying, "You made this for me in the first place, and it has always been my greatest treasure. So now I return it to you and hope that you will feel that it has been used worthily and that I have been able to add some glory to it."

My father never undervalued for a moment the tremendous help my mother had been to him in all his work, and his *Nearest the Pole* is dedicated "To her who has been my constant aid and inspiration and has borne the brunt of it all."

For years the flag was on display with my father's medals and other trophies in a special case in the museum of the Smithsonian Institution. However, the flag was made of taffeta, a fragile material, and had been exposed to extremes of temperature as well as stained with perspiration from my father's exertions at the upstanders of his sledge. It was finally noticed with dismay that it was breaking in various places and was in danger of disintegrating entirely.

Peary's "Greatest Treasure" Preserved

As all the objects in the case were only on loan, the flag was removed in order to preserve it. The entire flag was mounted on linen with tiny stitches of matching thread running along the edges of the stripes to distribute the weight as evenly as possible. The linen was then stretched on wallboard and the entire flag placed in a dust-proof, moisture-proof frame. For many years it has hung in the living room of my home in Washington, a thrill and an inspiration to all who have seen it and a source of pride and incentive to my two growing sons.

* "Arctic Ice Islands," by L. S. Koenig, K. R. Greenaway, Moira Dunbar, and G. Hattersley-Smith, in *Arctic*, the Journal of the Arctic Institute of North America, July, 1952.



Admiral Robert E. Peary

Moment of Victory: Peary's Flag, Token of a Wife's Love, Flies at the North Pole

Six stood at the top of the world on April 6, 1909. No man before or after them has walked to it. Peary made the picture of Ooquesh, Ootah, Matthew Henson, Egingwah, and Sergloo (left to right). The flag was soon to be cut in two so that Peary could leave a diagonal strip at the place of triumph.

Now, however, times are changing rapidly; my mother is 91, and she is anxious to see the flag in permanent and suitable security during her lifetime. In a family consultation, it was unanimously decided to present it to the National Geographic Society.

Hubbard Medal Awarded to Peary

Even further back than my memory serves there has been an unusually strong bond of admiration and affection between the National Geographic Society and the Peary family. During the winter of 1894 and '95, when my mother was working desperately at the trying and unfamiliar task of raising money to send a

ship north to bring my father home that summer, the first helping hand was extended to her by Gardiner Greene Hubbard, first president of The Society. He arranged to have Mother give a lecture before The Society and gave her the gross, not the net, receipts of the ticket sale. This friendly gesture, with its attendant publicity, ensured the success of Mother's efforts.

On December 15 of 1906, on my father's return from his Farthest North expedition, weary and discouraged from his "so near and yet so far" attempt, the National Geographic Society presented him with its beautiful Hubbard Gold Medal.



Admiral Robert E. Peary

Bundled in a Flag, "Snowbaby" Takes Her First Outing

The author was born in Greenland high above the Arctic Circle. Eskimos promptly nicknamed her Ah-poo Mickaninny, meaning "Snowbaby." Here Mrs. Peary takes her flag-wrapped 6-weeks-old daughter outdoors just before the sun disappeared for the winter of 1893.

In 1909, when the unfortunate controversy arose concerning the discovery of the North Pole, it was the National Geographic Society which had the courage of its convictions and volunteered to examine my father's observations and records and pass judgment upon them. The favorable verdict laid The Society open to a storm of invective and abuse from

the violent supporters of the rival claimant, but not once did it swerve from its loyalty to Peary. And the National Geographic Society was the first of all the geographical and scientific societies of the world to honor Peary for his discovery of the North Pole by presenting to him on the 15th of December, 1909, a Special Gold Medal, four inches in diameter, for that discovery.

At the time of my father's death in February, 1920, The Society relieved my stricken mother of all details connected with the funeral and later erected on his grave in Arlington National Cemetery the beautiful granite globe of the world, with the continents in relief and a bronze star marking the North Pole.*

Always The Society has stood firmly behind Peary and everything pertaining to him and his achievements. Most impressive of all has been the warm personal friendship existing between my parents and the succeeding presidents of The Society, beginning with Gardiner Greene Hubbard and continuing through Alexander Graham Bell and Henry Gannett to Gilbert Grosvenor, President since 1920 and Editor 55 years.

Therefore, it has seemed right and fitting that this honored flag should find its last resting place in the Explorers Hall of the National Geographic Society in Washington, in dignified and reverent surroundings, and at a time when my mother is still alive and when Dr. Gilbert Grosvenor, as Chairman of the Board of Trustees, is still active in the executive affairs of The Society.

* See "Memorial to Peary," NATIONAL GEOGRAPHIC MAGAZINE, JUNE, 1922.

Lured by Rich Rewards, Prospectors Search from Desert to Arctic for New Supplies of This Magic Fuel of the Atomic Age

BY ROBERT D. NININGER

With Illustrations by National Geographic Photographer Volkmar Wentzel

ONLY 15 years ago, when Prof. Albert Einstein warned President Franklin D. Roosevelt that Germany might be working on an atomic bomb, few people had even heard of uranium. Its chief uses then were for coloring pottery, glassware, and false teeth.

Today, in contrast, uranium is the most sought-after metal on earth, the essential material both for making atomic bombs and for producing atomic energy for peaceful uses to benefit all mankind.*

Fuel of the Atomic Age

On at least three continents of the Free World, and behind the Iron Curtain as well, a feverish hunt is under way for new and larger supplies of this magic gray element, the fuel of the Atomic Age. It is the greatest organized search for valuable ores in world history.

As an officer in the U. S. Army's Corps of Engineers, I first joined the quest for uranium during World War II, when a group of geologists working in supersecrecy hunted supplies for making the first atomic bombs. More recently, traveling to widely separated parts of the world, I have seen at first hand the development of the postwar uranium boom.

Since World War II the eager search for this radioactive metal has lured thousands of prospectors, both amateur and professional, into remote, sparsely populated regions of the United States, Canada, and Australia. The uranium rush to northern Saskatchewan in 1952 was reminiscent of the California gold rush of a century before; other big strikes in Utah in 1953 brought a flood of fortune seekers comparable to the stampede to the Klondike gold fields in 1897 and 1898.

Cowboys, shearers, Indians, barbers, plumbers, traffic cops, Boy Scouts, teachers, professors, high school and college students, many working in spare time, have joined the hunt for the precious element.

More and more amateur and professional uranium prospectors are "striking it rich"

each year. Discovery of a good ore body pays well because governments of the United States and several other nations are guaranteeing high prices and putting up bonuses for uranium ores. The United States Atomic Energy Commission offers a bonus of up to \$35,000, plus guaranteed prices, for the delivery of commercially useful ore from each new find. More than \$3,000,000 in bonuses alone has been paid to date by the Commission.

When the curtain of secrecy was lifted from the atomic energy program, the idea quickly spread that almost anybody had a chance to find uranium literally in his own backyard. Some promoters of candy and breakfast foods even offered children primitive uranium-detection devices in return for wrappers, coupons, or box tops "and 10 cents."

Uranium Won't Stop Your Watch

During the first three years after the announcement of bonuses and guaranteed prices for uranium, more than 15,000 inquiries asking for every conceivable type of information, and more than 20,000 samples representing practically every natural substance (and some that weren't natural), were received by the Atomic Energy Commission.

One lady complained that the cows which grazed at one spot on her ranch all lost their hair because of a uranium deposit there. A Texan wrote that every time he passed a certain point on his way to town his watch

* See, in the NATIONAL GEOGRAPHIC MAGAZINE: "Nevada Learns to Live with the Atom," by Samuel W. Matthews, June, 1953, and "Man's New Servant, the Friendly Atom," by F. Barrows Colton, January, 1954.

The Author

Mr. Nininger is Deputy Assistant Director for Exploration in the Division of Raw Materials of the United States Atomic Energy Commission. Early in World War II he served as a field geologist in the Strategic Minerals Program of the U. S. Geological Survey. Later, as an officer in the Corps of Engineers, U. S. Army, he was assigned to the Manhattan Engineer District and worked on the Atomic Bomb Project Exploration Program. Mr. Nininger is the author of the recently published book, *Minerals for Atomic Energy*.

stopped. Would the Commission send a geologist to see if there was uranium there? Others wanted to know whether uranium ore would cause radiation burns if touched.

An elderly man reported that ever since he had begun to prospect in an old mine on his property his ears had been ringing. He believed a uranium deposit caused it and wanted to collect the bonus at once.

Reports of "uranium strikes" even came from housewives who prospected around their homes with Geiger counters purchased in department stores. One old lady, who called herself the "Uranium Queen," took up residence in a shack near her discovery, which she mistakenly claimed was the biggest uranium find in the world. She used a 12-gauge shotgun to keep prospectors and even Government geologists from "jumping her claim."

The flood of inquiries led the Atomic Energy Commission and the U. S. Geological Survey to publish in 1949 a booklet called *Prospecting for Uranium*, to provide a few answers. More than 150,000 copies have been sold; it can be obtained from the U. S. Government Printing Office for 55 cents.

Spurred on by the hope of large rewards, prospectors have uncovered rich uranium deposits in Utah, Wyoming, New Mexico, Colorado, the Black Hills of South Dakota, and a hundred new places in the Colorado Plateaus area. Other valuable strikes have been made near Lake Athabasca in subarctic Canada, on the north shore of Lake Huron, and in Australia.

Uranium Known Since 1789

Martin Heinrich Klaproth, a German scientist, first identified uranium in 1789 while studying ores of the Jachymov silver mines of Bohemia, now in Czechoslovakia. Today these mines are an important source of uranium for the Communist-dominated countries.

Prospecting for uranium minerals has one major advantage over the search for other ores. All minerals containing uranium and its sister element, thorium, emit particles or rays, called radiations, that cannot be seen or felt but can be detected and measured with a Geiger or scintillation counter. With the aid of one of these devices, an experienced prospector can cover a large area quickly and make a good preliminary estimate of the importance of a find (pages 537, 539).

Today many types of lightweight, portable counters are available for uranium prospect-

ing at prices that range from \$30 up to \$700.

The Geiger counter employs a gas-filled tube with a high electric voltage set up between its walls and a wire running down the center. When radiations from uranium minerals pass through the tube, they collide with molecules of the gas and produce pulsations of electric current, which are amplified to actuate a needle on a dial, blink a light, or make an audible click in earphones.

In a scintillation counter the radiations produce tiny flecks of light or scintillations in synthetic crystals called phosphors. The scintillations in turn are translated into electric pulsations that move a needle on a dial.

A vein or bed, or even a good specimen of high-grade uranium ore, will send a counter's needle off the dial, cause the blinker to give an almost steady light, and make the earphones sound like a buzz saw.

Atomic Age's Dowsing Rod

The counter is, in fact, a scientific "dowsing rod" which will tell the operator when he is near radioactive minerals.

Even when there is no uranium around, the counter still registers a click or flash every second or so, a "background count" of radiation caused by cosmic rays from outer space and the radioactivity that exists in all rocks.

In the last four years alone more than 10,000 counters have been sold to individual prospectors, and another 25,000 have been purchased by private companies.

I saw Canada's uranium rush under way on a visit to the Beaverlodge area on the north shore of Lake Athabasca in northern Saskatchewan. This region was raw, undeveloped wilderness until uranium was found there. In late September, 1952, I flew north from Edmonton, Alberta, with Alf Caywood, chief pilot and general manager of the aviation division of the Canadian Government's Eldorado Mining and Refining Limited, a company which operates many of the new mines in the area.

Riding with us was a planeload of miners, engineers, cooks, clerks, and others who would staff the mining camps and take out the ore that the prospectors had found. The prospectors themselves were still out in the bush, making the best use of the last days before the early fall freeze-up.

Little prospecting is done in winter, for temperatures drop as low as 50° below zero, and snow often conceals rock outcrops.



Remote Canadian Lakes Offer Icy Landing Strips for an Airborne Prospector

Uranium hunter Ernie Boffa of Yellowknife, Northwest Territories, pilots his own ski-equipped plane. Here he checks a likely outcrop with hammer and radiation counter.





← A Navajo Ferrets Out Precious Uranium on a Canyon's Rim

Production of domestic uranium ore centers in the Colorado Plateaus region, 130,000 square miles astride the point where Colorado, New Mexico, Arizona, and Utah come together. Centuries ago Navajos searched its arid mesas for carnotite, a powdery yellow rock used in sand paintings. Today Indians again seek out the mineral; its uranium content furnishes the seed of atomic energy.

High above the Little Colorado River near Cameron, Arizona, two Atomic Energy Commission geologists examine a find and map the region for future exploration.

↓ Prospect Fever Grips Old and Young Alike

Near the gold and silver diggings of the Rocky Mountains the story of sudden wealth is being repeated. Here in Grand Junction, Colorado, even newsboys window-shop before a display like this!

Opposite: An AEC exhibit offers a lesson in "atomic geography" for University of Maryland students.

© Kodachromes by National Geographic Photographer Volkmar Weinstock

537



Alf Caywood invited me to join him up forward in the pilot's compartment.

"Temperature 30° and snowing in Beaverlodge," he reported. "Ceiling 400 feet, typical September weather!"

Below, through a break in the clouds, we glimpsed the waters of Lake Athabasca, whipped into whitecaps by the chill wind. During the three months of summer all the heavy freight for the new mines and settlements of the uranium rush must be moved by barge from the railhead at Waterways, 220 miles southwest.

As the plane emerged from the overcast, we looked down on the broad expanse of the Beaverlodge development area, where 20th-century prospectors have created the new towns of Eldorado and Uranium City.

Red-mud roads, carved out of the rock ridges and forests and built across the muskeg, extended from the newly constructed buildings toward the mines. The roads were lined on either side with pile upon pile of crates and boxes filled with equipment and supplies that had been moved in for the approaching winter.

Taxiing to the 12-by-12-foot hut that served as passenger terminal and operations building, we passed the wreckage of a DC-3 that had crash-landed in darkness a week before. Though passengers and crew escaped unhurt, Alf told me, the plane had been drenched with gasoline spilled from broken wing tanks. The pilot yelled back into the darkened cabin, "Don't anyone light a match!" Hearing only the word "match," an old Indian woman immediately struck one, but the other passengers pounced on her in time to prevent disaster!

Modern Prospectors Travel by Taxi

I found myself in a country of low moss-covered, rocky hills, dotted with thousands of lakes. Heavy forests of evergreens and poplars grow in the valleys and along the slopes and ridges where there is sufficient soil.

One of the world's greatest hunts for uranium is under way in this subarctic region near the border between Saskatchewan and the vast Northwest Territories that reach to the Arctic Ocean.

The area of uranium deposits extends east, west, and north of Goldfields, an abandoned gold-mining town on the north shore of Lake Athabasca. The most intensively prospected area is about seven miles north of Goldfields and around Uranium City.

Uranium City, rapidly developing into a modern mining community, is now a boom town of high prices and tall stories, lacking only wide-open saloons and gambling halls to make it typical of the old mining camps of gold-rush days. A distinctly modern touch is a fleet of taxicabs, brought in by barge across the lake (page 540).

Shortly before my arrival, this area saw a rush for newly opened uranium claims as exciting in its way as the Oklahoma land rush of 1889. Blanket prospecting concessions given to large mining companies by the Saskatchewan government in 1949 had expired. The companies had staked out only a small part of the concession area for their own operations, and the rest was then opened to the general public.

Prospectors Flown into Bush

Hundreds of prospectors lined up to await the starting signal at 8 o'clock one morning, but these fortune seekers of 1952 raced for their claims not by horseback, oxcart, or covered wagon but by canoe, airplane, and taxi!

A prospector was allowed 21 claims, each 1,500 feet square. For safety in this remote country most of them preferred to work in pairs, so claims were usually staked out in groups of 42.

Usually Eldorado hires several of these 2-man prospecting teams. Generally an older, experienced prospector and a younger man, perhaps a college student, go out together. The company provides provisions and counters for the summer and flies the men to a likely area. Many carry radios to keep in contact with their base. They are paid a good monthly salary and a \$1,000 bonus for each discovery that proves worth developing.

If a discovery is developed and worked, the prospectors get a percentage of the money spent on its development, as well as a portion of the profits from ore produced. It is possible for a prospector to make more than \$100,000 on a really good find. If the company does not want a discovery, the finders can claim it themselves.

The prospecting fever has mounted with every strike; in March, 1953, some 5,000 claims were staked in the Beaverlodge area.

During my visit a new discovery was made by diamond drilling on a claim owned by the Gunnar Gold Mines, Ltd. Partly as a result of further development of that find, the Toronto Stock Exchange soon had one of the

When Rock Blooms → Yellow and Geiger Counters Rattle— Uranium!

Seeking a bonanza, a Utah rancher with Geiger counter "walks the rim" in the Circle Cliffs country. Rays from radioactive ore penetrate the counter's tube, causing electrical discharges that produce clicks in the loudspeaker. The greater the radioactivity the faster the clicks.

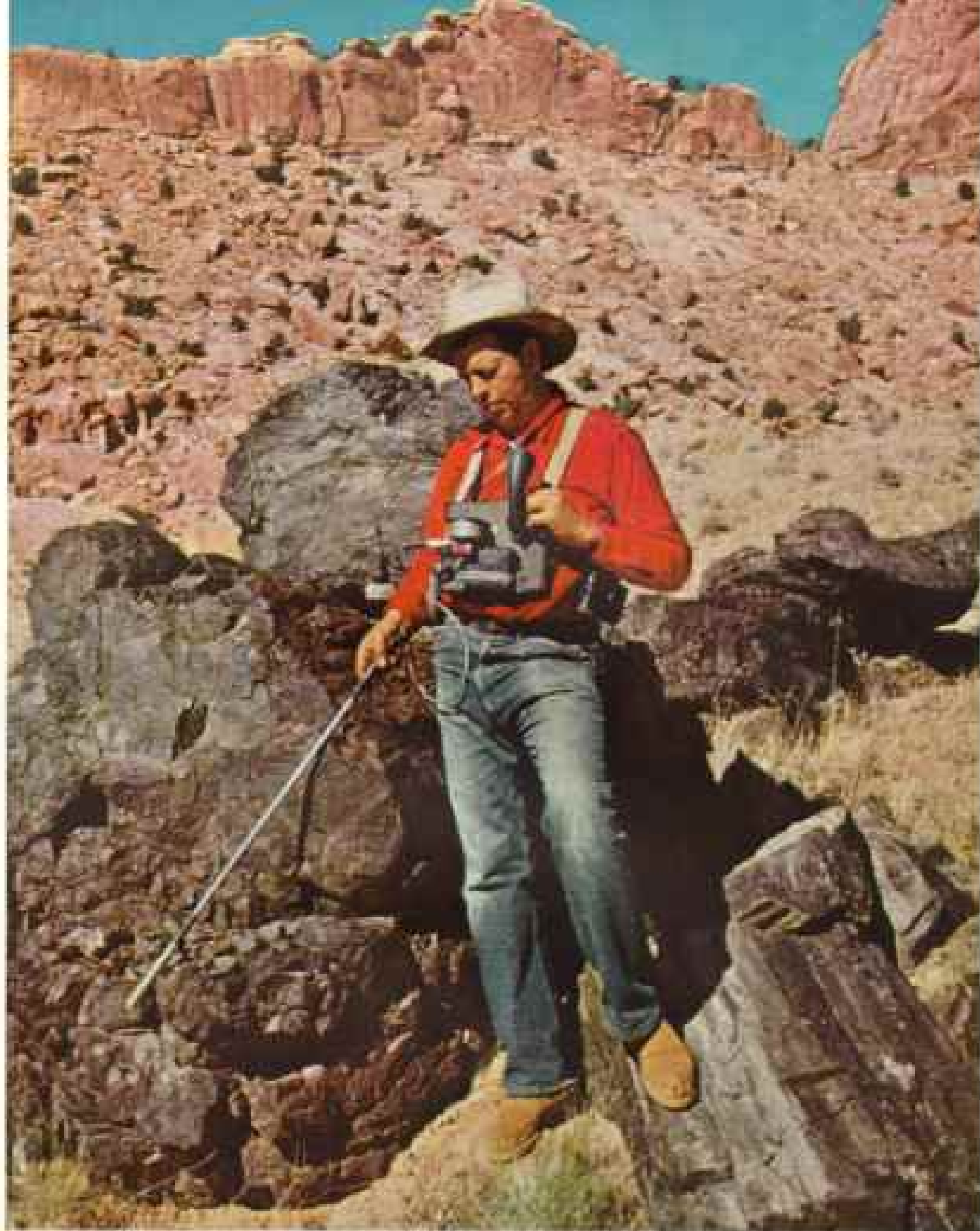
Uranium-bearing minerals display a variety of hues, but carnotite, the one most widely found on the Colorado Plateaus, usually shows bright yellow. The AEC pays \$1.50 to \$3.50 per pound of uranium oxide, depending on the grade of ore.

↓ Not Even Museum Rocks Escape Ray Tests

In Washington's Smithsonian Institution the U. S. Geological Survey has tested thousands of specimens in the quest for new uranium sources. This student, as part of his Antioch College mineralogy course, aims a scintillation counter at copper ore.

© National Geographic Society

Illustration by Josef Murek and (below)
Kodachrome by National Geographic
Photographer Volkmar Wenzel





Uranium City's Muddy Main Street Already Has Traffic and Parking Problems

This mushrooming Saskatchewan center is a focal point of Canada's feverish search for atomic minerals. Some of its buildings were hauled by tractor from the abandoned town of Goldfields. Unlike prospectors of gold-rush days, Uranium City residents bring their families; the local school has more than 100 pupils.

busiest periods in its history. Gunnar stock, which had been selling at 75 cents a share, went up in a few weeks to nearly \$15.

Shortly afterward, a discovery 2,000 miles away at North Bay, Ontario, caused a rush for uranium shares on the Toronto Exchange. Excitement became so great at North Bay that claims were staked even on the grounds of a church.

In the summer of 1953 a rush started in the Blind River district east of Sault Ste. Marie that resulted in 10,000 claims within a few weeks.

"The pitchblende here doesn't show up like the yellow carnotite you have in the United

States," Ben Allen, then Eldorado's chief geologist, told me. "In fact, in most of the mines you can't see it at all, but have to use a counter to tell where the ore is. Of course sometimes we run across a high-grade vein of nearly solid pitchblende with yellow, orange, and green secondary minerals showing at the surface; but that's the exception."

What the Canadian mines lack in richness, however, they make up for in size, and the Beaverlodge area is on its way to becoming one of the world's great sources of uranium.

Inspecting deposits in the Beaverlodge area, I had a taste of what the prospector faces in that country. I climbed over slippery moss-



covered rocky ridges, picked my way through the muskeg, and crossed icy-cold lakes in delicately balanced canoes.

Strangely enough, one of the worst and most common hazards is slippery moss. If a man falls, he may be impaled on a small, sharp poplar stump or break a leg or a hip days away from a doctor.

Winter Freeze a Major Hazard

Another danger is staying out too long in the autumn and getting caught in the freeze-up. Many a prospector or woodsman has been lost in the bush that way. The possibility that the freeze-up might occur any day kept me from going on to Great Bear Lake, 550 miles to the northwest.

"If you go up there now," Ben Allen told me, "you might not get out for a month. The lake takes that long to freeze hard enough for a plane to land on it."

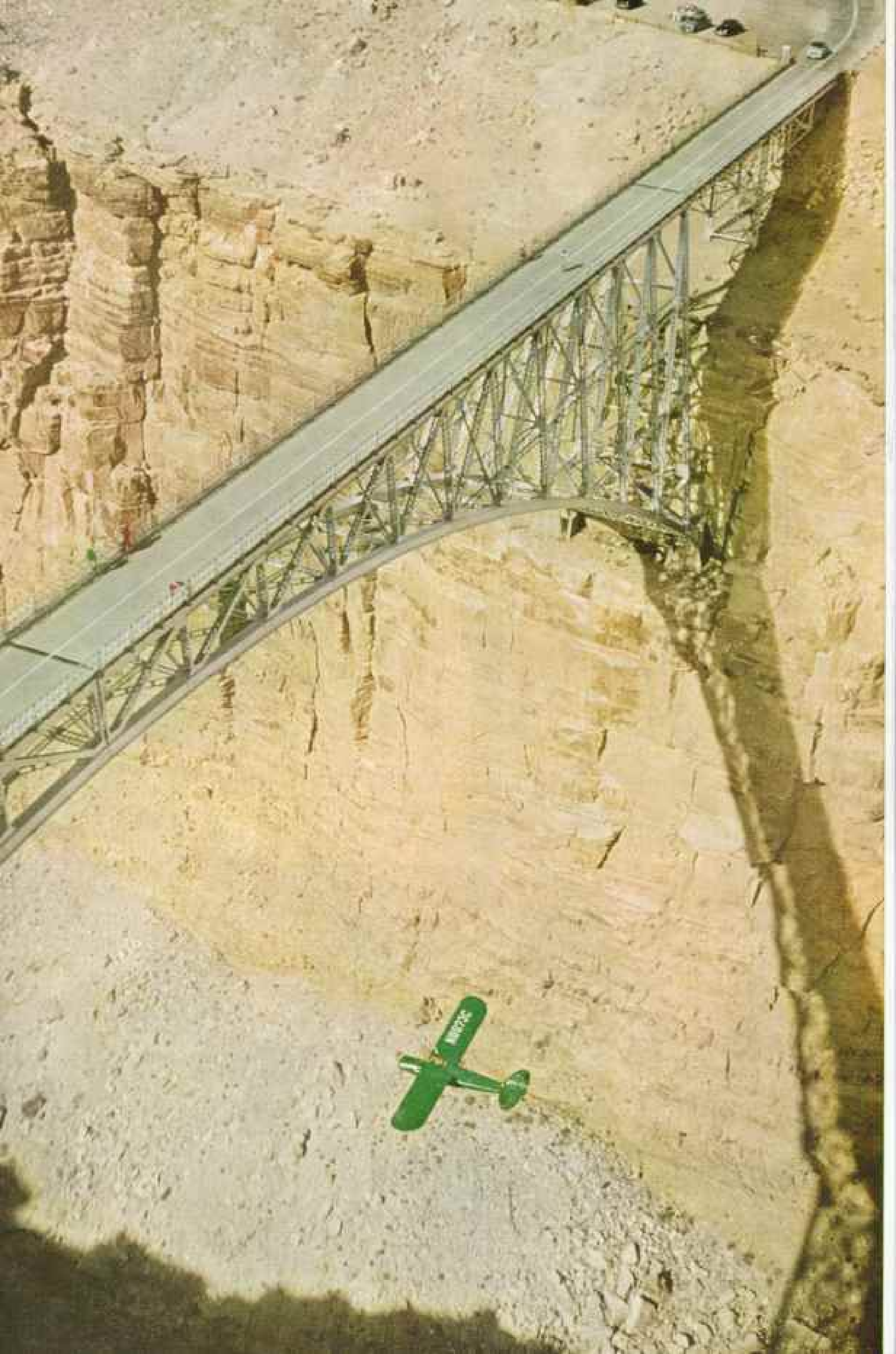
Eldorado's mine at Port Radium on Great Bear Lake has an airstrip a few hours away by boat that is used from late June to late September. During the winter the plane lands on the ice at the mine. For periods in spring and fall thin ice makes it impossible to get in or out by either route.

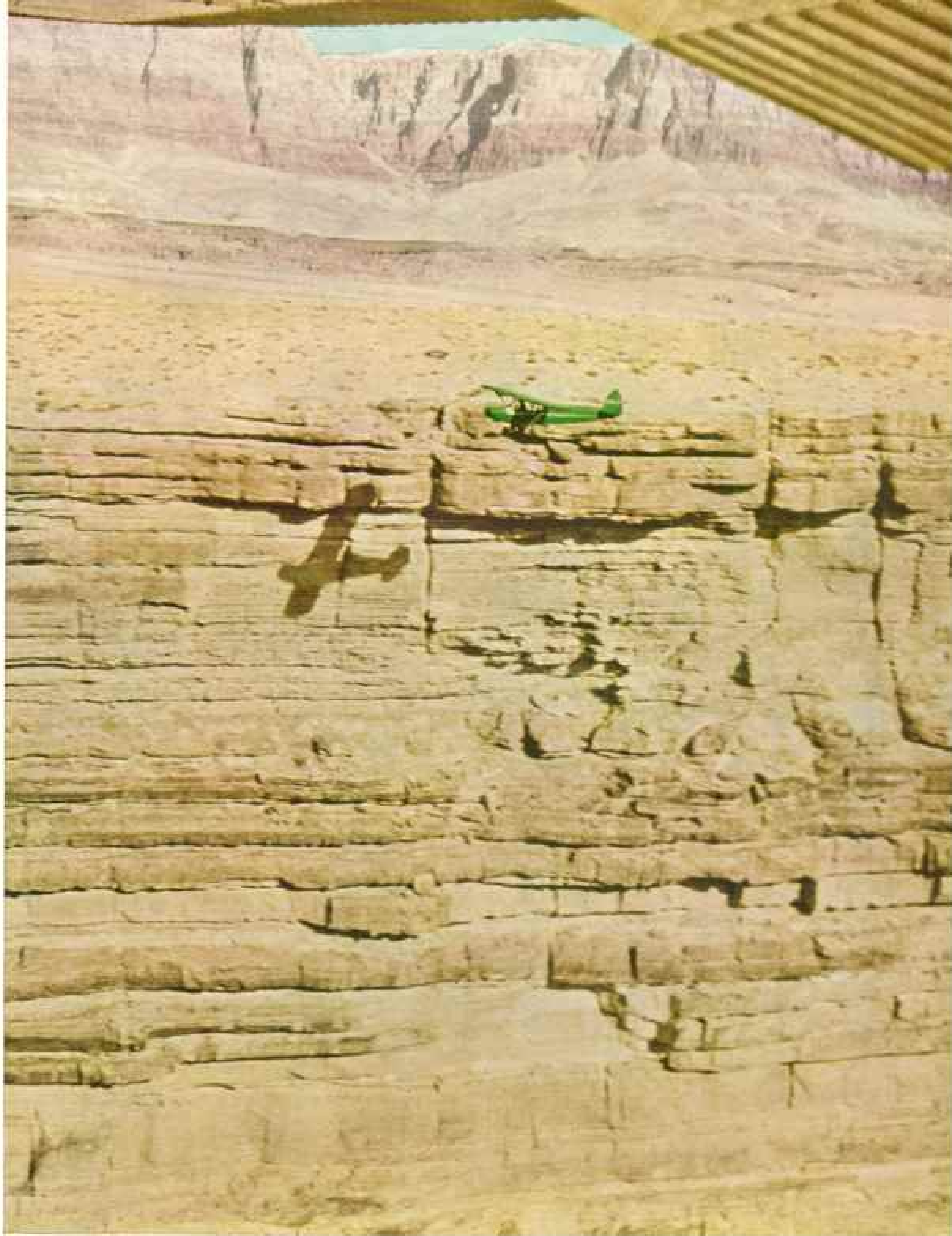
Port Radium, only a few miles from the Arctic Circle, has both sunset and sunrise within a few minutes of each other during the summer, but gets only a momentary look at the sun each day in winter. In June the bright colors of the sunset in the northwest can be seen at the same time as the first pastel hint of sunrise in the northeast.

Guss Hawker Sells Everything from Cosmetics to Claims

The Uranium City merchant (right) started his general store in a tent; last year he brought in \$100,000 worth of supplies. Here customer George W. Taylor listens to a convincing sales talk, the click of a Geiger counter (page 534). Claim map, radioactive ore samples, and counter are part of the deal. Hawker's half-Indian children, June (center) and August, look on; other children are named April and May. Last year Mr. Hawker spent some of his new wealth on a trip to England to see the Coronation.



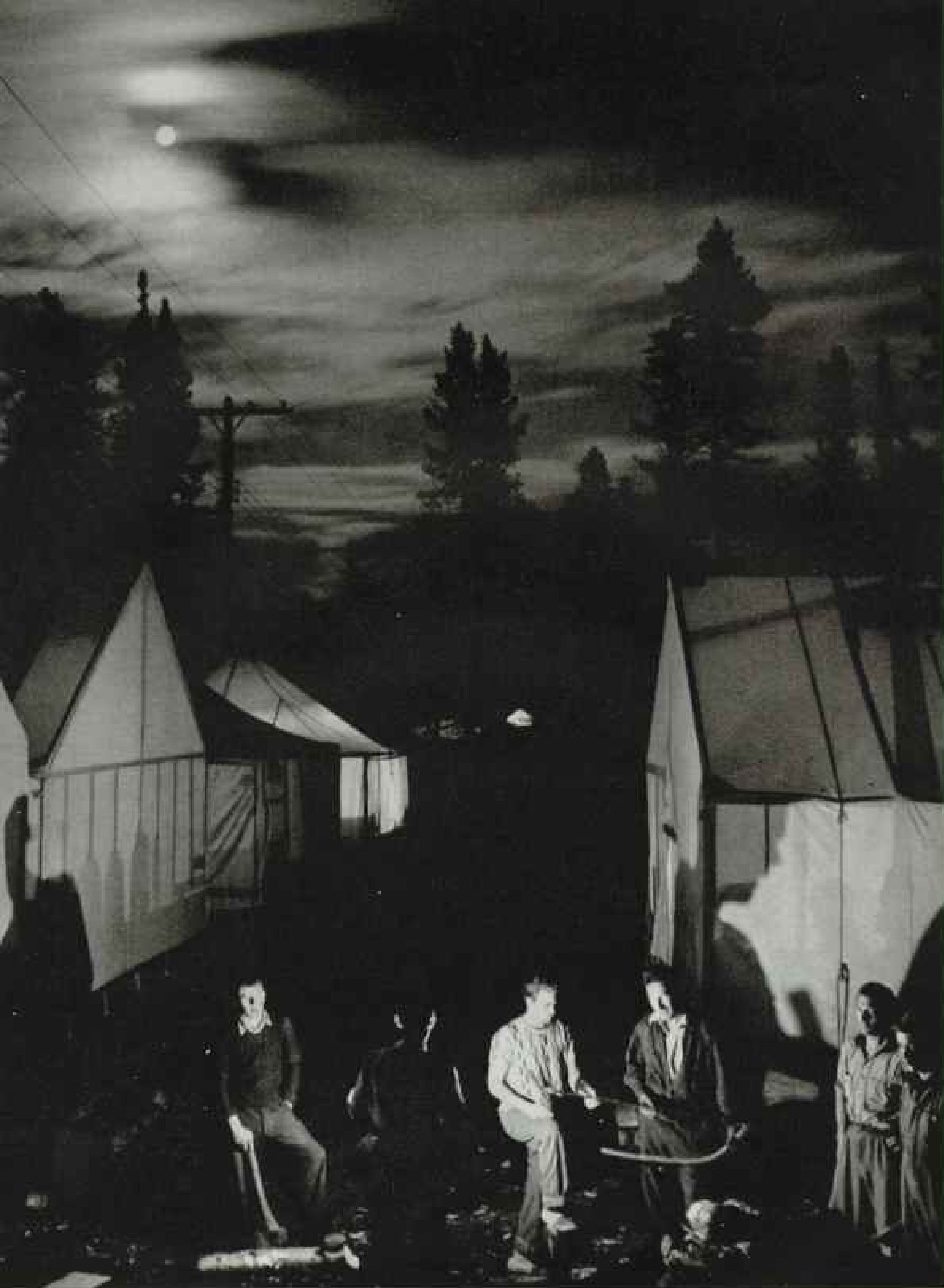




Daring Pilots, Skittering Through Canyons Like Dragonflies, Chart Rimrock Deposits

Nature has provided her own uranium test borings in the Colorado Plateaus; mineralized zones exposed by erosion on steep cliff walls can be detected without resort to costly drilling. Airborne surveys carried on extensively in half a dozen western States have revealed substantial new uranium sources. Instruments fitted in high-powered light planes record radioactivity as airmen sometimes skim within 15 to 20 feet of canyon walls. Ground parties are dispatched to areas showing worth-while deposits.

← A flying prospector darts under Arizona's Navajo Bridge, 467 feet above the Colorado River.



544

Isolated Uranium City Is No Place for an Inexpensive Vacation; These Tents Cost \$415!

Only \$130 is spent for the tent itself; lumber for the floor and frame and freight charges make up the rest. In rare cases, air freight charges have sent tent costs to almost \$750. Many of Europe's displaced persons, desperately anxious to start life anew, have come to the newly created towns of Canada's uranium country.



Aerial Photographs Help Modern Prospectors in Their Search for Hidden Riches

To the hiss of a gasoline lamp in one of Uranium City's winterized tents (opposite), a Canadian prospecting team plans the next stage of its hunt for new uranium sources. Mining engineer Allen W. Jeckell (center) and geologist John Cormie pore over a photograph obtained from the Canadian Government; prospector John Donnelly (left) stands behind a Geiger counter and a handful of rock samples.

"The staff at Port Radium," Ben said, "suffers from chronic loss of sleep in the summer. It's not unusual to be invited to a friend's house at 9 p.m., with the sun shining brightly, and stay until 2 or 3 in the morning, subconsciously waiting for nightfall."

Land of the Week-end Prospector

With freeze-up imminent, I took the next plane south to catch up on developments on the Colorado Plateaus, a region embracing some 130,000 square miles in Colorado, Utah, Arizona, and New Mexico. Here occur the richest uranium sources so far discovered in the United States.

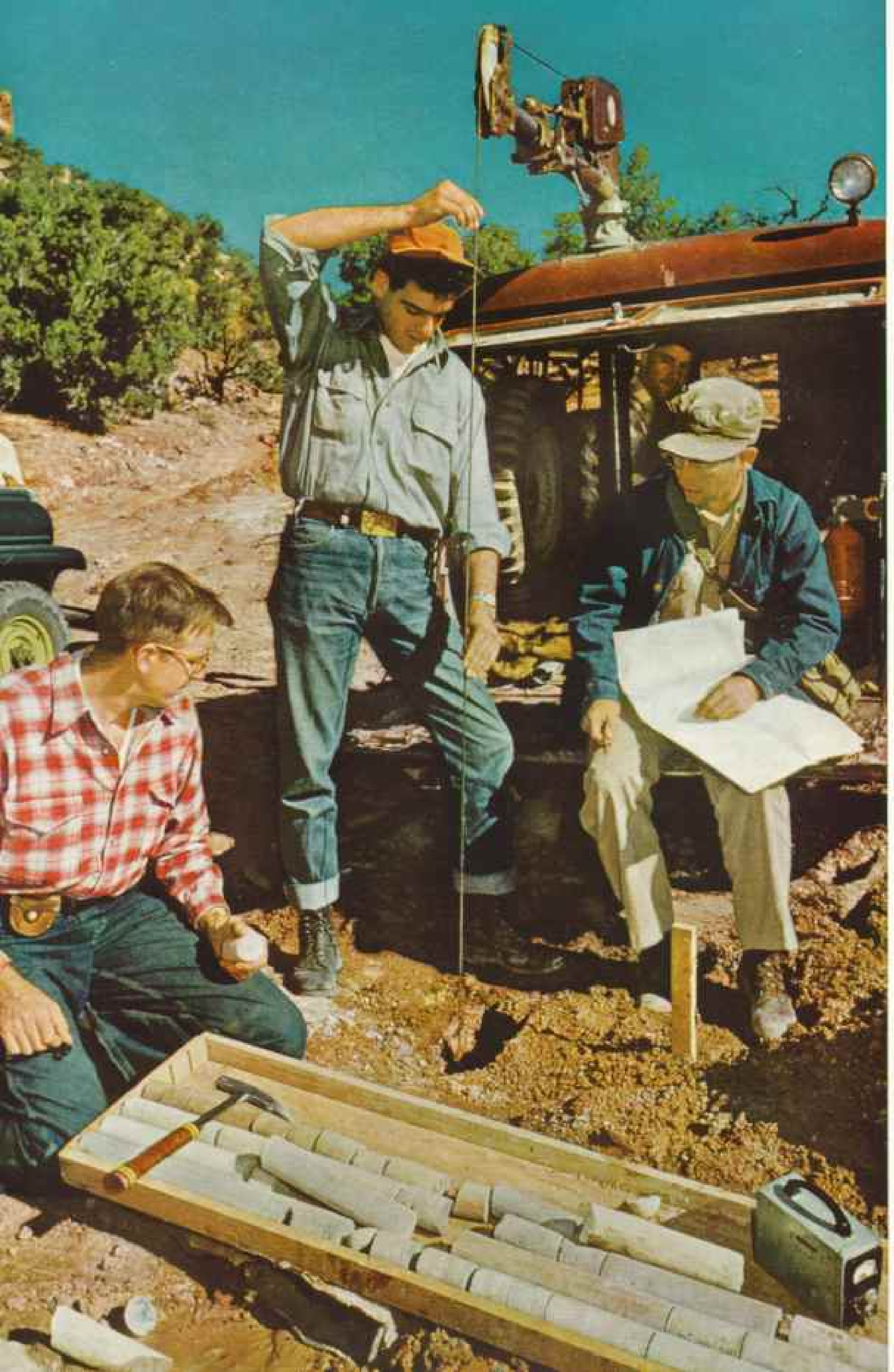
In the country I had just left water was almost too plentiful, but in this high, dry region of lofty mesas and deep canyons water for diamond drilling, cooking, drinking, and washing all must be hauled by truck to the

larger prospecting camps, sometimes as far as 100 miles. The individual prospector has to get along with a few surplus Army water cans loaded on his jeep or on a canteen fastened to his saddlebag or slung over his shoulder.

In Canada, because of the distance from civilization, prospectors are in the business full time, at least for the summer months.

Not so in the States. Here the wide network of roads makes it possible for almost anyone to go prospecting, and the Atomic Energy Commission has encouraged this. As a result, a whole new breed of modern "fortyniners" is overrunning the country and finding considerable uranium.

Large areas of the Colorado Plateaus and other regions in the West favorable for uranium prospecting are still in the public domain, owned by the Federal Government but



open to anyone. The Atomic Energy Commission publishes a monthly map showing places where radiation has been detected. The maps are posted at offices of the AEC, Bureau of Mines, and U. S. Geological Survey.

Individual prospectors have made nearly all the important new discoveries in the United States. Early in 1949 at Marysvale, Utah, about 160 miles south of Salt Lake City, a prospector discovered radioactive minerals while examining some old mines and gave the United States its first important source of primary uranium (page 549).

"Ghost towns" that once thrived in the gold and silver boom days may be restored to life by uranium.* In the Central City, Colorado, district, about 30 miles west of Denver, where fortunes were made in gold and silver during the last half of the 19th century, new deposits of pitchblende were discovered in 1948, and more have been found every year since then.

Central City May Rise Again

Now that prospecting for uranium has started, the old-timers are saying that with a little luck the famous old mines of bygone days will again bring wealth to Central City. At least a dozen mines have recently revealed showings of uranium, some of them of commercial importance.

Uranium also has been found on the dumps of several inactive silver-lead mines in Montana, in an area that was an important small producer of gold, silver, copper, lead, and zinc until 1928. Three mines in this area are now producing uranium.

In 1951 in Craven Canyon in the Black Hills of South Dakota valuable carnotite deposits were discovered for the first time in the United States outside the Colorado Plateaus, producing an entirely new carnotite mining area and starting a new uranium rush.

Other vast reserves of uranium, though of low concentration, lie in the phosphate rock

formations of Florida, Wyoming, Montana, and Idaho. These rocks are the main sources of phosphate fertilizer for the United States; uranium is a by-product.

When prospectors first explored the Colorado Plateaus, they found uranium chiefly in outcrops of a sandstone known as the "Salt Wash," along the rims of the high mesas.

Today, however, we know that uranium ore can also be found by drilling some distance back from the mesa rims and in several other rock formations, and prospecting has spread over the entire Colorado Plateaus area.

Airborne Prospectors "Fly the Rim"

Prospectors who can afford it use light airplanes equipped with special counters to locate uranium deposits on the ground below. Often they "fly the rim," maneuvering as close as possible to the vertical mesa cliffs that often rise a thousand feet or more. When the plane's counter indicates an outcrop of ore below, the spot is marked on a map or aerial photograph and investigated later on the ground (page 542).

Unless counters are shielded, luminous paint must be removed from the planes' instrument dials, since it contains radium that would cause a high reading on the counters, making them useless for detecting uranium.

The planes must be capable of flying at slow speeds—50 to 90 miles per hour—and must have enough surplus power to recover quickly from a sudden stall, pull out of the down-drafts often encountered near cliff faces, or climb quickly when a canyon unexpectedly comes to a dead end. It calls for a man with steel nerves to take this kind of flying.

Several enterprising prospectors have used field glasses to follow Atomic Energy Commission planes flying the rims. When a plane began to fly back and forth over one spot, indicating that radioactivity had been detected, the watcher would locate its source on the ground and stake a claim. Several people profited handsomely from such finds.

One young prospector, Charles Steen, has made a fortune through his persistence and unceasing optimism. Steen raised enough money to drill on claims he had staked in Big Indian Wash in southeastern Utah (page 558). His first drill hole went through 14 feet of a new type of deposit containing black

← Probing 400 Feet Deep, Scientists Record the "Pulse" of Solid Rock

Diamond-drilled holes spaced at intervals over a mesa enable prospectors to estimate an area's uranium content. Rock core samples raised from below are scanned with Geiger counter (foreground). Drill-hole counter mounted on the jeep charts subterranean radioactivity. Here, near Moab, Utah, AEC geologists lower a detecting device into the depths.

* See "Colorado by Car and Campfire," by Kathleen Revis, NATIONAL GEOGRAPHIC MAGAZINE, August, 1954.



Uranium Spans the Globe...

Of more than 100 minerals containing uranium, 19 are pictured on these two pages. Ranking world producers include South Africa, the Belgian Congo, Canada, the United States, Australia, eastern Germany, and Czechoslovakia.

Pitchblende and uraninite, the most important world sources of uranium, are heavier than iron and as hard as steel.

Sorters Weed Out Stony "Imposters"

At Canada's Port Radium plant, just below the Arctic Circle, an endless rubber belt carries coallike lumps of uranium-bearing ore from mine to mill. Keen-eyed spotters hold doubtful chunks before a Geiger counter suspended from the ceiling. A flashing light confirms radioactivity. Until 1953 Port Radium was Canada's only uranium mill; a larger plant in Beaverlodge now swells the output.

© National Geographic Society



...But Spreads Itself Thin

Of the minerals shown on this and opposite page, carnotite so far has been found in most U.S. strikes, but recent discoveries of pitchblende indicate that it may become an equally important source of uranium.

Before World War II carnotite was sought mainly for its vanadium and radium; uranium in those days served mainly to color pottery, glassware, and false teeth!

↓ "It Looks Good!" Utah Miners Exclaim

Marysvale, Utah, a quiet hamlet of 500 people, awoke one morning in 1949 to find itself a boom town. Deposits of secondary minerals had pointed the way to pitchblende studding surrounding hills.

Many domestic uranium mines are small-scale ventures, covering 20 to 40 acres; a 50,000-ton deposit is a good find. A ton of ore contains from two to about ten pounds of uranium oxide.

© Reproductions by National Geographic
Photographer Volkmar Wendt

549



KASOLITE
Belgian Congo

SKŁODOWSKITE
Germany

GUMMITE
North Carolina

EUXENITE
Greenland



SAMARSKITE
North Carolina



TORBERNITE
Belgian Congo



CARNOTITE
Colorado



PITCHBLENDE
Alaska



TYUYAMUNITE
Utah



ZELNERITE
Greenland



primary uranium ore (pitchblende) in a formation not previously known to carry uranium in that area. His discovery may be the most valuable yet made in the region.

Almost anyone who feels the urge can prospect for uranium in the Colorado Plateaus. A week end of searching requires little but a car or horse, food, and camping equipment. For a longer trip, however, not only in the Colorado Plateaus but in the southwestern United States in general, certain precautions should be taken.

Wealth Is Where You Find It

Have your car checked to be sure it is in good condition; take along an extra spare tire, tire-repair kit, reserve supplies of water, oil, gasoline, and food, tire chains, a good shovel, and a first-aid kit, including equipment for treating rattlesnake bite. Make certain also that an ordinary passenger car can travel the roads where you are going, and inquire about road conditions.

It is also essential to carry good road maps and, if possible, U. S. Geological Survey topographic maps, which usually can be obtained for a small price at book or stationery stores.

For lack of maps I once got lost in an isolated area when I visited a uranium outcrop discovered by an Indian on the Navajo Reservation. My guide, who had traveled back and forth across the reservation for 60 years, decided to take a short cut. We lost our way and nearly had to abandon our truck in the sand dunes before meeting an Indian lad who led us to the place we were seeking. By this time what was planned to be a half-day trip had stretched to 14 hours. A little later the truck succumbed to the punishment it had been taking and stopped cold.

We spent the night on a sheepskin on the floor of an Indian hogan after a midnight meal of broiled goat's meat, the first food we had had since 5 that morning.

Where should a prospector look? Where should he go to have the best chance of finding a valuable deposit of atomic minerals? The Atomic Energy Commission has stated: "Prospecting for uranium will probably be most successful if carried on in areas where: (1) uranium has been found before, (2) the geologic conditions are similar to those existing where uranium has been found before, or (3) other metals have been found (especially lead, zinc, cobalt, copper, silver, nickel, bismuth, and vanadium)."

An Indian named Paddy Martinez made an extremely important discovery of uranium in 1950 when he noticed the telltale yellow of uranophane and tyuyamunité in a limestone outcrop near Grants, New Mexico. Geologists had believed this area to be completely unfavorable for important deposits.

The Navajo Indians of the Southwest have proved to be expert uranium prospectors because of their intimate knowledge of the country and their amazing memory for colors and rock formations. The AEC has employed them as paid prospectors on the Navajo Reservation, permitting them to apply for leases and work any deposit they find (page 536).

Indian tribes of the Southwest probably were the first users of uranium, having employed carnotite as the yellow color in their sand pictures.

Many Indians scorn the counter with its buzzing earphones and blinking lights. They rely only on their sharp eyes to pick out the elusive yellow or yellow-and-green stains that usually mark an outcrop of uranium ore.

In addition to the private prospectors who have helped so much in the search for uranium, the AEC itself sponsors a prospecting program unmatched in history.

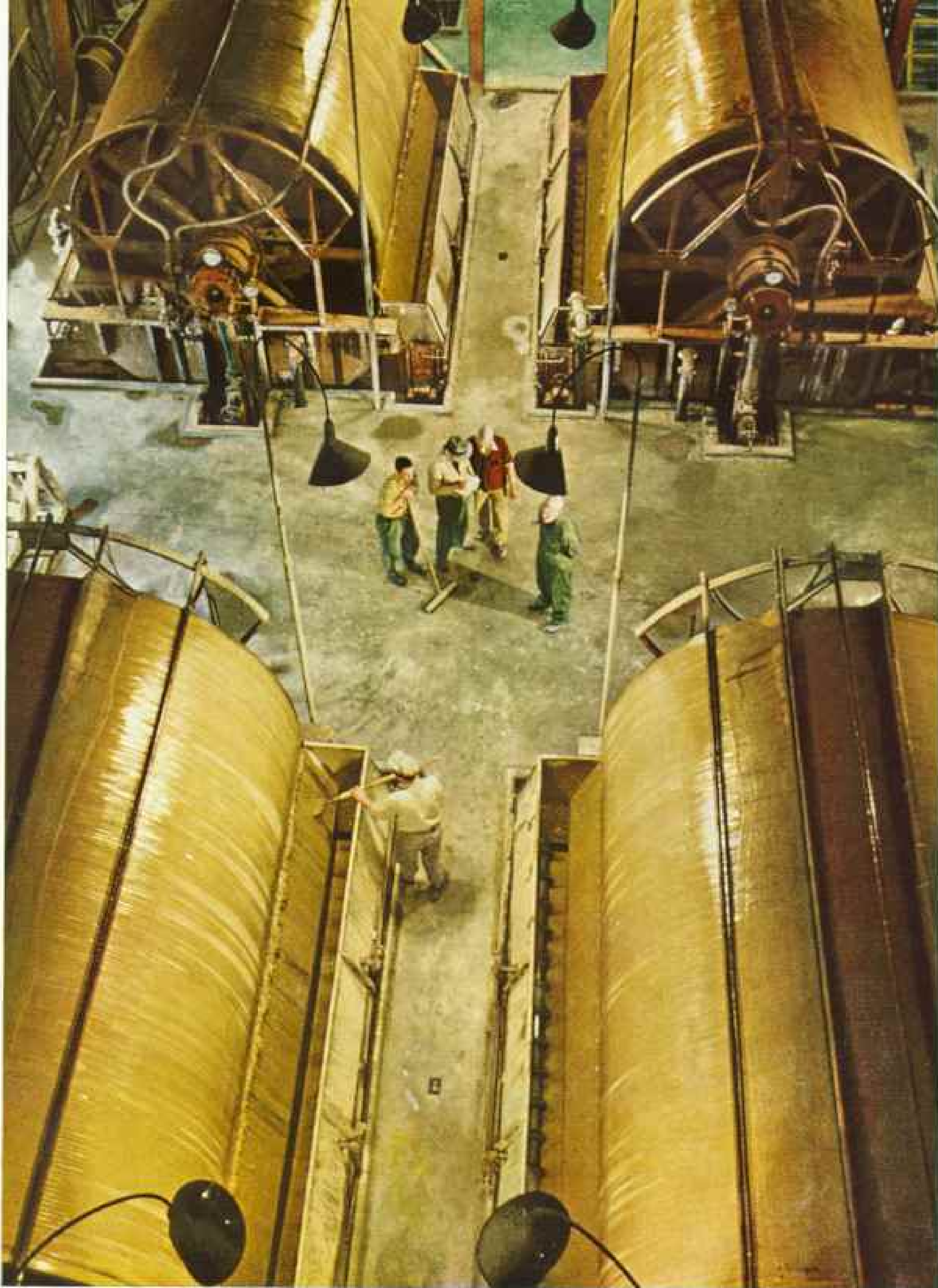
Government Teams Lead Search

Several hundred geologists, engineers, and other scientists employed by the Commission, U. S. Geological Survey, Bureau of Mines, Bureau of Reclamation, and more than 40 private contractors are engaged in an intensive search involving every technique from complicated laboratory studies to diamond drilling. They also operate eight aircraft as well as automobiles and jeeps equipped with radiation counters, while hundreds of other counters are used by geologists on foot.

Special counters are used to explore far down into boreholes for deeply buried deposits (page 546).

Even some plants, such as juniper and salt-bush, common on the Colorado Plateaus, provide clues to the presence of uranium in the ground. The Geological Survey has found that these plants absorb uranium from the soil. When samples are burned, analysis of the ash reveals whether there is an unusual amount of uranium in the area where the plants grew. Some other plants require considerable sulphur and selenium, which are often associated with uranium, and the pres-

(Continued on page 555)



Giant Revolving Drums Remove Ground Rock from Solutions Containing Uranium

Intricate processes lie between a uranium mine and an atomic bomb. Here at Eldorado, Saskatchewan, the residue from crushed ore is gathered up by massive cylindrical filters. "Yellow cake" (page 554), the raw material of atomic bombs, comes from the remaining liquid.

Out of the Wilderness → a New Town Rises

At Eldorado, on Beaverlodge Lake in northern Saskatchewan, a main shaft descends 1,300 feet into one of Canada's largest uranium deposits. The hangarlike leaching plant crowning the hillock (far right) was built with cement shipped in by air.

Key staff of the Canadian Government's Eldorado Mining and Refining Limited live here in single and duplex houses or in bachelors' dormitories. Eldorado, three miles from Uranium City, also boasts a school and hospital. Seaplane and boat docks thrust lake-ward; the wide slash through the woods serves as an airstrip. Gold-mantled aspen trees herald winter's approach.

↓ Flight Companions: Man and Mineral

En route to Edmonton from Port Radium on Great Bear Lake, geologists, miners, and their families share space with sacks of uranium concentrate. Medical treatment awaits the parka-clad Indian girl at left, venturing south for the first time.

© National Geographic Society

552





Airliners Ply Skyways Blazed by Bush Pilots

When Port Radium's mill burned in 1951, Eldorado airlift crews flew in 400 tons of lumber, steel, and hardware for the new plant. Six-foot-thick lake ice served as a landing strip. Regular flights bound from Edmonton to Port Radium come in at Sawmill Bay, 40 miles southwest. Passengers, mail, and freight must taxi up the lake by boat in summer but can land at the mine on winter's ice.



© National Geographic Society

554

Illustrations by National Geographic Photographer Volkmar Weitzel

↑ **Bound for Canada's Deep Woods,
Prospectors Load Supplies**

Field expeditions often last months. Camped in the wilderness, explorers gather ore samples and stake claims. Equipment, including tents, bedding, food, and the all-important radiation counters, goes by seaplane. Uranium City bush pilots do a thriving business.

↓ **Workers Handle "Yellow Cake"
Like Flour—It's Not Dangerous**

In this Monticello, Utah, plant, yellow cake (a compound of uranium, vanadium, and sodium) is fed into a furnace with soda ash, salt, and sawdust. Emerging, it is cooled and dumped into warm water. Vanadium dissolves; uranium is left as a wet black powder.



ence of these plants may indicate a deposit.

In 1952 I visited the scene of Australia's latest uranium boom, 50 miles south of Darwin on the north coast, in the remote, sparsely populated Northern Territory.

Prospector Unchanged by Wealth

One day in 1949 Jack White, a prospector, noticed some rocks with a yellowish tinge near a place called Rum Jungle. Later he noted a resemblance between the saffron-hued mineral and a color picture of uranium ore in a government handbook. Tests showed it was uranium.

Jack White was paid the initial bonus of £1,000 offered by the Australian Government for a significant uranium discovery, and he later received the maximum bonus of £25,000 payable for a find of major importance. His sudden wealth did not change his love for the bush or entice him toward the bright lights of Sydney or Brisbane. When I asked him what he would do now that he had all that money, he replied, "Well, maybe I'll go out and find another uranium mine."

Today a mine shaft sinks 500 feet below the spot where Jack White made his first find. The once-quiet jungle reverberates to the rumble of heavy machinery and drilling equipment. Bulldozers push aside overburden to uncover uranium ore for open-cut mining. Buildings to house 600 persons are going up. Most of them are built on high concrete pillars for better ventilation and to discourage wood-hungry ants. Uranium ore mined at Rum Jungle will be processed in a mill being erected on the spot.

Australia is especially interested in uranium as a source of atomic energy for producing industrial power. Its high-grade coal is concentrated mainly on the east side of the vast continent, its lack of rivers limits water power, and little oil has yet been discovered there.

Belgian Congo Has Richest Mine

More than 1,500 miles southeast of Darwin in South Australia are the Radium Hill deposits, 250 miles northeast of Adelaide, first worked for radium on a small scale prior to World War I. An important uranium mine has now been developed there.

Richest of all the world's known uranium deposits, and perhaps also the most closely guarded, is the fabulous Shinkolobwe mine in the southern Belgian Congo. More ura-

nium probably has come from this region than from all others combined.

Union Minière du Haut-Katanga, the company that owns Shinkolobwe, is as fabulous as the mine. Organized in 1906, it received the exclusive right until 1990 to prospect and mine all of the copper deposits and the metals associated with the copper in an area of 7,700 square miles, as well as all of the tin deposits in an adjoining area of 5,400 square miles.

Besides uranium, Union Minière mines copper, cobalt, zinc, and cadmium—and gold and silver as by-products. The company also holds concessions covering iron, coal, limestone for use in processing ores, and rights to waterfalls for power. It runs railroads, builds roads, operates schools, hospitals, factories, smelters, flour mills, and everything else needed to maintain a thriving, nearly self-contained society in the southern Congo.

Edgar Sengier, head of Union Minière for many years, was awarded the Medal for Merit by the U. S. Government for his role in supplying uranium and other raw materials to the United States during World War II.

Where Gold Mines Yield Uranium

Another important source of uranium has turned up in the gold mines of the Witwatersrand and the Orange Free State in South Africa. Strangely enough, an important part in this discovery was played in the geological laboratory of Amherst College in Massachusetts. In 1941 Dr. George W. Bain, professor of geology at Amherst, visited South Africa and brought back ore samples from various gold mines. Later, helping conduct a world-wide search for uranium, Professor Bain remembered his samples and found they contained an unsuspected amount of uranium.

This led to a survey of the Rand gold mines which revealed that uranium could be recovered in commercial quantities. Today it is helping supply the atomic energy needs of the Free World.

Deposits of uranium, like those of other metals, are not evenly distributed throughout the world but are grouped together in particular localities called "uranium provinces."

The largest and most important are Pretoria and Orange Free State, South Africa, the southern Belgian Congo, and Northern Rhodesia; the Great Bear Lake and Lake Athabasca areas of Canada; the Colorado Plateaus of the United States; and the Erz Gebirge area of Bohemia in Czechoslovakia and Sax-

ony in eastern Germany. As already described, the Northern Territory of Australia is rapidly developing into another great province. North-central Portugal and central France are smaller but important provinces.

Except for the Colorado Plateaus and South Africa, these particular uranium provinces contain principally rich vein-type deposits of the heavy dark-colored primary minerals—uraninite, pitchblende, and, in Australia, davidite and brannerite as well.

These, the original minerals of uranium, were deposited several hundred million years ago in cracks or other openings in the rocks of the earth's crust by hot waters in which were dissolved metals that came from molten rock masses called magmas, deep in the earth (page 548).

The solutions that contained the most uranium usually came from magmas that solidified into granite or granitelike rocks. Primary uranium provinces are usually associated with large areas of this type of rock formation.

Most of the best uranium finds in Canada's Beaverlodge area are along three major faults, which can be traced for miles across country by the valleys and cliffs formed where surface rocks were broken by ancient convulsions.

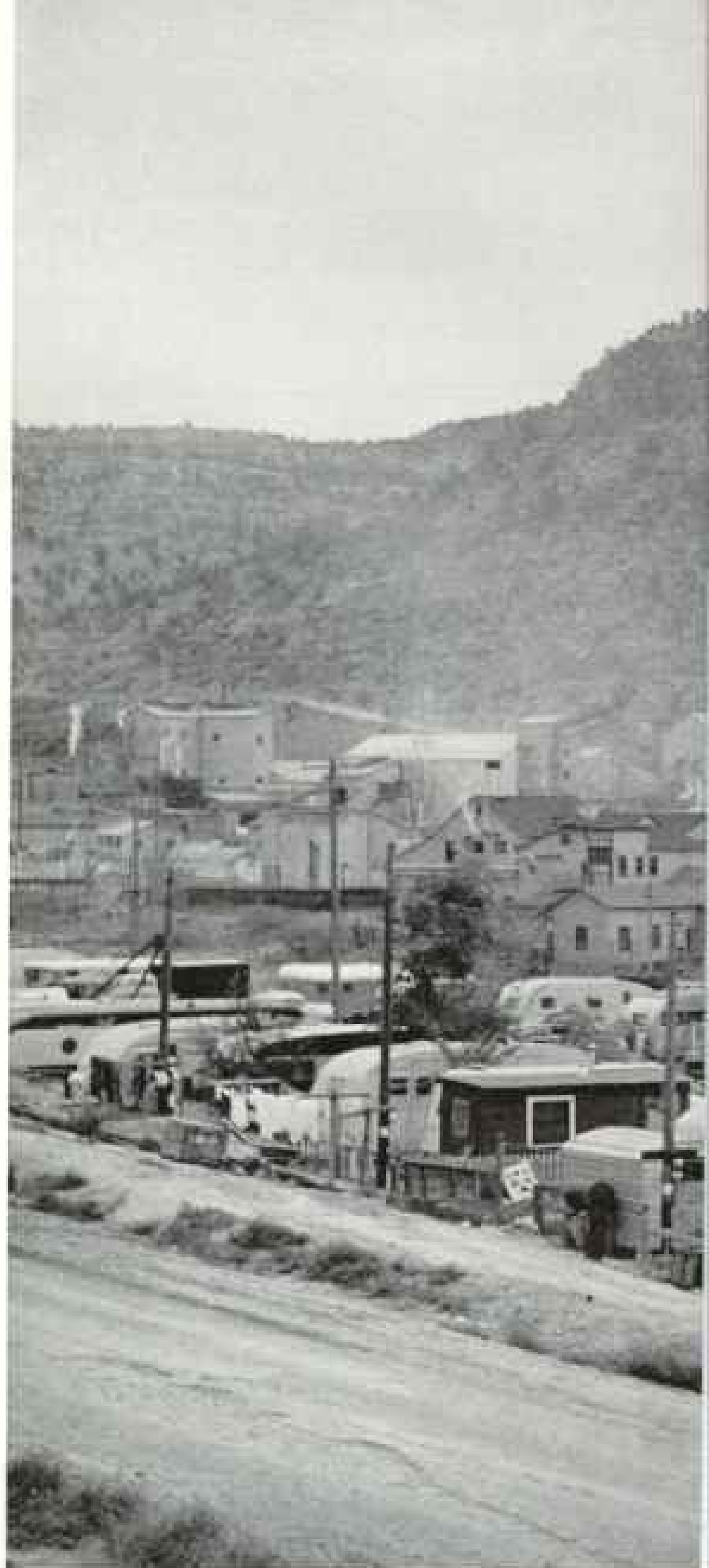
Geological "Shields" Rich in Uranium

The primary vein deposits of uranium that have produced the richest strikes so far, and many of the promising new finds as well, are related geographically to large areas that geologists call "shields." The term was first applied to such an area covering the eastern two-thirds of Canada because it was shield-shaped, and it is now used for all shield regions. The Canadian shield is the only such area in North America.

Shields are regions several hundred miles on a side, where ancient rocks have gradually reached a state of equilibrium over hundreds of millions of years. No great mountain building or earth movement has occurred in a shield area for a long time.

Ninety percent of the several hundred uranium properties so far found in Canada are within the shield area, primarily along the western and southern edges, in a zone about 100 miles wide extending southeastward from the east side of Great Bear Lake past Lake Athabasca to Georgian Bay on Lake Huron.

All the tremendous activity in searching out and mining uranium is directed toward producing the yellow and black uranium salts that are the finished product of the ore refineries. The quantity of these salts is almost pitifully



556

small compared with the huge tonnages of ore going into the mills. But even they are only the beginning in an almost unbelievably complex chain of uranium-processing steps.

The final object of the whole procedure is to produce uranium 235 and plutonium. These two elements are "fissionable." That means their atoms break down spontaneously and therefore can be used to produce the chain reaction that explodes atomic bombs or, when kept under control, may provide heat for industrial power.

In uranium ores, radioactive uranium 235 is present in the proportion of only one to



557

Gravity Goes to Work at an Ore Treatment Plant in Colorado's Uranium Country

Downhill chutes carry ore through this mill operated by the U. S. Vanadium Company at Uravan. Independent miners occupy trailers; most company employees live in a 180-home housing project. Seventy-two miles from the nearest town, Uravan has its own hospital, theater, stores, and swimming pool.

139 of uranium 238, which is nonfissionable. U235 is separated from U238 by complex processes in huge plants of the Atomic Energy Commission. Many tons of average ore from the Colorado Plateaus are needed to make a pound of uranium 235.

Plutonium, a man-made fissionable element that does not exist in nature, is produced from U238 in similarly small quantities in the atomic "piles" at Hanford, Washington,

and the Savannah River Plant, South Carolina.

Pure uranium metal or a refined uranium salt has very little radioactivity and can be handled without danger.

When refined to pure metal, uranium has a steel-gray color. It will spark easily when scratched with a knife blade or with any other piece of steel, and great care has to be taken in shaping it on a lathe to prevent the cuttings from catching fire. It weighs almost



Ankle-deep in Water, Drillers Prepare to Blast Ore from a Moab, Utah, Uranium Mine

Pneumatic drills bite 10-foot-deep holes into this ore face in the rich Steen mine; man on left will use poles to ram home the charges of dynamite. When dust from the explosion subsides, dump trucks will be driven directly into the mine to be loaded. Boxes sling from miners' belts are battery packs for head lamps.

as much as gold and more than twice as much as iron.

The weight of uranium came as a considerable surprise to one railroad freight agent during World War II. A research laboratory in a middle western city had refined a number of ingots of uranium and ordered a freight car shunted onto a siding for shipping them out. The uranium bars were so heavy that, when the car was loaded to its normal weight limit, it was far from full.

Unaware of the nature of the shipment, the railroad's freight agent angrily asked the scientists if they did not know that "there's a

war on" and said that the car would have to be fully loaded. Not until the car was run on the scales was he convinced.

Most of those who are taking part in the search for uranium believe that it can eventually help bring about unlimited improvement in the standard of living of all mankind in a peaceful world. The development of atomic bombs has caused a vast expansion of scientific knowledge that is being used to bring closer to reality the tremendous peacetime possibilities of atomic energy. The Atomic Age is here to stay; so is the opportunity for the "atomic prospector" to strike it rich.

Scotland's Outer Islands, "a Nice, Quiet Place," Offer the Traveler Hospitality, Rugged Scenery, and Serenity in a Noisy World

BY ISOBEL WYLIE HUTCHISON

THE little Rapide plane with its four passengers taxied briskly down the runway near Glasgow, gathered speed, and was airborne. We were off to Barra!

The houses of Renfrew with their neat gardens flashed past us. At once we were over the River Clyde. The young man beside me, who was going to the island of Tiree to take charge of its airport, drew my attention with his hand—for the noise of the engine almost drowned speech—to a fleet of warships assembling in the Clyde estuary for maneuvers. Two aircraft carriers, their decks crammed with dark-winged planes, looked like toys in a shop window.

Landing Waits Till Tide Is Right

Then suddenly they too were gone, and the mountains and lochs of Argyll were beneath us. In the soft September sunshine they seemed molded out of velvet.

We came to the open waters and crossed over Iona's sacred isle, from whose 6th-century monastery priests carried Christianity to pagan Scotland. The Cathedral was directly below (page 562), and to the left the little bay where St. Columba landed after his voyage from Ireland.

My destination now lay barely 60 miles ahead. The long string of the Outer Hebrides protrudes from the ocean like the backbone of a great lizard, extending from the Butt of Lewis south to Barra Head. The islands are separated from the coasts of Newfoundland and Labrador only by the vast, heaving swell of the North Atlantic, whose breakers thunder upon their snowy western beaches.

Fifty-five minutes after take-off we landed at our first stopping point, the flat island of Tiree.

"Bad news for the Barra passengers," said the pilot to the two of us who were going on. "A wait of four hours here till the tide is right for the Barra landing."

Bad news? Far from it! It was the first time I had visited Tiree in nearly 30 years. Nothing could please me more on this bright September morning than to spend four hours on its magnificent silver sands.

All too soon we were back in the plane, and

in less than 30 minutes we hovered over Barra. We could see the tip of the Outer Hebrides swinging southward to Barra Head, on Berneray, like the beads in a necklace. On the firm white sands of the great cockle strand at Traigh Mhor, an excellent landing ground washed twice daily by the tides, we alighted, graceful as a sea gull.

A white-haired, blue-eyed Viking in sailor cap and jacket came forward to meet us with outstretched hand. This was Mr. John Macpherson, known all over Barra by the affectionate nickname of "the Coddie" (page 561). His daughter, Kate, in neat gray uniform, was in charge of the small British European Airways office planted on the beach above tidemark.

From their comfortable house at Northbay I was about to explore Barra again. From here, in 1924, I had set out on my first walking tour through the Long Island, as the Outer Hebrides are collectively called. Altogether, it's a distance of about 150 walking miles from Barra to the northern tip, or Butt of Lewis (map, page 565).

From these remote islands for the past 150 years a tide of emigration has borne Scots men and women of the best type to Canada, the United States, and Australia. In the depressed period between the two world wars this emigration took a severe toll of the island population.

Quiet Islands in a World of Noise

The late Dr. Donald Macdonald, beloved parish minister of North Uist, described the prospect of emigration to Canada in the early '20's as causing a considerable flutter of expectation and excitement in the islands.

"There are no people," he wrote, "who cherish a warmer sentiment for Canada and the United States than those resident in the Hebrides." The number of families leaving South Uist and Isle of Lewis about that time was so large as to require the presence of an Atlantic liner in a local port.

Today it is rare to find a family in the Outer Isles that does not have some connection with the New World, perhaps a



brother in Vancouver or a son in New York.

The tide of emigration, however, today seems to be on the ebb. World conditions are everywhere more difficult. The cost of living is high, and the Hebridean is beginning to realize that there are worse places than his native soil. A number of emigrants of 30 years ago returned to revisit the islands in 1951.

"Did they come back for good?" I asked an islander.

"No, no," he replied. "They've got rooted over there now, but, for all that, I believe Benbecula is as good a place to live as anywhere!"

His words reminded me of the old roadman I met once in South Uist. "A nice healsy, quiet place, South Uist," was his parting re-

mark. Perhaps the words "healsy" (the islander's pronunciation of healthy) and quiet are the secrets of the Hebrides' attraction in our increasingly noisy world.

I had landed in Barra with the intention of retracing my former journey from beginning to end. It would be interesting to see if the years had brought many changes to islands that still enshrine a way of life, as well as a language, that is dying out on the mainland of Scotland.

The wayfarer will scarcely find a more interesting tour in Britain. He need not be deterred by fear of discomfort or, as a rule, even by weather. I made both my tours in late autumn, and on the first occasion had sunshine nearly all the way. The showers, however violent, soon depart over the hills, leav-



561

John Marshall

↑ "Coddie" Macpherson Seasons Barra.
Life with His Wit and Wisdom

A living legend, Mr. Macpherson excels as a storyteller, local counselor, and student of the Hebrides people, language, and folklore (page 559).

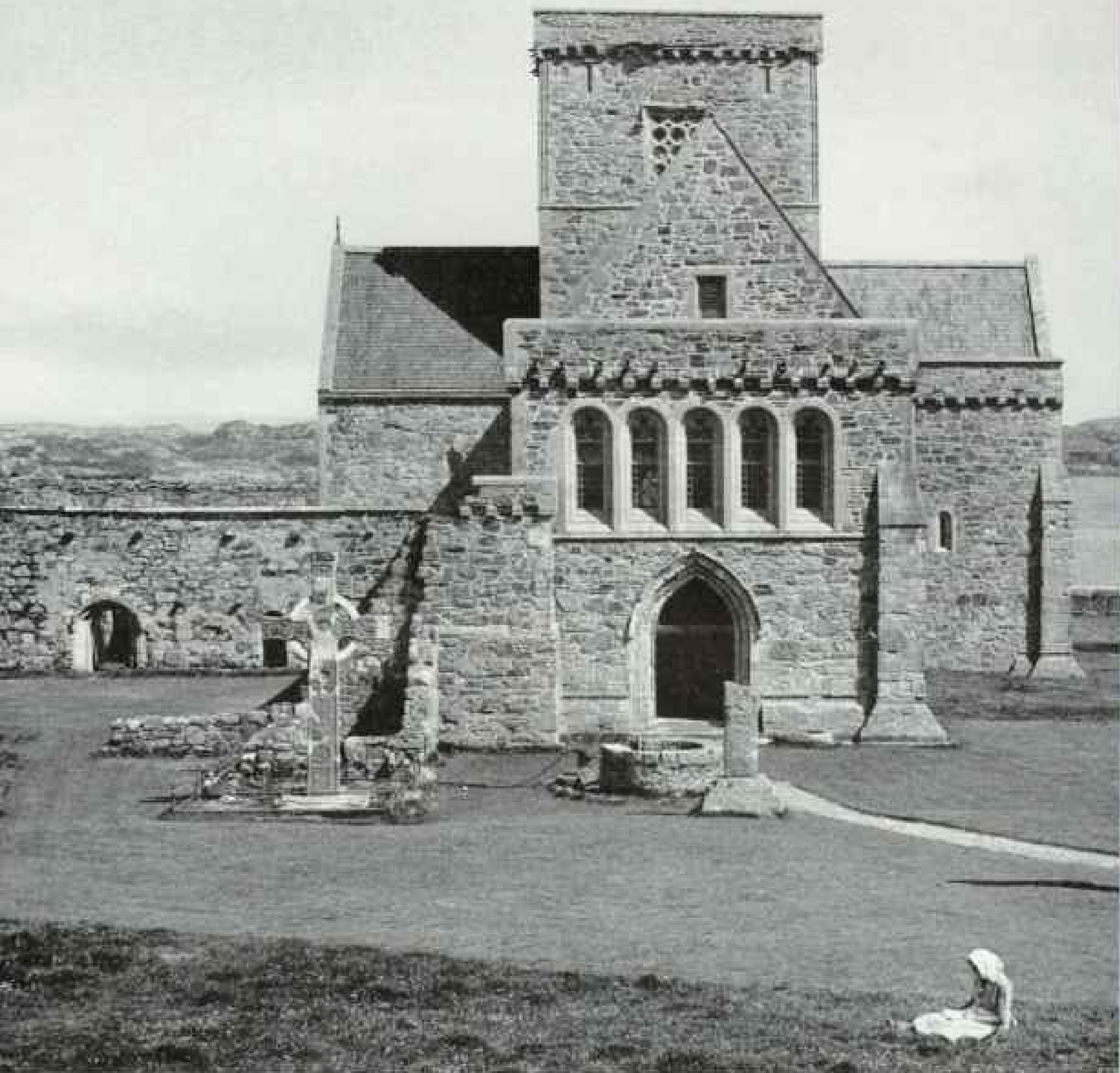
← Shoppers throng the main street of Stornoway, chief Hebrides seaport and manufacturing center. Island-probing roads lead from Stornoway as spokes from the hub of a wheel. Buses like these usually drive from the rural districts in the morning and go back at night, permitting islanders daylong marketing excursions (page 579).

↓ Twice daily ocean tides sweep this natural airstrip on Barra's great strand, but leave undisturbed the solid pack of cockleshells (pages 559, 566). Pilots claim it's safe to land when the sea gulls go wading.

J. Allan Cash (left)

© G. Leslie Hare





Iona Cathedral Crowns a Sacred Isle of British Christianity Beside the Celtic . . .

The priest-saint Columba arrived on tiny Iona, Inner Hebrides, A.D. 563 (page 559). He made it a Celtic Rome, famed throughout Britain. Later, Vikings plundered the buildings and murdered the priests. Twentieth-century restoration of this 12th-century Norman abbey church helps fulfill St. Columba's prophecy: "But ere the world comes to an end, Iona shall be as it was."

ing brilliant fragments of rainbow arched on the gray cloud background, with the promise of swiftly following sun. Most of the islands have comfortable hotels.

Only Witches Come from the North

The four large islands that make up the southern part of the chain—Barra, South Uist, Benbecula, and North Uist—are separated by shallow channels. Two of these, surrounding Benbecula, can be forded at low tide, and one is now bridged; the others involve ferry

rides. Lewis, to the north, is the largest island; its southern district, Harris, gives its name to Harris tweed.

According to the Gaelic superstition, it is only witches who come to a house *tuathcal*, or from the north. Thus our tour should be made from south to north and begin on Barra. Perhaps it should have started even farther south on lonely Barra Head, with no inhabitants save those at the lighthouse 683 feet above the sea, a few sheep, and the wildfowl that scream about its desolate cliffs.

The Outer Hebrides

"The Long Island"

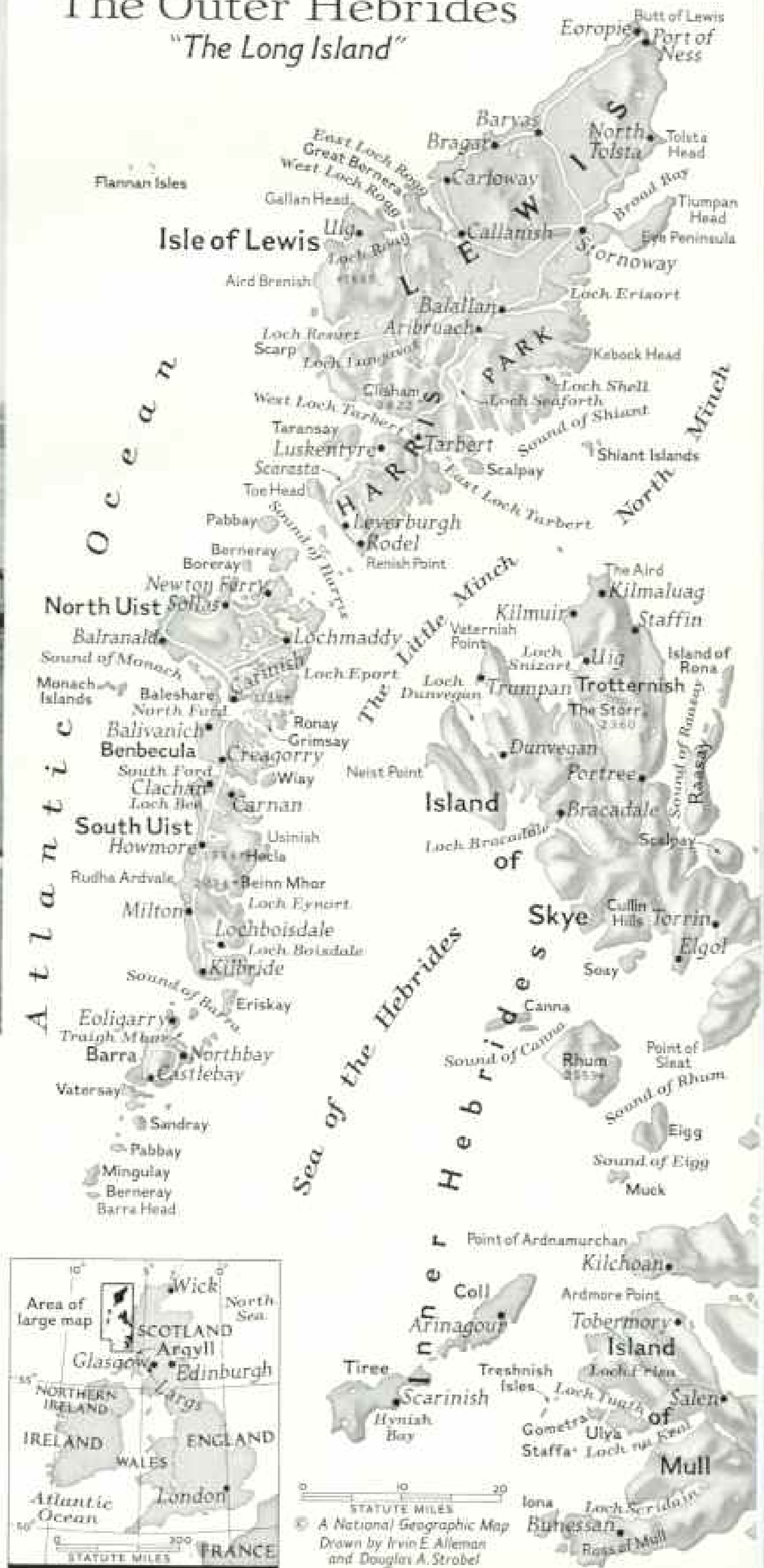


563

...St. Martin's Cross

Unbroken in 10 centuries, this red granite cross rises 16½ feet. Its carving depicts the Virgin and Child, Daniel in the lions' den, and David playing before Saul. A path leads past the cross to a still-producing stone well by the church door. St. John's Cross (left) was restored from fragments in 1976.

→ The sea-honed Outer Hebrides serve Scotland as a 130-mile breakwater against the Atlantic Ocean. The sea moderates island climate, but sends the highest winds in Britain. Geologically, the rocks of the Outer Hebrides are among the world's oldest.



Barra is a center of the Roman Catholic religion. The student of faiths, as well as of manners and legends, will have a varied and bewildering experience on the Hebrides, ranging from the fervent Roman Catholicism of Barra and South Uist to the strong Protestantism of Harris and Lewis. Benbecula lies in a neutral zone between its fords, giving benignant countenance alike to the fathers of South and the ministers of North Uist.

At the extreme Butt of Lewis one comes with some surprise upon the little 14th-century kirk of Eoropic, containing interesting relics of episcopacy. Here in olden days pilgrimages were undertaken for the cure of mental illness. The victim, after being walked seven times around the church, was left bound hand and foot inside all night. If he was not cured by the morning, his case was considered hopeless!

Hard-top Road Marks Biggest Change

When I inquired of Mr. Macpherson which were the most important changes, in his opinion, that the years had brought to his island, he replied without hesitation, "The roads and the houses." When I had retraced the 14-mile road that girdles Barra, I agreed.

As I climbed the steep hill on my way to Castlebay, the chief town, I stopped to admire the peaks of Mull and Rhum, blue on the horizon. I remembered how I had once come upon the district nurse pushing her bicycle laboriously up that very hill. At the top she had waited for me and remarked feelingly, if a trifle ambiguously, "This is a killing job!" Most nurses in the Hebrides now have their own automobiles, and the island roads are stony no more.

Castlebay is no longer important as a herring port, and the cheery crowd of "fisher lassies" that used to fill its piers are no longer there. The town itself has not changed much in 30 years. The two churches, Protestant and Roman Catholic, overlook the harbor where the ruin of Kisimul Castle, once the stronghold of the Macneils, still clings to the rock that just fits it.

Kisimul Castle stands as a 20th-century link between the Hebrides and the United States: its present owner, The Macneil of Barra, 45th chief of the Clan Macneil, was born in Michigan and now lives in Marlboro, Vermont. This son of a Scottish artist and an American mother succeeded to the chiefship on his father's death in 1914.

"All my life," the 65-year-old chief says, "I have gone back and forth to Barra." A



history of the Clan Macneil bears his name, and Kisimul Castle owes its preservation to his efforts. If present plans materialize, the historic structure may one day house visitors to the island. In 1921 The Macneil organized the Clan Macneil Association of North America; several thousand United States citizens of Hebrides ancestry attend its gatherings.

Time Has Taken the Piper

The years have taken Roderick, Barra's piper, who made his frugal living by a singular and interesting trade, the manufacture of reeds for bagpipes. This is intricate work requiring a very fine ear. Roderick cut his reeds from Spanish cane, and they were in demand all over Scotland.

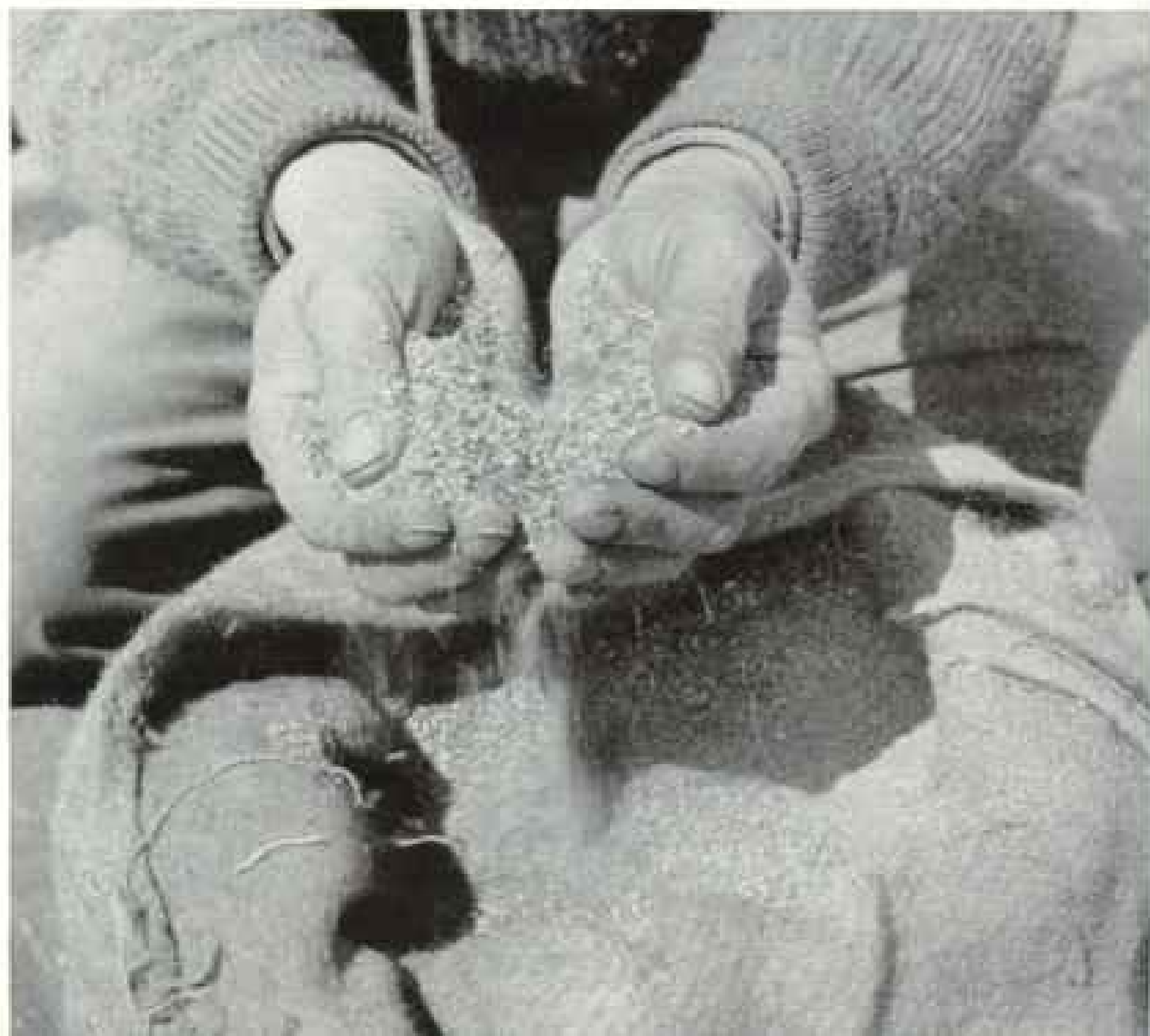
Barra's sands seemed whiter, her seas bluer, than ever. On a lonely western beach I sat one day in the evening sunshine listening to the gray Atlantic seals holding a conversation. They lay on a ridge of rock quite close to the



Men Fork Seaweed to Feed a Factory on South Uist Island

For ages past, Hebrides crofters have spread seaweed for fertilizer. In the 17th and 18th centuries ashes of the marine fodder proved a source of sodium carbonate, used in soap and glass, and of iodine. Seventy years ago a scientist discovered in seaweed a new acid called "alginic." Today its salts and derivatives—alginates—go into soups and sauces, toothpastes and lotions, absorbent medical dressings, and antburn ointments. Experiments are under way to use metallic alginates in commercially useful flameproof fabrics (page 566).

This seaweed arrives at the factory air-dried. After further drying it is ground into coarse meal (right) and sent to the mainland for processing.



shore, slowly flipping their tails and calling to one another with strange melancholy cries that reminded me of the howling of Arctic Huskies. At times they varied this call by gruffer barking notes, and now and again they slipped off the rock and swam around leisurely, as peaceful and undisturbed as their beautiful island.

Cockles and Seaweed Feed Factories

Traigh Mhor, a great mile-long cockle strand at Eoligarra, near the north end of Barra, is now being worked commercially by a company whose small tractors gather the shells and pulverize them into grit for poultry food. The supply of cockles seems inexhaustible. Their presence at this spot has been known for centuries, and they formed a useful addition to the food supply in times of famine long ago.

Another sea product of the islands is also being put to a modern commercial use. Seaweed, with which the crofters traditionally mulch their fields, is now collected and sent to a processing plant at Lochboisdale in South Uist. There it is dried, pulverized, bagged, then shipped to chemical factories on the mainland. From it ultimately come alginate salts and derivatives, useful in such ways as thickening toothpastes, stabilizing ice cream, molding dental impressions, coating pills, making absorbent medical dressings, and sizing textiles (page 565).

At a little pier beyond the cockle strand, Neil Campbell, the ferryman from South Uist, arrived one morning, summoned by telephone, to take me across to his island. It was a perfect day, and the sea was radiant with the lavender, green, and azure which are the delight and despair of artists. To the right, closing the sound, lay the large island of Eriskay.

From the ferry I could see the white sands of the Prince's Beach, as the people still call it, gleaming in the sun. Here "Prince Charlie" Stuart made his first landing in Scotland from the French brig *La Douille* in an ill-fated attempt to win Britain's throne in 1745.

Next day, returning from Lochboisdale in South Uist, I crossed to Eriskay by Neil's boat to explore the beauties of this charming little isle. It has no hotel, but I was able to get a clean and comfortable room for the night in one of the fishermen's houses.

My hostess was a woman of tireless industry. All water had to be carried from a well,

and there was no electricity. She had her husband and two grown sons to clothe and feed, animals to attend to, and a flower garden (unusual in the Hebrides and the prettiest I saw there) which she looked after herself.

At every spare moment she knitted socks and pull-overs for her men or for customers on the mainland. She told me that she was seldom in bed before 2 in the morning. Her husband and one son were out 12 hours a day in their boat fishing, and came in cold and hungry about 9 o'clock to be fed. Visitors kept dropping in, and there was a cup of tea and a welcome for all.

Eriskay is a Roman Catholic island and has a population of about 200. At the time of my visit its school had 66 scholars. A new road links the scattered houses to pier, post office, and the stout rounded church which stands conspicuously on the headland. The church is a memorial to the work of its most beloved priest, Father Allan Macdonald, who is buried in the little graveyard on the sands. He inspired and helped several collectors of folk tales and music, including Mrs. Marjory Kennedy-Fraser, famous singer and collector of Hebrides folk songs.*

I like a story I heard about a solitary Protestant who once lived in Eriskay. When he died, no one knew where he should be buried; so at last it was decided to give him the place of honor, nearest to Father Allan, and there he lies.

The Sea Takes a Toll

The morning of my visit to Eriskay was bitterly cold and gusty, but I was lured by the romantic associations of the place, and the white sands and green waters of the Prince's Bay, to take a dip in its waves. When I had dressed again under the sheltering cliffs, I was distressed to find that I had lost a valuable gold watch which had been my mother's.

As I hunted for it despairingly (for the tide was coming in and I feared I had dropped it on the sands), I heard curious disjointed cries coming from the clifftop. An old man was standing there with a dog circling round him. I clambered up to him presently and asked if he was training his dog.

"No," he replied, "I'm putting spells on the sea to bring the herring." (There was a little fishing boat out in the sound.)

* See "Hunting Folk Songs in the Hebrides," by Margaret Shaw Campbell, NATIONAL GEOGRAPHIC MAGAZINE, February, 1947.



An Eriskay Cottage Looks Like a Rock-studded Hill Hatted by a Haystack

Chimneys modernize this "black house," so called because in the old days peat smoke darkened the interior before escaping through a hole in the roof. A weighted net anchors the thatch. Blocks of peat lie piled in the foreground. The creel-laden pony, grazing with foal, is her mistress' chief burden carrier.

"I wish you'd put a spell on it to bring me back my watch," said I, and told him of my disaster. Nothing loath, in spite of a lame leg, he stumped down with me to the edge of the beach and stood there gazing seaward and shouting his strange cries. I wish I could report more favorably on the old man's spell as a means of restoring property, but my watch is still as lost as Prince Charlie's cause!

Island Timekeepers: Sun and Tide

The lack of a watch was an awkward business in the Outer Isles, for no new one could be got immediately. I consoled myself by remembering Mr. Macpherson's words to an impatient visitor on Barra: "The only watch we study here is the sun and the tides."

In Lochboisdale, the "capital" of South

Uist, I stopped for a couple of nights in the comfortable hotel beside the busy pier. Disembarking here had been one of the most exciting adventures of my earlier trip. The landing had to be made on a pitch-black night, the motor launch was overloaded, and the pier was in disrepair. But amid astonishing good humor, and despite the extortion of one shilling each for the privilege of making this perilous adventure, the boat was cleared safely.

"Ay, we're just wondering who'll be the first victim," the ferryman agreed smilingly, as he pocketed his ill-gotten gains.

These dangers are now past. Over the gangway to a fine modern pier passengers come and go in safety. The only excitement is an occasional stampede of terrified, bleating sheep or bellowing cattle as they are herded



Sea-sprayed Pastures Feed Black-faced Sheep on an Uninhabited Hebrides Isle

Shearing time brings men to the sheep, which live untended the year round on this island between Barra and South Uist. After clipping, fleeces go into the dye pot (opposite), emerging to become Harris tweed.

on board ship for transfer to mainland markets.

The Department of Agriculture for Scotland helps the crofters improve their houses and other buildings or to erect new ones. But many thick-walled dwellings of the old type still stand in the Uists, their roofs thatched with straw covered by wire or net. This is weighted with heavy stones at the fringes to keep it down in winter gales (page 567).

Skirted Prince Escapes to Skye

Most of the little fields of oats or barley were being scythed by hand as I walked north on South Uist, and on the loch near Hecla and Beinn Mhor, its highest summits, what looked like the very same wild swans that I had noted on my last visit were nesting with a promising brood of five cygnets.

At Milton, less than halfway to Carnan, stands the birthplace of Flora Macdonald. A

signpost recently erected by the Clan Donald Society points the way to it. The house in which the rescuer of Prince Charlie was born is now a mere shell open to the winds: within it a newly built cairn bears a descriptive plaque. It was in Flora's company that the Prince, beaten in his battle for the English throne, escaped to the Island of Skye. Attired as Flora's maidservant, he was nearly discovered because he carried his unaccustomed petticoats so awkwardly.

The island of Benbecula is harnessed and unharnessed to North and South Uist as the tide swings to and fro, but at the South Ford at Carnan an important change had taken place. Here a half-mile-long bridge, begun in 1939 and finished in 1941, now lashes "the mountain of the fords" (as Benbecula means in Gaelic) firmly to South Uist. The longer ford to North Uist is still unbridged, but plans are being made to change that.



As I leaned over the rail at one of the passing places on the structure and gazed seaward, I recalled the last time I had crossed this ford, in a horse and trap which almost didn't make it. The tide was coming in fast, and by the time we reached the deep central channel the water was over the horse's knees.

"Another 20 minutes and we wouldn't have got over," said my driver calmly. "I've seen myself many a time having to put my feet up on the seat for the water coming in!"

Benbecula: Meeting Place of Faiths

The arrival of air transport and the building of a landing field during the war years have altered Benbecula perhaps more than her neighbors the Uists. In the old days it was claimed that the journey from Stornoway to Barra was as long as the journey to New York, and a good deal more arduous. Since there was no direct transport, the traveler from Stornoway had to sail to the mainland of Scotland and re-embark from there for the island.

Planes of British European Airways now travel four days a week from Renfrew, near Glasgow, via Tiree to Benbecula and Stornoway. They reach Benbecula in under two hours and Stornoway less than an hour later. In summer there is daily service on weekdays.



Equally divided between Protestant and Catholic, Benbecula is a meeting place of faiths. There is no apparent clash of religions, however, and the same bus proprietor provides vehicles on Sunday to take worshipers to both churches, which stand side by side at the north end of the island.

The comfortable hotel at Creagorry has been in the hands of the Macaulay family for several generations. I found it full of fishermen, one of whom was intimate with Greenland and another with the Falkland Islands. The latter spot, he assured me, was "hotching" (teeming) with Hebrideans, the only people who could stand the climate.

Creagorry Hotel is also a stopping place for occasional commercial travelers. These are usually a most good-natured body of men, full of helpful information as to inns and roads. There is a saying in the islands that "The one-night man knows the road best," and a commercial traveler's information is usually reliable.

I joined forces with one who was crossing to North Uist at the same time as myself, and on a stormy morning we shared an open motor-boat for the trip. The distance is between three and four miles and at low tide can be crossed by horse and trap.

This was not my first crossing. On the previous trip I had forded to North Uist with a gay wedding party from Creagorry. I shall never forget the vast pageant of sea and cloud as we traversed the neck of Grimsay island and turned to look back. The shining waste of pale sand stretched to the distant breakers of the incoming ocean. Great billows of lavender and white cloud, lipped with the silver of the setting sun, stood motionless above. A lonely curlew shrilled eerily over the waste. "As fine a sight," our driver remarked patriotically, "as you could see anywhere."

Island Adorned with Brochs and Barps

In Celtic legend a ford is one of the favorite meeting places for ghosts, but our driver suddenly dispelled gloomy speculations by breaking into song. To the swinging tune of "The Road to the Isles," followed by the haunting refrain of the "Eriskay Love Lilt," bellowed by several lusty voices, we galloped up the narrow channel before Carinish Inn, making our safe arrival in North Uist known, as seemed probable, as far as Lochmaddy, 12 miles away!

North Uist is rich in prehistoric remains,

but not in relics of Norse occupation, although the Hebrides belonged to Norway from the 9th century till the Battle of Largs in Ayr in 1263. Its earth houses date from the early Iron Age. Its brochs (round towers) were occupied in the days of the Romans, and its barps are chambered cairns of Neolithic times covered by great heaps of stones. They represent an early way of "praising famous men" and must have entailed an enormous amount of labor.

Solicitor Gives Up His Bed

Steamers call at the little port of Lochmaddy only thrice weekly, and buses are infrequent. North Uist has thus retained its out-of-the-world atmosphere more than its neighbors, for there is still only an emergency landing ground for planes. Its highest mountain is little more than a thousand feet, but its lochs are numbered in hundreds.

I landed on a stormy day and decided to share my commercial friend's car (he was returning that evening to Benbecula) to make a tour of the island. He was taking orders for enamelware, and we called in at all the little shops, visiting two at Lochmaddy, the only town of any size.

On my first visit there years ago I had found it impossible to get a room at the hotel or anywhere else in the village, for a boat had just come in. At last I was directed to the solicitor, who lived in an old harled (that is, roughly plastered) building near the pier. Though it was late when I reached his house and the moon was showing its reflection in the placid waters of the loch, both he and his housekeeper were still raking the hay in their field.

The lady looked at me pityingly but shook her head. Her house was full up. What was to be done? At this point the solicitor intervened. He was standing, hayrake in hand, considering me compassionately through his glasses.

"She can have my bed," said this good Samaritan, "for I don't like to see a stranger left on the road."

And so it fell out. I had the use not only of his room but of his books. With Josephus' history of the Jews and Martin Martin's book on his tour of the Hebrides—this last a rare and fascinating volume which first appeared in 1703—I passed a very pleasant evening, despite rats which thought nothing of coming

(Continued on page 575)



No Portrait of the Past, a Woman and Her Wheel Still Spin in Scotland's Hebrides

The outside world knows the isolated, rock-bound islands of the Outer Hebrides chiefly for their Harris tweed. The authentic fabric uses only virgin wool grown in Scotland. Factories spin most of the yarn; croft workers, like this Harris housewife, produce the rest (page 577). Here she feeds a lapful of dyed, carded wool to a century-old handmade spinning wheel. Her scale for weighing the wool hangs from the mantel.

↖ **Tarbert's Houses Huddle
Close on the Edge of
a Stony Wilderness**

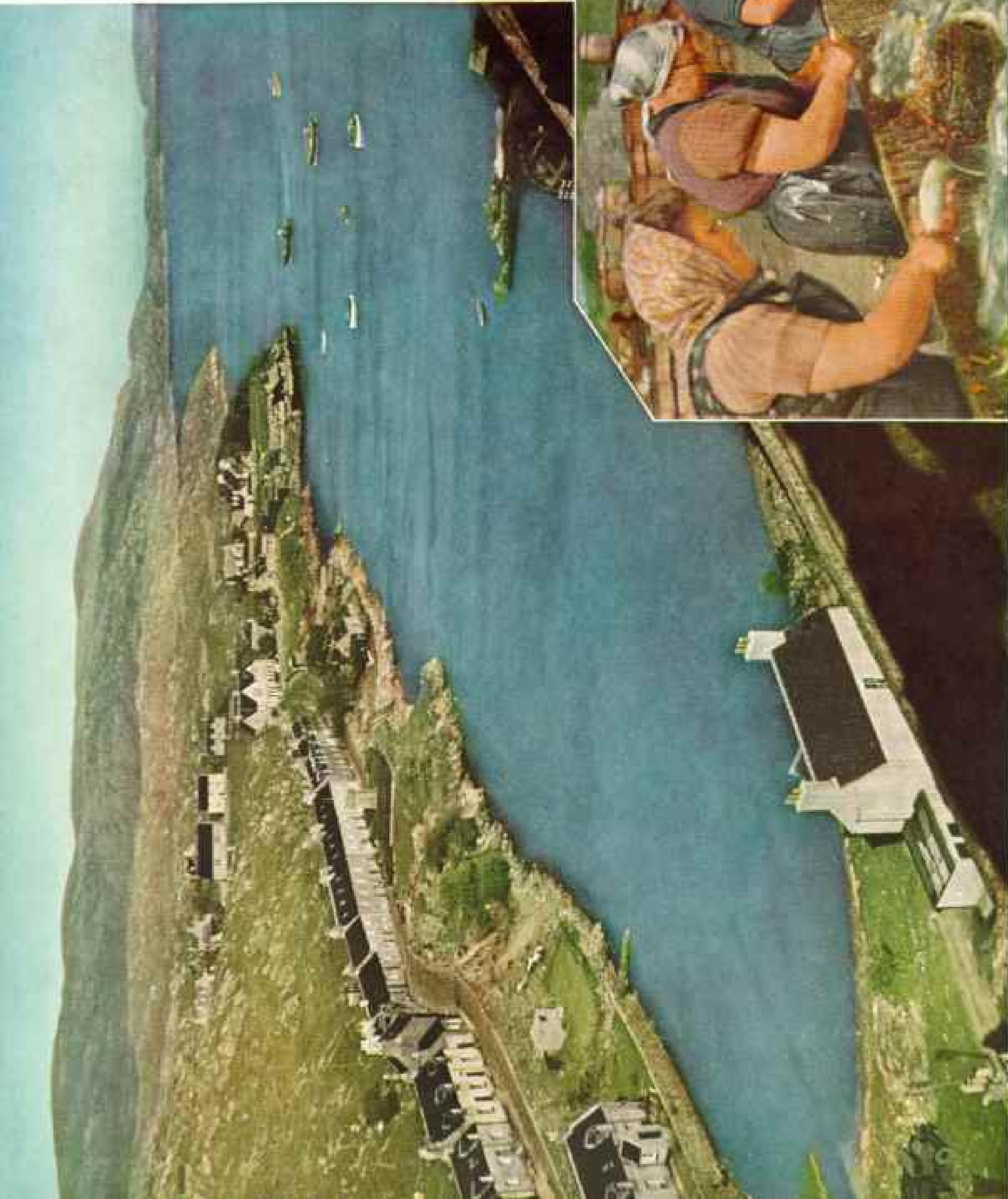
Harris's bleak east coast, one of the rockiest inhabited spots on earth, supports few trees. Its thin skin of soil, broken everywhere by stone, permits only piecemeal cultivation. Tarbert, chief town of Harris, exists by weaving and lobster fishing. It lies on a narrow neck of land between fingers of the Atlantic Ocean and the Little Minch, seen here.

↘ **Quick Fingers Clean
Hebrides Herring**

After eviscerating the catch, "fisher lassies" salt and pack it in waiting barrels for export.

© National Geographic Society

572



**Hebrides Breadbasket: →
the Coastal Plain of the
Isle of South Uist**

The flat, sandy *moebair*, bordered by the Atlantic and backed by cloud-crowned Hecla, forms the bulk of the islands' arable land. This young crofter harrows newly planted potatoes. Seaweed from the near-by ocean fertilizes his crop.

**↙ Ruddy Fleeces Mix to
Fleek a Suit of Tweed**

In this Stornoway mill wire teeth within the machine separate and fluff fibers for carding and spinning. Lichens, roots, and berries from the moor still color some Harris tweeds, but commercial dyes are now more common.

573

© Macdonalds to J. Allan Clark





← Harris Tweed Rolls from the Loom in a Craftsman's Cottage

To be genuine, Harris tweed must be hand-woven in the Outer Hebrides at the islanders' own homes. As this weaver pedals the shuttle and tightens or loosens the tensions of his loom, he gives the material a drape and feel characteristic of his own personal skill. Weaving at home, he can produce exclusive patterns for each bolt, a practice uneconomical with modern power machines.

Some Hebrides islanders still finish their tweeds in the old-fashioned way, soaking the cloth in urine to set the color and tighten the threads. Then women "waulk," or full, the fabric, pounding and kneading the fibers until they are felted against wind and water. Final drying over a peat fire permeates the cloth with a tang it may carry for its lifetime.

© National Geographic Society



Tweeds Jam →
in Lewis Warehouse

The Harris Tweed Association guards the industry and markets its product. Only fabrics produced and inspected under its rules may carry the familiar Orb mark. Last year Hebridean looms produced 5 million yards of the material. Britain exported more than half to the United States, earning some \$4,000,000.

A technical school, recently opened in Stornoway Castle, includes courses to perpetuate the art of weaving. These bolts of handmade fabric could serve as illustrated textbooks for the students enrolled there.

Illustrations by J. Allan Cash

out into the middle of the floor to inspect a stranger!

I was just too late to renew acquaintance with this kind friend. He had died, at a ripe old age, the week before I returned.

In North Uist the weather, which had shown signs of cracking in Benbecula, broke to bits, and I was stormbound for three days. Gales and lashing rain drove against the windows of the small boardinghouse near the North Ford where I had found comfortable quarters.

Harris Hillsides Are Stony

On the third evening of the storm the road surveyor from Harris blew in (quite literally) on his way to supervise his workmen farther south. In defiance of the weather, he had come by mailboat to Lochmaddy, and he went on to Eriskay and Vatersay by way of the North Ford next morning.

Many new roads are being built on the islands. This gives employment to the men and links up formerly isolated communities in the effort to keep the younger people from emigrating. Houses formerly reached by mere tracks across the moors are now having roads brought to their doors, and bus transport has greatly improved conditions in outlying districts.

The roads in Harris seemed to me the roughest and wildest, for this is the most mountainous part of the Long Island. Its hillsides are certainly the stoniest I have seen in Britain. Here, too, however, great improvements took place even before the war and are still going forward. A road now circles southern Harris, giving alternative routes from Rodel in the south to the chief port of Tarbert, on a narrow isthmus between East and West Loch Tarbert.

Stormy Crossing to Rodel

On its northbound trip the mailboat from Lochmaddy to Rodel sails only on Tuesdays. I decided to cross by a motorboat whose owner, Mr. Finlay Patterson, lives on the large island of Berneray in the Sound of Harris (not to be confused with the Berneray at the tail of the Long Island south of Barra, usually known as Barra Head, or with Great Bernera, an island farther north in Lewis).

Mr. Patterson and his son ferry travelers over the hidden rocks and sandbanks in the sound which divides North Uist from Harris. The distance to Rodel is nearly eight miles,

and I had to wait until the storm abated.

On a morning which still seemed to my quailing spirit anything but calm, a sudden telephone call summoned me to Newton Ferry at the north end of North Uist. There I was told Mr. Patterson would be waiting for me about 1 o'clock. Newton was 20 miles from my boardinghouse near Carinish, and there were no buses; but there was a car for hire at the Carinish post office, and 1 p.m. found me at the rendezvous.

The comfortable covered boat was just coming in from the island of Berneray, which still has 300 inhabitants in spite of its lonely situation in the stormy sound. Finlay Patterson's appearance in yellow sou'wester, dark, rosy, and jovial, inspired confidence. In spite of the storm, he had crossed on the previous day to Rodel for an ambulance case, amid rain so tempestuous that it was often impossible to see the surface of the waves.

Fortunately the swell abated, though the boat still tossed frighteningly. We threaded the numerous rocks and islets of the sound, rounded a rocky headland, and entered Rodel's snug harbor. Here, sheltered under the cliffs, was the former mansion house of the Macleods, now the local hotel.

Poetess Buried Face Down

On the cliff above it stands the 16th-century church of Rodel, restored in 1873 by the Countess of Dunmore. It is one of the oldest and most interesting in the Hebrides. Within it, among other monuments, lies the richly carved effigy of a chief of the Macleods, his stone feet resting upon a stone crocodile or lizard, his two-handed sword on his breast.

In the churchyard is buried a remarkable Hebrides character who was born about 1588. Mairi Nighean Alastair Ruaidh (Mary Macleod) was nurse to the Macleod family, seven of whom she reared. She was famous in her day as a poetess, and lived to the great age of 105 years. In her old age she went about with a silver-headed cane and was fond of a pinch of snuff.

She was once banished by the chief of the Macleods on account of a song she had composed which had offended him. Later she made another song to placate the aggrieved chieftain and was recalled from exile. The artist's love of truth, however, conquered the woman's love of favor. The story goes that on her deathbed Mairi asked that she be buried face downward as a sign of repentance

for having given in to the Macleod against her better judgment.

I spent a week end at Rodel in the comfortable hotel, itself a home of romance. From its walls in 1850 the comely daughter of Balranald, the Macdonald estate in North Uist, was kidnaped, but not unwillingly. "Red Jessie," so called from the auburn color of her hair, eloped from North Uist with Lord Macdonald's factor there, a young man from Skye. Pursued to Harris, Jessie was recaptured by her relatives and held prisoner at her uncle's house at Rodel.

But Jessie's lover, aided by Skyemen summoned from that isle, broke into the house at night and forcibly removed his sweetheart, not without much commotion, for they were discovered in the attempt. They fled first to Skye and later emigrated to Australia.

Over the Mountains to Tarbert

Leaving my knapsack to follow by bus, I set out from Rodel on a sunny September morning for the long but beautiful walk to Tarbert, the chief port of Harris 23 miles away. The road leads north along the west coast, then turns east through a mountain pass and descends to the narrow isthmus where Tarbert stands between its two lochs.

Three miles from Rodel I passed the village of Leverburgh, whose name was changed from the Gaelic Obbe (which means a bay) in compliment to the late Lord Leverhulme. His untimely death 29 years ago cut short his philanthropic efforts to better the conditions of the Lewis and Harris crofters. He was one of the most generous patrons the Hebrides have ever known.

A quarter of the way to Tarbert I ate my lunch on the white sands of Scarasta, where the surf thunders in from Labrador. On the roadside above it stands the church and manse where Lord Macaulay's great-grandfather, Aulay Macaulay, was once minister.

At Luskentyre I waited for the motorbus and was carried over the mountains to Tarbert, which has a delightful hotel. In its visitors' book I saw the signature of Sir James Barrie, creator of the beloved Peter Pan. In 1912 Sir James rented a castle on West Loch Tarbert and drew inspiration for his drama, *Mary Rose*, from its neighborhood.

From the busy pier at Tarbert, steamers sail south and east to Skye and Lochboisdale (page 572). They have also been known to go from West Loch Tarbert to America. That loch is now lonely and silent; Britain's only whaling station, formerly operated there by



576

a Norwegian company, was closed down for the second time in 1951.

It is 36 miles from Tarbert to Stornoway in Lewis. The road lies over the shoulder of Clisham, highest mountain in the Outer Isles (2,622 feet), and is very wild and grand. As it was too long for one walk and there is no hotel halfway, I again decided to set out on foot and let the bus overtake me in the afternoon.

On my first journey I had spent the night at the hospitable home of a farmer and his daughter at Balallan, a village about 21 miles from Tarbert. Although I had arrived unexpectedly, they had treated me like an honored guest.

In a blizzard of rain three kindly roadmen lifted me in their lorry over the high shoulder of the mountain and set me down on the shore of beautiful Loch Seaforth, where the boundary between Harris and Lewis is passed almost unnoticed (above).



The Sea, Thrusting a Finger into the Long Island, Fills a Barren Valley with Loch Seaforth

Geographically one island, Harris and Lewis are split by clan affiliation, county allegiance, and common consent. Loch Seaforth, which gave the Seaforth Highlanders their name, divides the island on the east.

There are few habitations here, but at last I came to the hamlet of Aribruach. Hearing the clack of a loom, I peeped in at the open door of a shed where two lads were weaving Harris tweed. I was politely invited to inspect their work, which was "for export only."

Harris Tweed Must Be Home-woven

The weaving of Harris tweed is entirely a cottage industry. The yarn is woven, usually by men, on hand looms in the houses, after being processed and spun, as a rule, at one of the large mills in Stornoway or in one at Tarbert. Occasionally it is also hand-spun (page 571).

To meet the standards set by the Harris Tweed Association, Harris tweed must be made from "pure virgin wool produced in

Scotland, spun, dyed and finished in the Outer Hebrides and hand-woven by the Islanders at their own homes" in these islands only. It is a fabric of rare excellence, and to assure himself that the cloth is genuine the purchaser should look for the certification mark (a *patée* cross surmounting an orb, with the words HARRIS TWEED) stamped on the cloth at 3-yard intervals in the mills (pages 573, 574).

The industry employs about 60 percent of the working population of Harris and Lewis. There are also weavers in the Uists and other Outer Hebridean islands. Many crofters and fishermen are weavers in their spare time and add considerably to their incomes in this way. A diligent worker may earn from £10 to £14 (\$28 to \$40) per week.



A Thin Telephone Line, Swinging Across the Sea, Links Tiny Scarp with the Outer World
This post office engineer, mounted on a Harris pole, taps the line to Scarp and asks for a fishing boat to take him to the island. He visits each year to check the one telephone, installed in 1947 in a house of its own.



A Bus-borne Bank Takes to the Road to Serve Isle of Lewis's Far-flung Crofts

This bankmobile runs a regular route out of Stornoway. Besides offering the ordinary services, the bank functions as paymaster to the crofters by delivering the money they earn weaving tweeds, thus saving them a long trip to town. Unlike her city cousins, this woman banks comfortably in house dress, apron, and kerchief.

After a depressed period, the Harris tweed industry is again on the upgrade. It brings a tidy annual income to Britain's "export drive."

The Outer Hebrides depend largely on this industry, as well as on stock raising, fishing, and tourism. The lads I talked with were whole-time weavers. A huge bale of cloth outside their shed awaited the bus or some passing lorry driver for conveyance to a mill at Stornoway. Unlike some of the older folk in Lewis, the lads were delighted to be photographed; they called it "a good advertisement."

Crofter Brews Her Own Dyes

I talked also with a woman who spun all her own sheep's wool and dyed it herself with some of the old vegetable dyes. These include black from iris roots, yellow from heather tops, and red and reddish brown from lichens. The dye was distilled by several boilings in a huge copper vat in her garden (page 569).

At the scattered village of Balallan I called

at the house where I had previously lodged, and was delighted to be recognized and welcomed at once by my former hostess herself. She greeted me as if my last visit had been yesterday.

"Certainly I remember you!" she cried. "You haven't changed at all!" What praise could be more gratifying from this land where time moves slowly?

As I was bidding her goodbye at the gate, a bus drew up to carry me the remaining 15 miles into Stornoway. On the way we drove past the beautiful woods which surround Stornoway Castle, practically the only trees on the island. Lord Leverhulme, who once owned the castle and its grounds, generously bequeathed them to the town. A technical school is now housed there.

Stornoway, a center of the herring fishery, is a flourishing town of several thousand inhabitants and leads a life of its own (page 560). The Lewis Presbytery of the Church of Scotland was holding a conference there the week of my arrival, and its head, the

moderator, was present. On Sunday, services were broadcast throughout the British Isles.

I attended one of these in a church which now occupies the site of the house where a famous explorer of North America, Sir Alexander Mackenzie, was born in 1764, a year later than his memorial tablet states.

I found friends in the County Hotel. An Australian Scot, paying his first visit to the old country after an absence of 50 years, invited us all to accompany him in his car to the Butt of Lewis and the famous prehistoric stone circle at Callanish on the west coast.

Lewis Monoliths Rival Stonehenge

This group of giant monoliths rivals Stonehenge in the number, if not the size, of its stones, which lead in a long avenue to the somewhat cruciform "altar." Their situation, on a lonely eminence above East Loch Roag, is more striking than that of Stonehenge.

The Butt of Lewis is 30 miles from Stornoway. In 1924 I had walked all of them, for no buses went that way. There are now one or two daily. As the slow miles passed, innocent of intelligible milestones like all the roads in the Outer Hebrides, I grew more weary than I had imagined possible.

In the strange, heavy twilight, as I approached the Butt through the monotonous peatlands which surround it, I felt that I had indeed reached the end of the world. Darkness fell early, the moor turned purple, then faded into dimness. A big woman working in a croft by the roadside spoke to me in Gaelic. I was utterly weary now, but no sympathy was to be had from this lady.

"You must be strong," she said enviously, when I told her that I had walked from Stornoway. The cheering vision of a belated cup of tea faded! Lights were beginning to show through the doorways, and I met girls carrying pails of water from the wells, using buckets attached to a wooden hoop within which the carrier walked. Outside of Stornoway there was no piped water supply in Lewis 30 years ago, and many houses there are still without it today.

Leaving out the Stornoway area, Port of Ness is one of the most populous districts in

Lewis. Most of its old thatched, or "black houses," with only a hole in the roof for the escape of smoke, covered by a bucket without a bottom, have been replaced by tidy modern dwellings, mainly of concrete or stone, with asbestos or composition roofs. The old houses are still in use as cow barns.

On the last day of my visit to Stornoway I returned to the Butt alone to revisit the lighthouse, which earlier had been closed to our car party by painting operations. As I gazed northward from its high tower, over the dark-blue waters where the afternoon sun was setting, I called to mind a beautiful extempore translation of Ossian, legendary Irish warrior-poet, which the schoolmaster of Tarbert once recited to me by his fireside:

Hast thou left the deep blue of thy course
in the heavens,
Thou peerless sun of the golden locks?
To thee the doors of the night are open,
And the place of thy rest in the west....
Sleep thee in thy nest, O sun!
And with joy return thee from thy rest.

A Swim for Shony

Not far from the lighthouse there is a little sheltered cove under the rocks, with a beach of golden sand. I had brought my bathing suit with me, and here, as I had done before, I propitiated the ancient pagan sea-god, Shony, in the green sunlit waters—though properly the sacrifice to Shony should be offered up at night.

Shony was the giver of seaware (seaweed) to the islanders, and on a night at Hallowtide long ago someone was chosen to wade into the sea holding a cup of ale. This was offered to the god with these words:

"Shony, I give you this cup of ale, hoping that you'll be so kind as to send us plenty of seaware for enriching our ground."

I had nothing stronger to offer the god than an empty thermos. From the shore I waved this at him in farewell and cried: "Shony, I hope you'll be so kind as to return me that watch you stole on Eriskay, you thieving old scoundrel!"

And those three words, I believe, are a truer description of the sea-god than Ossian ever penned!

NATIONAL GEOGRAPHIC SOCIETY

SIXTEENTH AND M STREETS NORTHWEST, WASHINGTON 6, D. C.

JOHN OLIVER LA GORCE, President
 ROBERT V. FLEMING, Treasurer
 HERBERT A. POOLE, Assistant Treasurer
 HILLEGARY F. HOSKINSON, Assistant Treasurer
 LYMAN J. BRIGGS, Chairman, Research Committee
 ALEXANDER WETMORE, Vice-Chairman, Research Committee

MELVILLE BELL GROSVENOR, Vice-President
 THOMAS W. MCKNEW, Secretary
 VERNON H. BREWSTER, Assistant Secretary
 MELVIN M. PAYNE, Assistant Secretary
 ROBERT E. DOYLE, Assistant Secretary
 SIBYL PECK, Assistant to the Chairman of the Board

BOARD OF TRUSTEES

GEORGE C. MARSHALL
 General of the Army
 Formerly Secretary of Defense
 CURTIS E. LEMAY
 General, U. S. Air Force, Commanding
 Strategic Air Command
 LEROY A. LINCOLN
 Chairman of the Board
 Metropolitan Life Insurance Co.
 LYMAN J. BRIGGS
 Director Emeritus, National
 Bureau of Standards
 H. RANDOLPH MADDOX
 Vice President, American Telephone
 and Telegraph Company
 ERNEST E. NORRIS
 Retired President
 Southern Railway System
 MELVILLE BELL GROSVENOR
 Associate Editor
 National Geographic Magazine

GILBERT GROSVENOR
 Chairman of the Board, Formerly President, National
 Geographic Society and Editor of its Magazine (1899-1934)
 JOHN OLIVER LA GORCE
 Editor, National Geographic Magazine
 ROBERT V. FLEMING
 President and Chairman of the Board
 Riggs National Bank
 ALEXANDER WETMORE
 Research Associate
 Smithsonian Institution
 WILLIAM V. PRATT
 Admiral, U. S. Navy, Retired
 RICHARD E. BYRD
 Rear Admiral, U. S. Navy, Retired
 JUAN T. TRIPPE
 President, Pan American World Airways
 WILLIAM E. WRATHER
 Director, U. S. Geological Survey
 ELISHA HANSON
 Lawyer and Naturalist

CHARLES F. KETTERING
 Consultant and Director
 General Motors Corporation
 LLOYD B. WILSON
 Formerly Chairman of the Board
 Chesapeake and Potomac
 Telephone Companies
 L. O. COLBERT
 Rear Admiral, U. S. Coast and
 Geodetic Survey, Retired
 EMORY S. LAND
 Vice Admiral, U. S. Navy, Retired
 Formerly President
 Air Transport Association
 THOMAS W. MCKNEW
 Secretary
 National Geographic Society
 HUGH L. DRYDEN
 Director, National Advisory
 Committee for Aeronautics

ORGANIZED FOR "THE INCREASE AND DIFFUSION OF GEOGRAPHIC KNOWLEDGE"

To carry out the purposes for which it was founded sixty-six years ago, the National Geographic Society publishes the National Geographic 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. By dating the ruins of vast subterranean dwellings in that region, The Society's researches solved secrets that had puzzled historians for 300 years.

In Mexico, The Society and the Smithsonian Institution, January 18, 1939, discovered the oldest dated work of man in the Americas. This stone is engraved, in Mayan characters, November 4, 294 B. C. (Spinden Correlation). It antedates by 200 years anything else dated in America, and reveals a great center of early American culture, previously unknown.

On November 11, 1933, the stratosphere flight of the world's largest balloon, *Explorer II*, sponsored by The Society and the

U. S. Army Air Corps, reached a world-record altitude of 72,305 feet. Capts. Albert W. Stevens and Orvil A. Anderson took aloft a ton of scientific instruments and obtained results of extraordinary value.

A notable undertaking in the history of astronomy was launched in 1949 by The Society and Palomar Observatory of the California Institute of Technology. This project will photomap the vast reaches of space and provide for observatories all over the world the most extensive sky atlas yet made.

In 1948 The Society sent seven expeditions to study the sun's eclipse on a 5,000-mile arc from Burma to the Aleutians.

A Greek cargo ship sunk in the Mediterranean 2,200 years ago was found and investigated in 1952-54 by the National Geographic Society-Calypso Marine Archaeological Expedition led by Capt. J.-Y. Cousteau of the French Navy.

The National Geographic Society and the Royal Ontario Museum in 1951 explored and measured newly found Clubb meteor crater, 11,500 feet in diameter, in northern Quebec.

The Society and individual members contributed \$100,000 to help preserve for the American people the finest of California's sequoias, the Giant Forest in Sequoia National Park.

One of the world's largest icefields and glacial systems outside the polar regions was discovered in Alaska and Yukon by Bradford Washburn while exploring for The Society and the Harvard Institute of Exploration in 1938.

EXECUTIVE STAFF OF NATIONAL GEOGRAPHIC MAGAZINE

JOHN OLIVER LA GORCE, EDITOR

MELVILLE BELL GROSVENOR, ASSOCIATE EDITOR

Assistant Editors
 FREDERICK G. VORSTRIEM
 LEO A. BURAH
 MARGO SUTHERLAND
 GEORGE W. LONG

Editorial Staff
 ANDREW H. BROWN
 ROBERT LESLIE CUMLEY
 BEVERLEY M. BOWIE
 LONNELL AIRMAN
 STUART E. JONES
 ALLAN C. FISHER, JR.
 KENNETH F. WEAVER
 JOHN SCOFIELD
 NATHANIEL T. KENNEDY
 JOHN R. HOOPER
 ROSE T. MACBRYDE

Editorial Research
 INEZ B. RYAN, Chief
 MARGARET G. BLEDSOE

Librarian
 ESTHER ANN MANION
 JULIA F. BAKER, ASST.

Geographic Research
 GEORGE CROSSFITT

Foreign Editorial Staff
 W. ROBERT MOORE, Chief
 LUIS MARDEN
 FRANC NISHI
 HOWELL WALKER

Secretary's Staff
 Personnel Officer
 HERBERT T. HENDERSON
 Membership Administration
 SULLIVAN CART
 Chief Auditor
 F. CHARLES BROWN
 Payroll Operations
 ESTHER M. LOHRER
 Statistical Control
 EVERETT C. BROWN
 Cashier

WILLIAM H. MCCAGLEY
 Cost Control
 SARGENT C. ELLIOTT
 Purchasing
 JOHN P. M. JOHNSON
 Administration
 JOHN H. WALKER
 Membership Fulfillment
 ROY J. KLOCKENBRINK

Chief Cartographer
 JAMES M. DARLEY
Cartographic Staff
 NEWMAN BURNYEAD, ASST. CHIEF
 C. E. RIDDIFORD, Typographer
 WELLMAN CHAMBERLIN
 ARTHUR D. GRACINDI
 JOHN J. BREWER
 RALPH E. McALEER
 APPLIA HOLSTOCK
 RICHARD DARLEY
 WALTER E. MORRISON

School Service
 RALPH GRAY, Chief
News Service
 WYNDSON P. BOOTH, Chief
 SAMUEL W. MATTHEWS

Advertising
 GILBERT G. LA GORCE, Director
 JOHN F. CONNERT, Manager
Printing Production
 DICK JAMES ANTELLA
 JOE M. BARLETT
Film Editor
 JOSEPH M. RIDGOUT

Assistant Illustrations Editor
 WALTER M. EDWARDS
Illustrations Staff
 KID ROSS

HERBERT S. WILBURN, JR.
 ANDREW FOONENTON
 LEONARD J. GRANT
 CHARLES ALLMON
 EDWARD C. FERRISDAY, JR.
 CARO STILLWELL, LIBRARIAN
Staff Artist and Naturalist
 WALTER A. WEBER

Staff Photographers
 B. ANTHONY STEWART, Chief
 WILLARD R. CULVER
 J. BAYLOR ROBERTS
 VOLKMAR WENTZEL
 ROBERT F. SIMON
 JOSE E. FLETCHER
 DONALD McBAIN
 DAVID S. BOYER
 BATES LITTLEDALE
Photographic Laboratory
 EDWIN L. WISHARD, Chief
 RICHARD H. STEWART, ASST. Chief
 NEWTON V. BEARDSLEE

How much do you think a Hamilton costs?

Some people respect Hamilton watches so much they do themselves a disservice. They *think* they can't afford one—and never discover they can own a Hamilton for only \$57.75 or a Hamilton Illinois for as little as \$33.95. Thus they miss a wise investment. A Hamilton is built to serve faithfully for a lifetime. Its mainspring is *guaranteed* unbreakable. In the end, it costs less to own a Hamilton than a so-called "bargain" watch.

*It means
so much more
to give—or get—a*

Hamilton

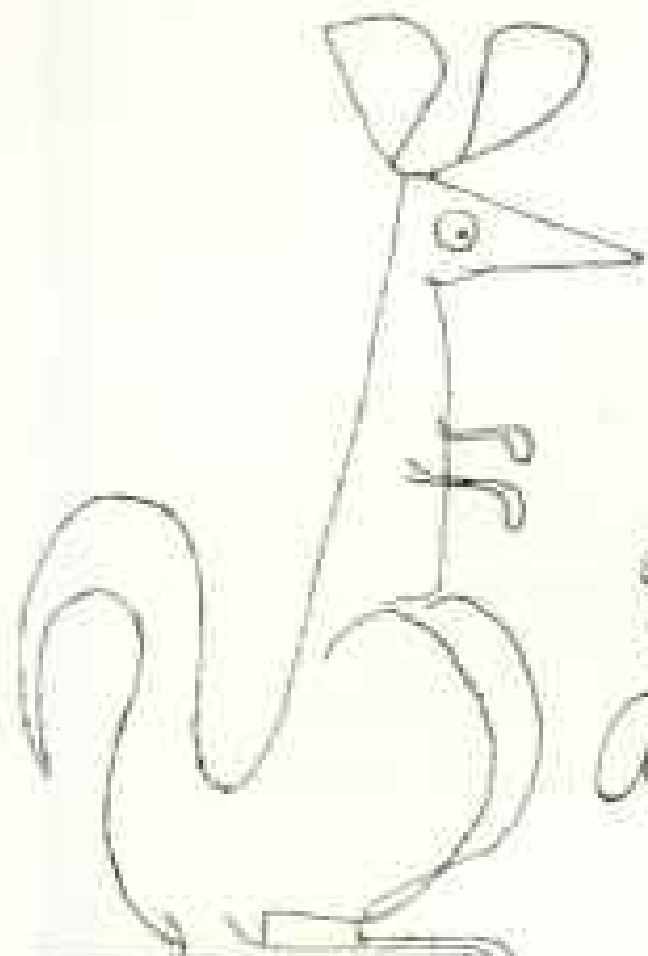
NEWTON, \$71.50; GLAMOUR™E, 7 2 diamonds, \$99.50. Prices include Federal tax.



FREE! Color folder of 1954 watch styles. Send name and address to Dept. N-31, Hamilton Watch Co., Lancaster, Pa. 

Mention the National Geographic—It identifies you!

FLORSHEIM SHOES



*of
genuine
Australian*

Kangaroo



There's no other leather quite like
Kangaroo—light and soft as the
finest kid, yet tough as can be!
Actually, it's scratch and scuff
proof, and naturally shiny.



THE FLORSHEIM SHOE COMPANY • CHICAGO 6 • MAKERS OF FINE SHOES FOR MEN AND WOMEN

Mention the National Geographic—It identifies you

Whether cruising the Caribbean

or crossing the

Atlantic

refresh your zest for living

on

France-Afloat



Villemaot

Your heart and your spirits lighten the moment you cross a French Line gangplank—whether you're to cruise the Caribbean or sail for Europe.

For, almost instantly, your mood is caught up and carried along with the vivacious, fun-loving spirit of the French. Your cares and tensions dissolve in the whispering waves of your trip.

You can anticipate other pleasant bonuses on France-Afloat. Each meal is an adventure in world-famed French cuisine. You'll enjoy gay entertainment, pre-release movies, deck sports or deck-dozing relaxation. Each hour is an enchanted holiday. Consult your Authorized French Line Travel Agent or French Line, 610 Fifth Ave., New York 20, N. Y.

French Line

Planning a Western Trip?
TRY S. P.'s CALIFORNIA STREAMLINER

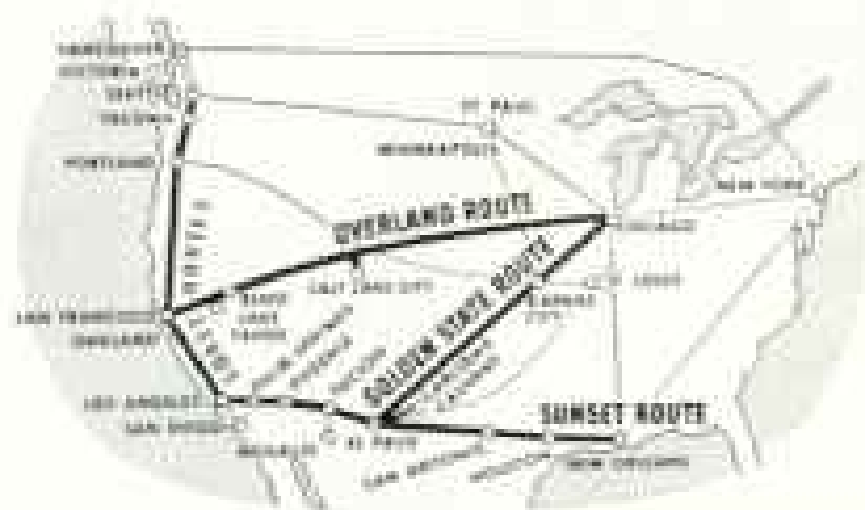
Golden State

CHICAGO • SOUTHERN ARIZONA • LOS ANGELES

The *Golden State* is the smoothest thing on wheels between Chicago and Southern California. It takes you the low-altitude way, via Tucson, Phoenix, Palm Springs. Stop over for fun in the sun - ride the *Golden State* for fun on the run. You'll love this streamliner's easy-riding comfort and extra features: free hors d'oeuvres at cocktail time, valet service. There's wonderful food in the Dining Car or Coffee Shop - or enjoy it in the privacy of your Pullman room, if you prefer. Low-cost Chair Car accommodations. Free pillows, too.

We're the people to see about any Western trip. Southern Pacific has more streamliners, serving more of the West, than any other railroad. Mail coupon for free, full-color book, "Wonderful Ways West." Ask about low Family Fares, too.

Remember, all the scenery is on the ground. You see the West best from S. P. streamliners.



C. T. Collett, Dept. 154, Southern Pacific Co.
 310 South Michigan Avenue, Chicago 4, Illinois

Please send me, free, your full-color book, "Wonderful Ways West."

NAME _____

ADDRESS _____

CITY & ZONE _____ STATE _____

**Southern
 Pacific**



Croesus' cavalry stampeding at the sight of Persian camels

*Yesterday . . .
"The Fates" Decided*

In the 6th century, B. C., King Croesus of Lydia was told by the Delphic Oracles he could defeat the Persians. Relying on "The Fates" instead of the facts, he took on an enemy he should have known was too strong for him . . . and he was badly beaten. Lack of facts cost him his kingdom and his freedom.

Today . . . Facts Are What Count



The recent great strides in military science, pure science, commerce, and industry have resulted from modern man's ability to determine the facts and act accordingly.

Tremendous advances have been made in the past few years in fact-finding machines. Through electronics, great masses of data that would have taken a lifetime to process can now be handled in a few days. Ordinary volumes of work can be done in minutes.

By making "mathematical models" of specific processes, products, or situations, man today can predetermine probable results, minimize risks and costs.



World's Leading Producer
of Electronic Accounting Machines

INTERNATIONAL BUSINESS MACHINES, 590 Madison Avenue, New York 22, N. Y.



Living Dangerously?

My Junior Fire Marshal showed me how careless I had become

This was a special day in Gary's life. I sensed it the minute he walked in wearing that fire hat.

His story spilled out in all directions . . .

Big meeting at school. Appointed Junior Fire Marshal. Very important to prevent fires. Chief Wilder said so. He gave me this fire hat, Mom. And a report to fill out at home. My class can win a banner . . .

It was wonderful to see Gary taking so much interest in protecting his home. I dropped what I'd been doing, and we began checking on fire hazards.

Believe me, that report opened my eyes to the careless habits I'd fallen into! I'd been living dangerously and all because I hadn't realized the simple steps to take for safety.

If you have a youngster in school, the chances are you'll be hearing about the Hartford Junior Fire Marshals during National Fire Prevention Week, October 2 to 9.

Last year, nearly three million enthusiastic children asked parents' help in completing a Junior Fire Marshal's Home Report. Right now, the *sixth* annual drive is under way.

The Marshals are sponsored as a public service by the Hartford Fire Insurance Company. Thousands of public-spirited Hartford Agents from coast to coast—on their own time—administer the program in their communities. Schools, fire departments and other civic groups cooperate generously.

Year in and year out you'll do well with the

Hartford

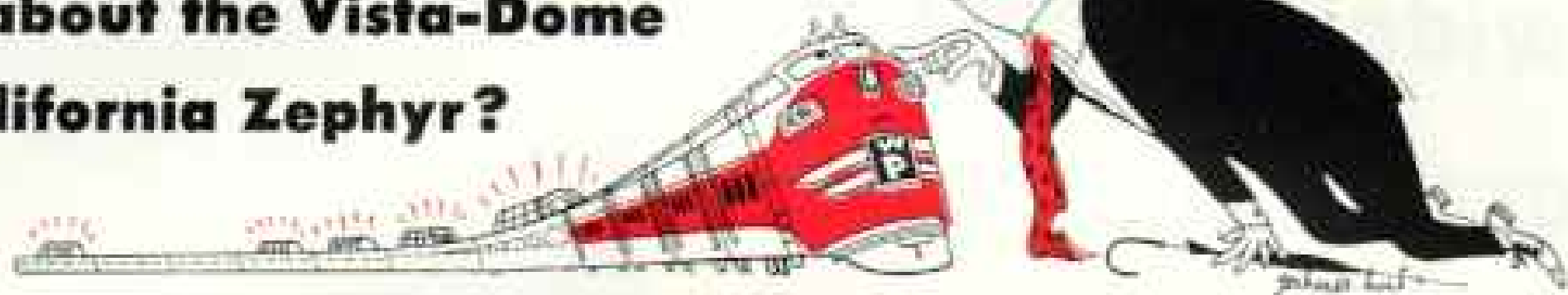


Hartford Fire Insurance Company • Hartford Accident and Indemnity Company
Hartford Live Stock Insurance Company • Hartford 15, Connecticut

Mention the National Geographic—It identifies you

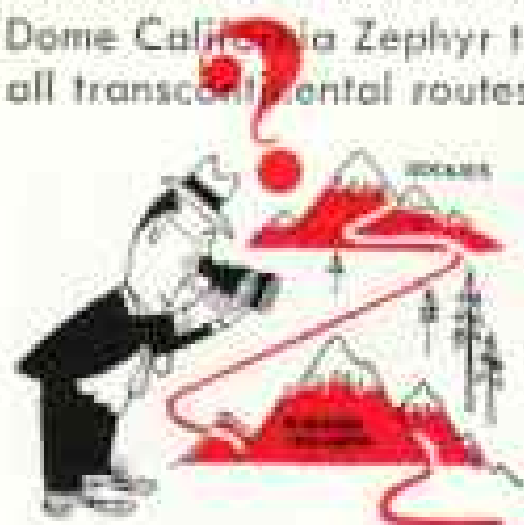
Curious?

about the Vista-Dome California Zephyr?



(Most people are; after all, it's the most talked-about train in the country!)

Want to know about the route? The Vista-Dome California Zephyr travels the most scenic of all transcontinental routes . . . through the mighty



Colorado Rockies, across the High Sierra, and down the entire length of California's Feather River Canyon. And you see all this wonderful scenery during daylight hours!

Know why this train has five Vista-Domes? Because there's so much to see along the spectacular route of the no-extra-fare California Zephyr, this streamliner has five glass-enclosed Vista-Domes . . . 120 unre-



served, extra seats for the enjoyment of both Pullman and Chair Coach passengers!

Wonder why there's so much talk about the Dining Car? Simply because so many passengers are so pleased that such wonderful food can be served at such reasonable prices. Another talked-about feature is the unique system of advance dinner reservations in the California Zephyr's beautiful Dining Car.



Like more facts about accommodations? In addition to Vista-Dome Chair Coaches, you have a choice of drawing rooms, compartments, bedrooms, bedroom suites, roomettes and berths. NOTE: all private rooms have individual controls for lighting, heating, air conditioning, radio or recorded music.

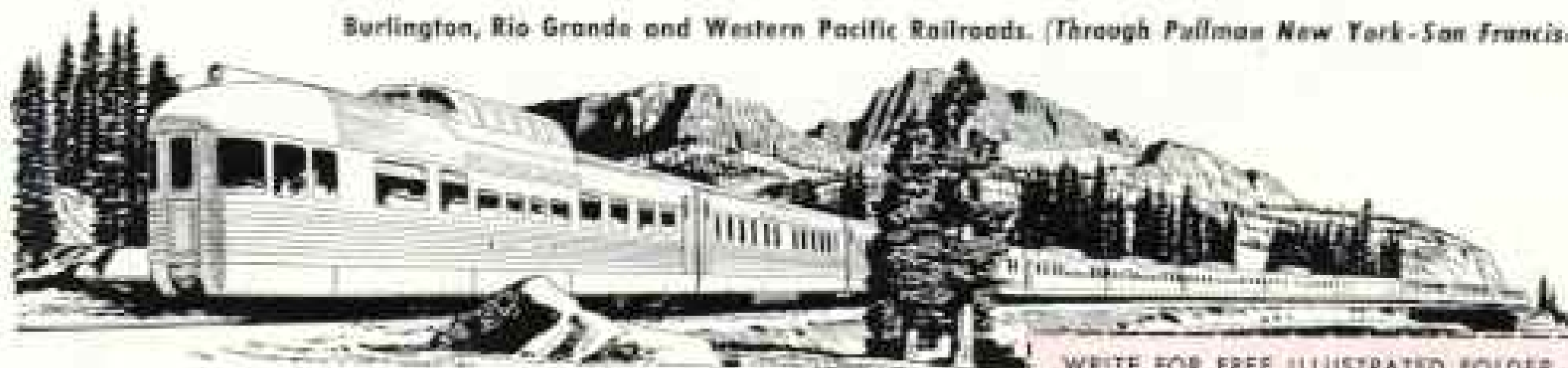


The only train to San Francisco with five Vista-Domes

California Zephyr

Daily between Chicago and San Francisco-Oakland via Denver and Salt Lake City on the

Burlington, Rio Grande and Western Pacific Railroads. (Through Pullman New York-San Francisco)



Still curious? ▶

Take advantage of Family Plan Fares.

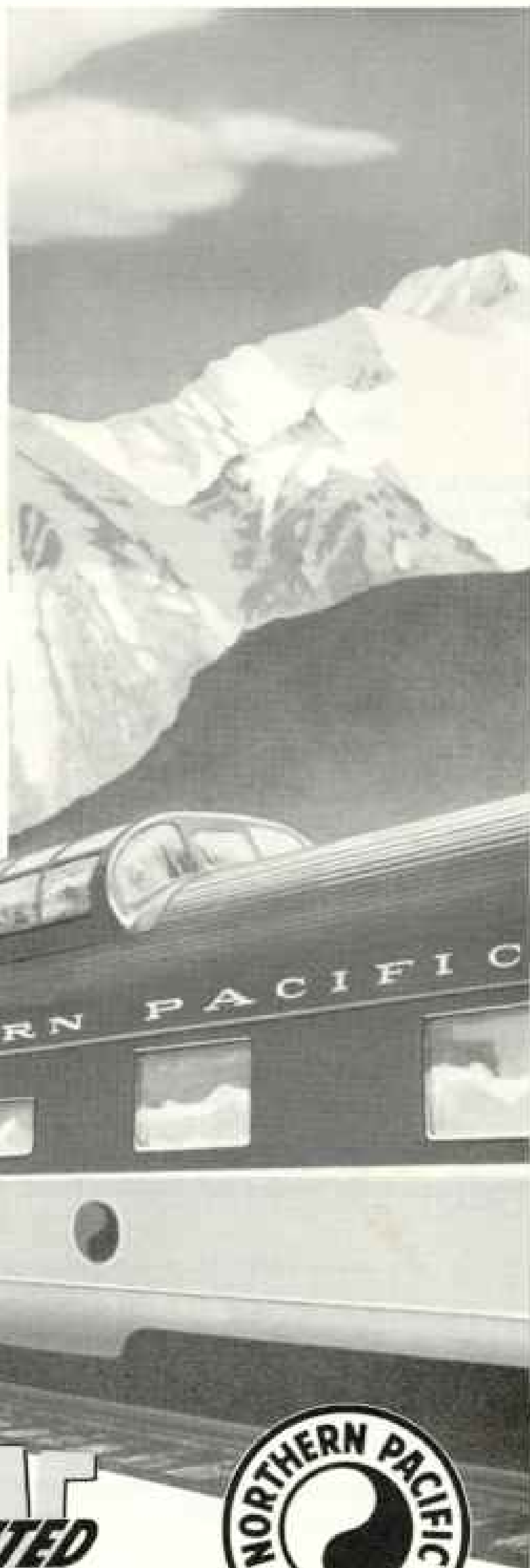
WESTERN PACIFIC

WRITE FOR FREE ILLUSTRATED FOLDER
Joseph G. Wheeler, Passenger Traffic Manager
Western Pacific Railroad
526 Mission St., San Francisco 5, Calif.

Name _____
Address _____
City _____ State _____ (ING)

See the Northwest...

high,
wide
and handsome



New Vista-Domes are rolling now on the faster North Coast Limited!

On Northern Pacific's Scenic Route Across America, you ride high up over the crest of the Rockies... through the evergreen Cascades. Beside you bright streams thread their way. Wide around you jagged peaks are silhouetted against the sky. You see it all as you never could see it before.

Northern Pacific's first dome cars are already in service. More will be added until by fall there are *four* Vista-Domes — two dome coaches and two dome sleepers — on each North Coast Limited!

Want a colorful booklet about this wonderful train? Write now for "Northwest Adventure." Address G. W. Rodine, Passenger Traffic Manager, Room 926, Northern Pacific Ry., St. Paul 1, Minn.

VISTA DOME
NORTH COAST LIMITED
VISTA DOME



MAIN STREET OF THE NORTHWEST • CHICAGO • NORTH PACIFIC COAST

Mention the National Geographic—It identifies you

FREE

TO NEW MEMBERS OF AROUND-THE-WORLD SHOPPERS CLUB

This Exquisite 6-Piece Set of Florentine Silver—

direct by mail from Florence, Italy—without payment of duty or postage



PICKLE FORK, with Ferris Griffin
 BUTTER KNIFE, with Julius Caesar
 SUGAR SHELL, with Apollo the Sun-God

MUSTARD SPOON, with Winged Lion
 DRESSING SERVER, with Rosetta, Remus and Wolf Mother
 OLIVE FORK, with Lily of Florence

Shown slightly reduced

Why This Sensational Offer Is Being Made By **AROUND-THE-WORLD SHOPPERS CLUB**

We will send you this unusual 6-piece Florentine Silver Set FREE when you join our Club! Set was hand-made in Florence, Italy, with techniques going back to the time of da Vinci; each piece has a different Renaissance design, and handles are tooled in Florentine bas-relief.

THRILLING MONTHLY SURPRISE. As a Club member, each month you will receive a wonderful surprise gift mailed to your home *direct from a different foreign country*—postpaid and duty-free. You enjoy an exciting "around-the-world" shopping trip . . . and make your home a "show place" with unusual, exotic gifts from the earth's distant lands!

JOIN TODAY BY MAILING THE COUPON. You may join for 2, 4, 6 or 12 months. When your gift packages begin arriving, you'll be delighted you joined—but if you ever become displeased, resign membership and unused payment will be refunded at once. And—if not captivated by your first regular gift, keep it and the Florentine Silver and receive a *full refund*. Mail coupon now!

AROUND-THE-WORLD SHOPPERS CLUB, Dept. 320 F
 71 CONCORD ST., NEWARK 5, N. J.

GIFT MEMBERSHIPS. If you wish to give Memberships as gifts please use separate sheet, specify term of membership, and attach to the coupon so that we may know your friends are entitled to the beautiful Florentine Silver Set as an extra gift.

Around-the-World Shoppers Club, Dept. 320 F
 71 Concord St., Newark 5, N. J.

Please enroll me as a Member and send me the Florentine Silver direct from Italy FREE for joining. Start regular monthly shipments of the Club's selection of foreign merchandise direct to me from countries of origin and continue through the following term of membership:

- 2 Months . . . \$ 8.00 / 2 gifts at \$2.50 each
- 4 Months . . . 9.00 / 4 gifts at \$2.25 each
- 6 Months . . . 12.00 / 6 gifts at \$2.00 each
- 12 Months . . . 22.00 / 12 gifts at \$1.83 each

I enclose remittance for \$.....

Name..... (Please Print)

Address.....

City & Zone..... State.....

(NOTE: All shipments come to you without payment of duty or postage. However, The U. S. Post Office Dept. charges a service fee of 15c for delivering foreign packages collected by your postman and cannot be prepaid.)
 CANADA, 2 months, \$1.50; 4 months, \$10.50; 6 months, \$14.00; 12 months, \$20.00. Delivered to your home without payment of additional duty or postage.
 Address: 371 St. Timothy St., Montreal 24, Que.

Check here if this is a request for a renewal or replacement of your membership so we can avoid duplicating countries.



AS GENERAL ELECTRIC SEES IT . . .

The atom will produce power for homes in 5 to 10 years

Full-sized plants will generate electricity from atomic energy without government subsidy.

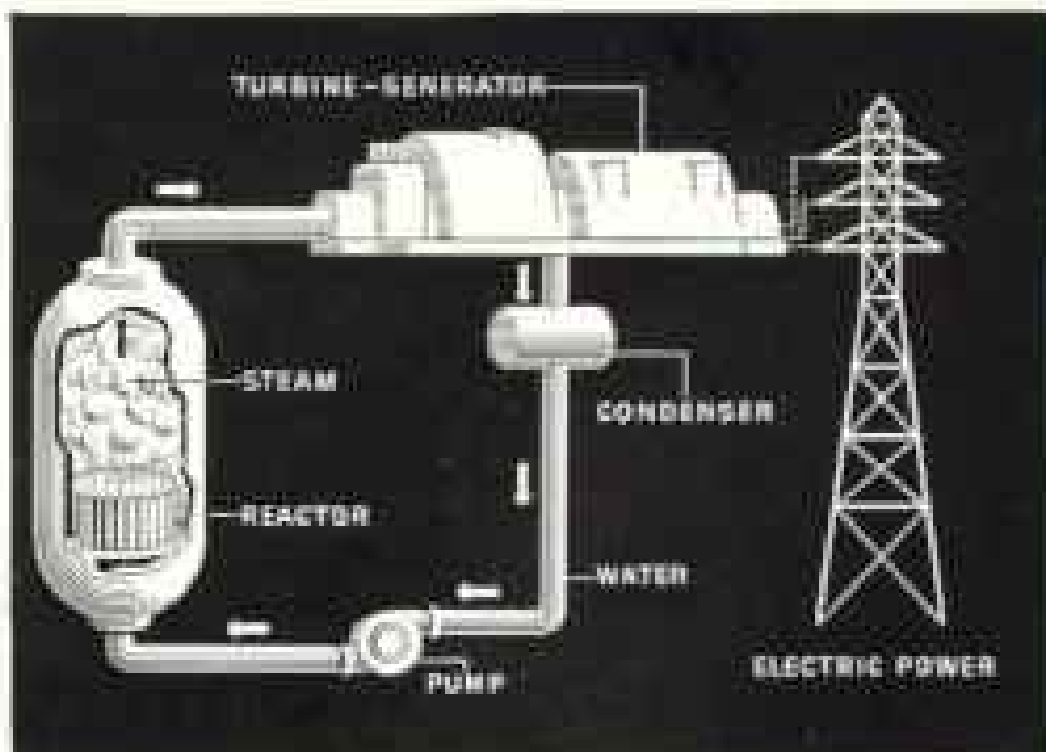
Biggest question in producing electricity with atomic energy has not been: Can it be done?—but: How can it be done economically on a full-scale basis—so that many areas and many people can benefit?

America is now very close to a practical answer.

We already know the kinds of plants which will be feasible, how they will operate, and we can estimate what their expenses will be. In five years—certainly within ten—a number of them will be operating at about the same cost as those using coal. They will be privately financed, built without government subsidy.

Developing the right fuel element is still a problem, but the Atomic Energy Commission, General Electric scientists and other experts are all working on a solution. And real progress is being made.

← **Protective plastic suit** enables technician to work safely. 12,000 General Electric employees are assigned to atomic projects.



Atomic power plant of type developed by the A. E. C.'s Argonne National Laboratory. Fissionable material serves as fuel to produce steam which powers turbine. For more information from G. E.'s Atomic Power Study, write Department K, 2-119, Schenectady, N. Y.

Progress Is Our Most Important Product

GENERAL  ELECTRIC

With Revolutionary Machine...

End Copying Bottlenecks Automatically

**A Low Cost Complete
Photocopy Department All
In One 20 Inch Unit**

All Electric! No Installation!

APÉCO *Auto-Stat*
SYSTEMATIC



**Send for New
FREE BOOK**

Find Out How
You Can Save
Time and
Money in Your
Business . . .

**Right in Your Own Office Photocopy Any-
thing Written, Printed, Typed, Drawn or
Photographed in Less Than 45 Seconds**

Solve the problem of handling your paper work in a hurry with the new Apeco Systematic Auto-Stat. With this quick copying machine, thousands of firms have eliminated 35% of all typing and actually cut paper work in half. Anyone can operate it . . . just flip a switch and any papers, opaque or transparent, can be copied in seconds no matter if printed on one or two sides. It's low cost, too . . . priced within the budget of even the smallest business.

*Lifetime Service Guarantee with
Every Apeco Auto-Stat*

American Photocopy Equipment Company
1921 West Peterson Avenue, Chicago 26, Ill.
Rush me without obligation your new book the
"Auto-Stat Story." I understand this is an in-
formative report on Auto-Stat copying and shows
how this machine can increase the efficiency
of any business.

NAME _____
FIRM _____
ADDRESS _____
CITY _____ STATE _____



By speeding up Pro-
duction and Engi-
neering with Auto-
Stat Copying.



By Expediting Ship-
ping and Receiving
with Auto-Stat
Copying.



By cutting office
paper work in half
with Auto-Stat
Copying.

Mention the National Geographic—It identifies you.



FLY B·O·A·C



*Around the
world — under
6¢ a mile!*



B.O.A.C. fits the world into your vacation. B.O.A.C. Speedbirds do all the hurrying. You have as much leisure as on a surface world tour of months! Leisure to really see Europe, Africa, the Near East, the Orient, and Australia.

B.O.A.C. fits the world into your budget. Now, with complete tourist as well as first-class routes around the world, B.O.A.C. offers you this supreme travel experience at fares as low as **\$1,347.90 . . . less than 6¢ a mile!**

Complete round-the-world tours from \$2,075. They include tourist air fare . . . hotels . . . most meals . . . sight-seeing. Fly eastward or westward from New York. Visit the Pacific Coast, Japan, Hong Kong, Singapore, Thailand, Burma, India,

Pakistan, Egypt, Europe, Britain. Take 25 to 57 days. And for \$400 to \$450 more, you can fly first-class all the way.

30-DAY TOUR (R1)	\$2,075.00
25-DAY TOUR (M1)	2,184.00
45-DAY TOUR (C2)	2,438.60
57-DAY TOUR (R2)	3,122.00

Some alternate routes from New York. Pacific Coast, Hawaii, Fiji, New Zealand, Australia, Japan, Hong Kong, Singapore, Thailand, Burma, India, Pakistan, Egypt, Europe, Britain. **34-DAY TOUR (M2)** \$2,958. Or make the same tour, but go from Australia to Bali, Cocos Islands, South Africa, East Africa, and so to Egypt. **58-DAY TOUR (R3)** \$3,667.

What to pack and wear. Write or call Ouida Wagner, Flight Wardrobe Advisor, at B.O.A.C.'s New York office listed in coupon below.

Reservations through
your travel agent or call
**BRITISH OVERSEAS
AIRWAYS CORPORATION**
New York, Boston, Dallas, Detroit,
Washington, Chicago, Los Angeles,
San Francisco, Miami; in Canada:
Montreal, Toronto, Vancouver

All fares subject to periodic revision by
International Air Transport Association.

British Overseas Airways Corporation
342 Madison Ave., New York 17, N. Y. Dept. R-45
Murray Hill 7-8900

Please send free Round-the-World Planning Chart and
literature on complete round-the-world air tours.

NAME _____
ADDRESS _____
CITY _____ STATE _____

Mention the National Geographic—It identifies you

*You don't need
Color "TV"*



*to bring you
the beauty of the*

Pacific Northwest

Your car window on the Streamliner "CITY OF PORTLAND" is like a giant size TV screen bringing you picture after picture of magnificent scenic beauty in full color. East of Portland, for 200 miles, Union Pacific rails parallel the wondrous Columbia River Gorge. Completely relaxed, you can fully enjoy this "show of shows."

The Streamliner offers a variety of Pullman accommodations . . . reserved Coach seats with restful, stretch-out leg rests . . . a choice of excellent dining-car meals graciously served. Go "Union Pacific" for pleasurable travel.



Family Travel Plan

If hesitating between train travel and driving, check on the big saving in rail fare for two or more persons in a family group. See your local ticket or travel agent. Remember, you can rent a Hertz "Driv-Ur-Self" car on arrival for sightseeing.

UNION PACIFIC RAILROAD

UNION PACIFIC RAILROAD, Room 712, Omaha 2, Nebr.

I am interested in a train trip to the Pacific Northwest.
Please send free booklet.

Name _____

Address _____

City _____ Zone _____ State _____

"That's Grieg's 'Concerto in A Minor'"

(And last week I didn't know Beethoven from Brahms!)



New easy way to a musical education!

RCA VICTOR LISTENER'S DIGEST

THE RCA RADIO CORPORATION OF AMERICA

Automatic "Victrola" 45 phonograph—plus 10 RCA Victor "45 Extended Play" High Fidelity records—plus 42-page musical enjoyment guide—all for little more than the former price of the phonograph alone

Have you ever been impressed by someone who, just from a phrase of music, could identify the masterpiece and its composer? It isn't as difficult as you may think—if you just relax and *listen* your way to musical knowledge, with the new RCA Victor *Listener's Digest*. Here, in one "package," is everything you need to entertain and *inform* you:

FIRST, AN AUTOMATIC "VICTROLA" 45 PHONOGRAPH featuring RCA Victor's famous "Golden Throat" tone system. It's complete with self-contained speaker. Easy to move, easy to store! So easy to play, even a child can put on 14 RCA Victor "45 EP" records, touch a button—stage a concert almost two hours long!

YOU ALSO RECEIVE 10 RCA Victor "45 EP" High Fidelity records, with 12 of the world's best loved classics in "digest form", played by "the world's greatest artists." (In complete album form, this collection would cost almost \$60.) And you also get a 42-page musical enjoyment guide.

See and hear the RCA Victor Listener's Digest at your dealer's.



Suggested Eastern list prices shown, subject to change without notice.

12 MUSICAL MASTERPIECES...PERFORMED BY "THE WORLD'S GREATEST ARTISTS"

Beethoven: Symphony No. 5, Sir John Barbirolli conducting the Halle Orchestra. **Beethoven:** Moonlight Sonata, Pathétique Sonata, Anis Dahlmann, pianist. **Tchaikovsky:** 1812 Overture, Capriccio Italien, Arthur Fiedler, Boston Pops Orchestra. **Franck:** Symphony in D Minor, Pierre Monteux and the San Francisco Symphony Orchestra. **Grieg:** Piano Concerto in A Minor, Artur Schnabel, soloist, Antal Dorati, the RCA Victor Symphony Orchestra. **Beethoven:** "Emperor" Concerto, Artur Schnabel, pianist, Frederick Stock, Chicago Symphony Orchestra. **Dvorak:** "New World" Symphony, Leopold Stokowski and His Symphony Orchestra. **Rimsky-Korsakoff:** Scheherazade, Leopold Stokowski, Philharmonia Orchestra of London. **Brahms:** Symphony No. 1, Leopold Stokowski and the Hollywood Bowl Symphony Orchestra. **Tchaikovsky:** The Nutcracker Suite, Arturo Toscanini and the NBC Symphony Orchestra.



ONLY \$39⁹⁵

(with Model 45EY2 shown)

Listener's Digest also available with "Victrola" 45 portable model 45EY3 or deluxe table model 45EY8, each only \$54.95.

Mention the National Geographic—It identifies you



ONLY V-8

in the low-price field

Only Ford in its field brings you the smooth, responsive "Go" of a V-8 engine. What's more, Ford's 130-h.p. Y-block V-8 is the most modern engine in the industry. Yet a V-8 Ford costs less than any other V-8 . . . even less than most sixes. And because more and more car makers are swinging to V-8's (seven more in the past six years alone), you can be sure V-8 power will be the most wanted type of power when you are set to sell.

ONLY BALL-JOINT RIDE *in the low-price field*

With new Ball-Joint Front Suspension, Ford not only rides and steers easier but actually lasts longer, too. For this completely new system of suspension eliminates 12 of the 16 wear points found in conventional suspensions.



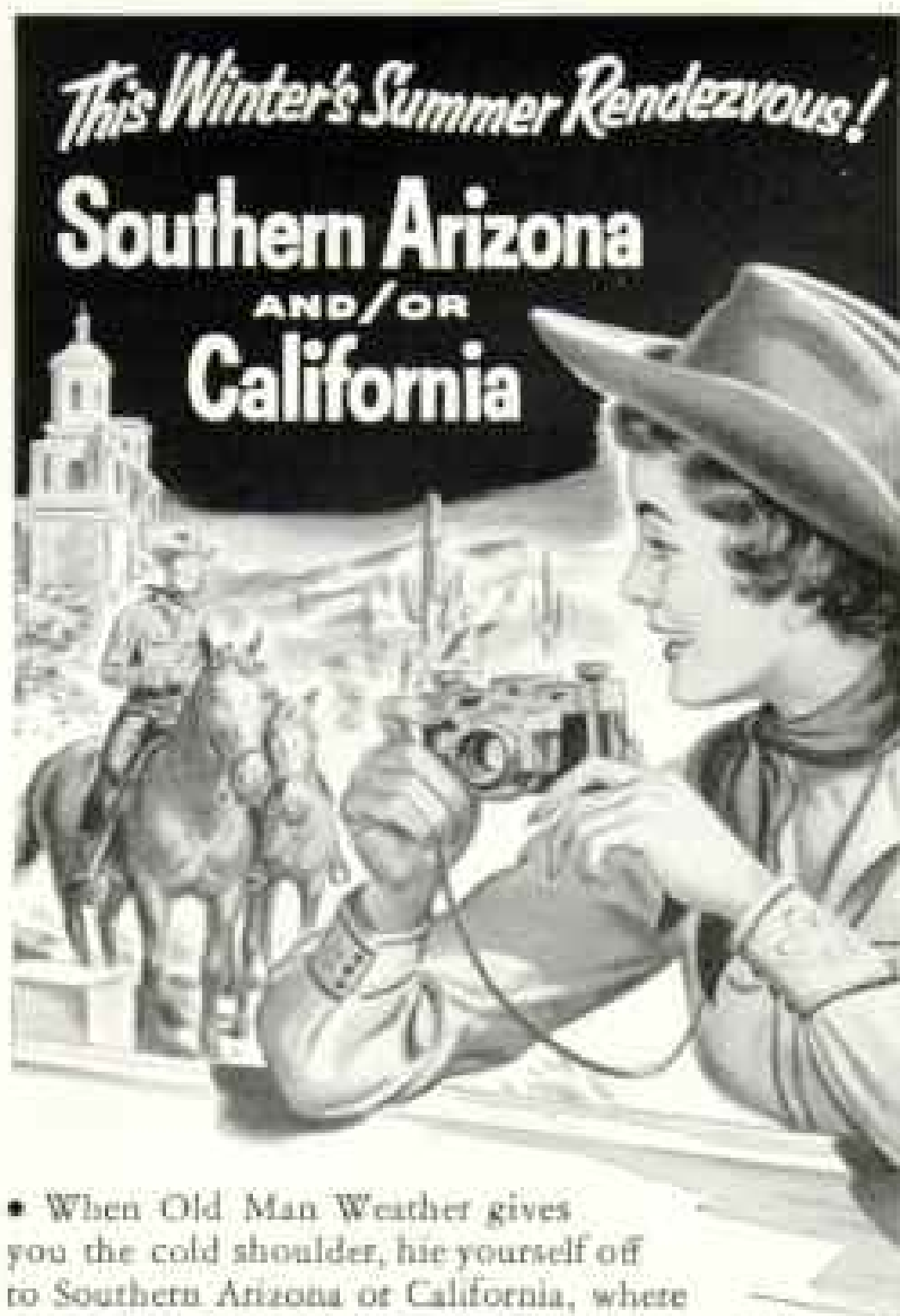
ONLY MODERN STYLING *in the low-price field*

Because Ford brings you tomorrow's clean uncluttered look *today* . . . because it brings you so many future features . . . it will still be in style years from now. And all of Ford's 28 beautiful models offer (at extra cost) power steering, power brakes, Fordomatic or Overdrive . . . many, a 4-Way power seat and power windows, front and rear. See your Ford Dealer *now* . . . Test Drive the car that brings you the modern features *today!*

*Worth More
when you buy it . . .*

*Worth More
when you sell it!*

Ford



• When Old Man Weather gives you the cold shoulder, hie yourself off to Southern Arizona or California, where Nature has done such a noble job in providing year 'round pleasure-loving "spas."

And on your journey to El Paso, Tucson, Chandler, Phoenix, Palm Springs or Los Angeles, enjoy a memorable travel treat—ride the GOLDEN STATE. Offers a wide selection of Pullman accommodations; coach seats, too, with full length leg-rests and free pillows. Complimentary hors d'oeuvres for Pullman passengers. Meals?—delicious! . . . fresh foods, skillfully prepared, expertly served.

Penny wise—Dollar smart

Now your family can travel on low, money-saving fares thanks to the Family Fare Plan. Ask for details. Also ask about Rail-Auto Plan—provides you with new car at your destination.



The GOLDEN STATE leaves Chicago 1:20 pm Through Pullman from St. Louis—also through Pullman and day-night coach from Minneapolis-St. Paul—entrained in the GOLDEN STATE at Kansas City.

Travel Information Coupon

I. C. BRUCE, General Passenger Traffic Manager
723 La Salle Street Station
Chicago 3, Illinois

I am interested in a trip to _____ Send details about money-saving Family Fares. My family includes wife and _____ children whose ages are _____

Name _____

Address _____

City _____ State _____



Fly TCA — the fast dependable way;
enjoy Canadian hospitality and
courteous service on regular flights
TO ALL CANADA.



NOW . . . the most modern and luxurious SUPER Constellations are operating as part of the TCA fleet bringing you the ultimate in air travel across the Atlantic and across Canada.

See your Travel Agent or TCA Ticket Office in New York, Chicago, Detroit (Windsor), Cleveland, Boston, Salt Lake, Minneapolis, Seattle-Tacoma, Tampa-St. Petersburg.



FLYING OVER 17,000 MILES OF
WORLD AIR ROUTES



The blanket that stays awake ...so you can sleep in perfect comfort

All night long a G-E Blanket is on the job, automatically providing just the warmth you need for perfect comfort. No need to get up for extra blankets if the night turns colder. Your G-E Blanket will adjust itself to changes in temperature, while you snooze on peacefully! More than 2,000,000 users have enjoyed the comfort of G-E Automatic Blankets.



The G-E takes the place of 3 ordinary blankets. Warmth without weight.



Easily washed either by hand or in your own washer. Just follow simple directions.



High-fashion colors: Dresden Blue, Rose Pink, Garden Green, Citron Gold, Flamingo Red, Turquoise. Luxurious Chatham fabrics, bindings by Skinner. Single- or double-bed sizes. Manufacturer's recommended retail or Fair Trade prices, from \$44.95.



Choose the warmth you want on the *Sleep-Guard* Bedside Control. *Sleep-Guard* keeps you that warm all night, automatically providing more, or less, warmth as needed. Note: only G-E Blankets have *Sleep-Guard*.



A G-E Blanket creates your own little world of comfort, warming the entire sleeping area, so your whole body can relax. Ordinary blankets do not produce warmth, merely hold in body heat. In effect, you must warm an ordinary blanket.



Custom-Contoured corners, specially designed for plenty of foot room, allow ample "give" in the center, keep the G-E Blanket neatly in place. General Electric Company, Small Appliance Division, Bridgeport 2, Conn.

The HI-FI-ET
PORTABLE
PHONOGRAPH
#98.95

*For music lovers who want
 "Hi-Fi" quality in a compact portable!*

The HI-FI-ET's thrillingly realistic tone comes from a combination of features not usually found in a portable phonograph.

- Extended range amplifier giving up to 7.5 watts output
- Audio frequency response from 50 to 15,000 cycles per second
- 8-inch concert-type permanent magnet speaker

Fully automatic 3-speed record changer. Separate bass and treble tone controls. Luggage style case in durable two-tone pigskin finish with contrasting trim.

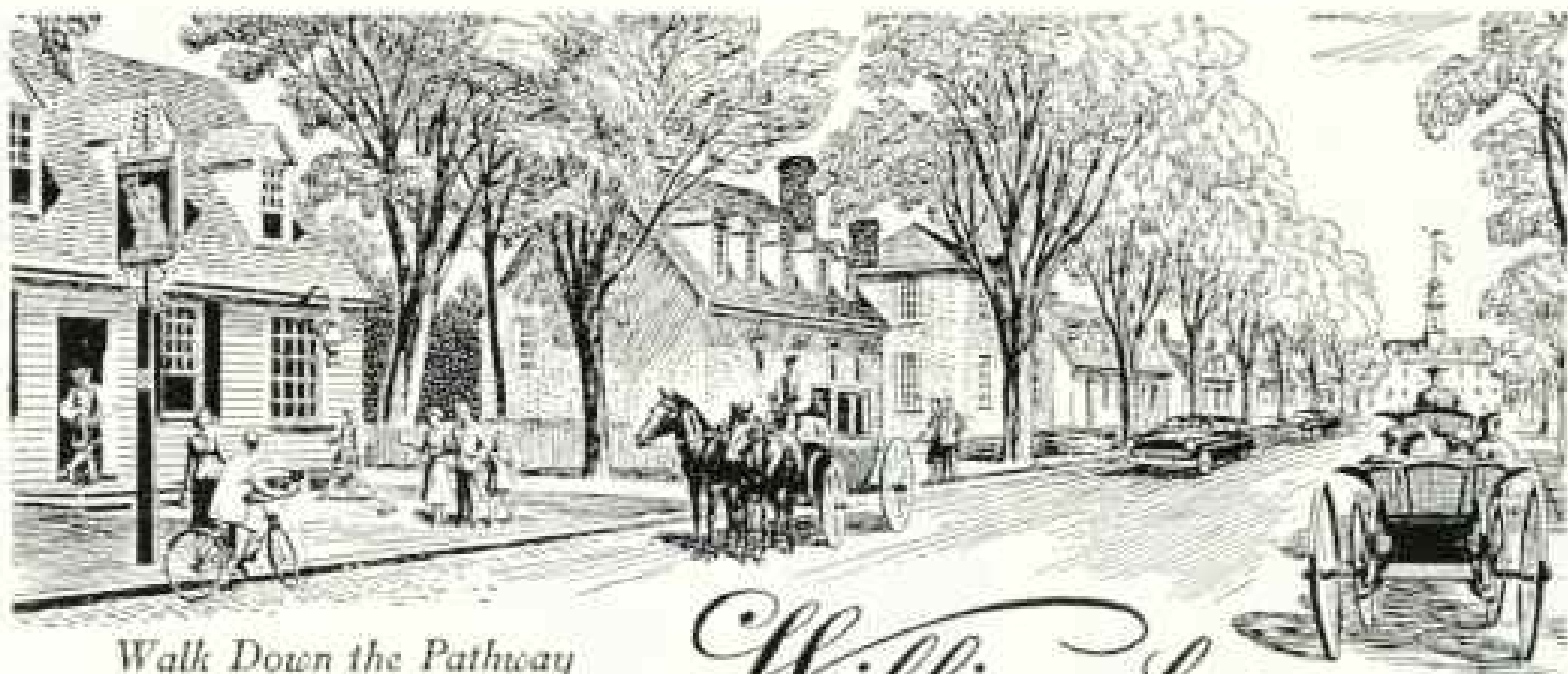
HI-FI-ET 3-Speed Table Phonograph in cabinet of mahogany or bleached mahogany veneers also available at slightly higher cost.

STROMBERG-CARLSON COMPANY, ROCKEYER BLDG., NEW YORK



"there is nothing finer than a

STROMBERG-CARLSON."



*Walk Down the Pathway
 of History in*

Williamsburg
 VIRGINIA

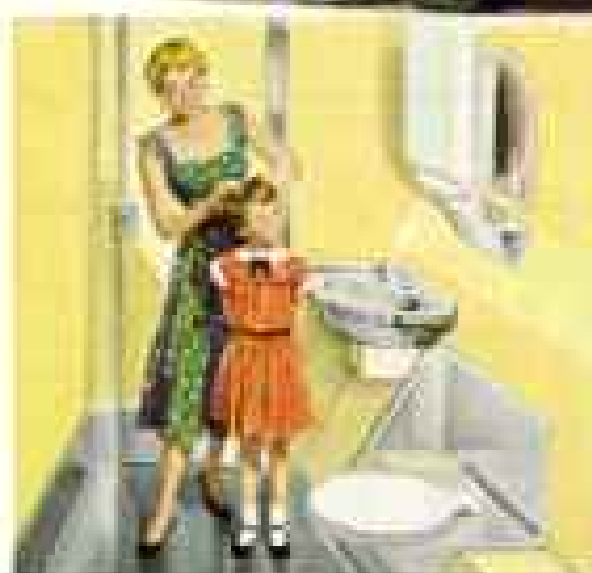
"THE most historic avenue in all America"—Williamsburg's famed Duke of Gloucester Street. Enjoy the present and the past in this completely restored colonial city. Here the clock has been turned back revealing the life and times of the 18th century. Fine lodgings available in modern hotels, colonial cottages, restored taverns.

Williamsburg Lodge & Taverns • Double from \$6.00

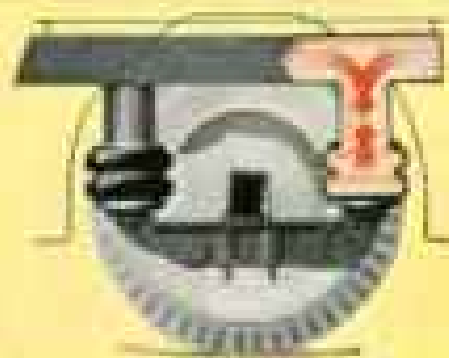
Williamsburg Inn & Cottages • Double from \$10.00

For information and illustrated folder write Glenn McCaskey, Gondwin Building, Williamsburg, Va., see travel agent or Williamsburg Res. Office, 630 Fifth Ave., New York. Tel. Circle 6-6800.

Every mile a Magnificent Mile...
every highway a strip of velvet...



Complete Washroom—with wash basin, running water, toilet, other conveniences.



Air Suspension Ride—Entire coach floats on cushions of air, in rubber-nylon bellows.



"Highway Traveler" coaches also offer Air Suspension, huge picture windows.

when you travel in the amazing new

Scenicruiser.

Here's the finest, most luxurious motor coach ever built, with features of comfort and riding ease never before found in travel . . . the brilliantly-designed *Greyhound Scenicruiser!*

Scores are already in service, hundreds more on their way—and only Greyhound will operate these sensational coaches—raised-level, panoramic sight-seeing, tasteful appointments, unbelievably smooth operation (*Scenicruiser* actually floats on air).

GREYHOUND.

FREE! FULL-COLOR PLEASURE MAP OF AMERICA WITH TOUR FACTS

Mail to Greyhound
Tour Dept., 71 W.
Lake Street, Chi-
cago 1, Ill., for full-
color trip-planning
map—with details
on 50 Greyhound
Expense-Paid Tours.

Name _____

Address _____

City & State _____

Send me special information on a tour to:



1. Your shipboard vacation



2. Your sightseeing vacation

YOUR FARE BUYS 2 VACATIONS ON A SUNNY PACIFIC CRUISE

Sailings to the ORIENT every 3 weeks from CALIFORNIA

HAWAII • JAPAN • PHILIPPINES • HONG KONG

Your 6 weeks Cruise full of fun and relaxation on the sunny Pacific is a vacation complete in itself! Outdoor swimming, deck sports, superlative meals, movies, dancing—and always the company of interesting people!

Another complete vacation awaits you in every port. The ship is your air-conditioned hotel as you sightsee and shop in Hawaii and the Orient. Take 350 pounds of luggage free!

S. S. PRESIDENT WILSON

S. S. PRESIDENT CLEVELAND

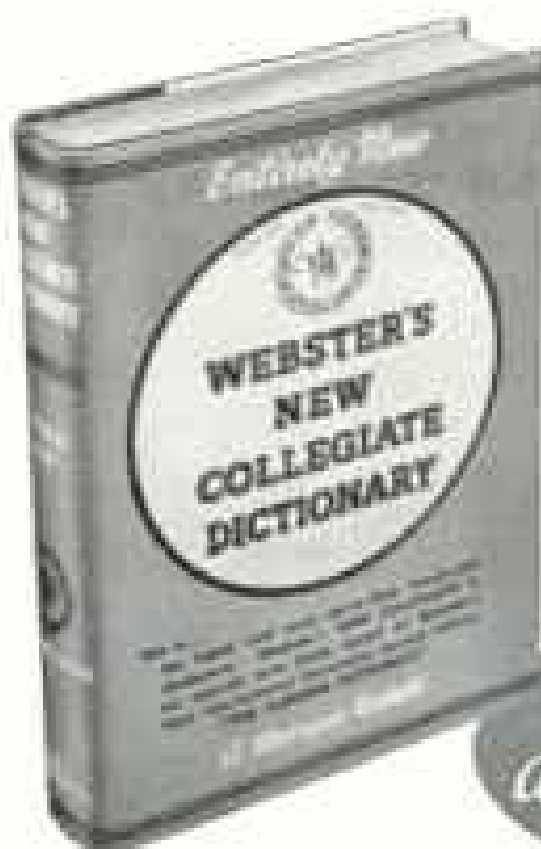


Ask Your Travel Agent for Free Folder

AMERICAN PRESIDENT LINES

311 CALIFORNIA STREET • SAN FRANCISCO 4, CALIFORNIA

No Doubt About It!



Webster's New Collegiate — the ONLY desk-size dictionary based on "the Supreme Authority" — is the best you can own for home, school, or office.

Webster's New Collegiate Dictionary is preferred and recommended by the country's leading schools, colleges, and universities.

Get your copy today at your department, book, or stationery store. \$5. Thumb-indexed \$6.

LOOK FOR THIS TRADE-MARK
A Merriam-Webster

INSIST ON A GENUINE MERRIAM-WEBSTER

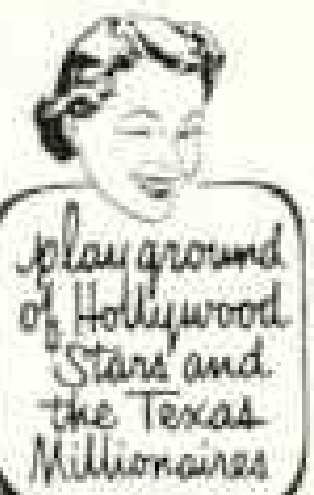
"Webster's New Collegiate Dictionary is the ONLY desk-size dictionary based on the unabridged Webster's New International Dictionary, Second Edition—called upon as "the Supreme Authority" by the nation's courts, libraries and universities, and the Government Printing Office.

G. & C. MERRIAM COMPANY, Springfield 2, Massachusetts

PLEASE MAIL COUPON FOR FREE FOLDER AND

COME TO LIFE IN

SAN DIEGO



These are the "Golden Days"... clear... sunny days, full of life as you love it... from sea to mountains to desert to nearby Old Mexico.

For FREE Folder, Fill in and mail to

San Diego CITY AND COUNTY **Visitors' Bureau**

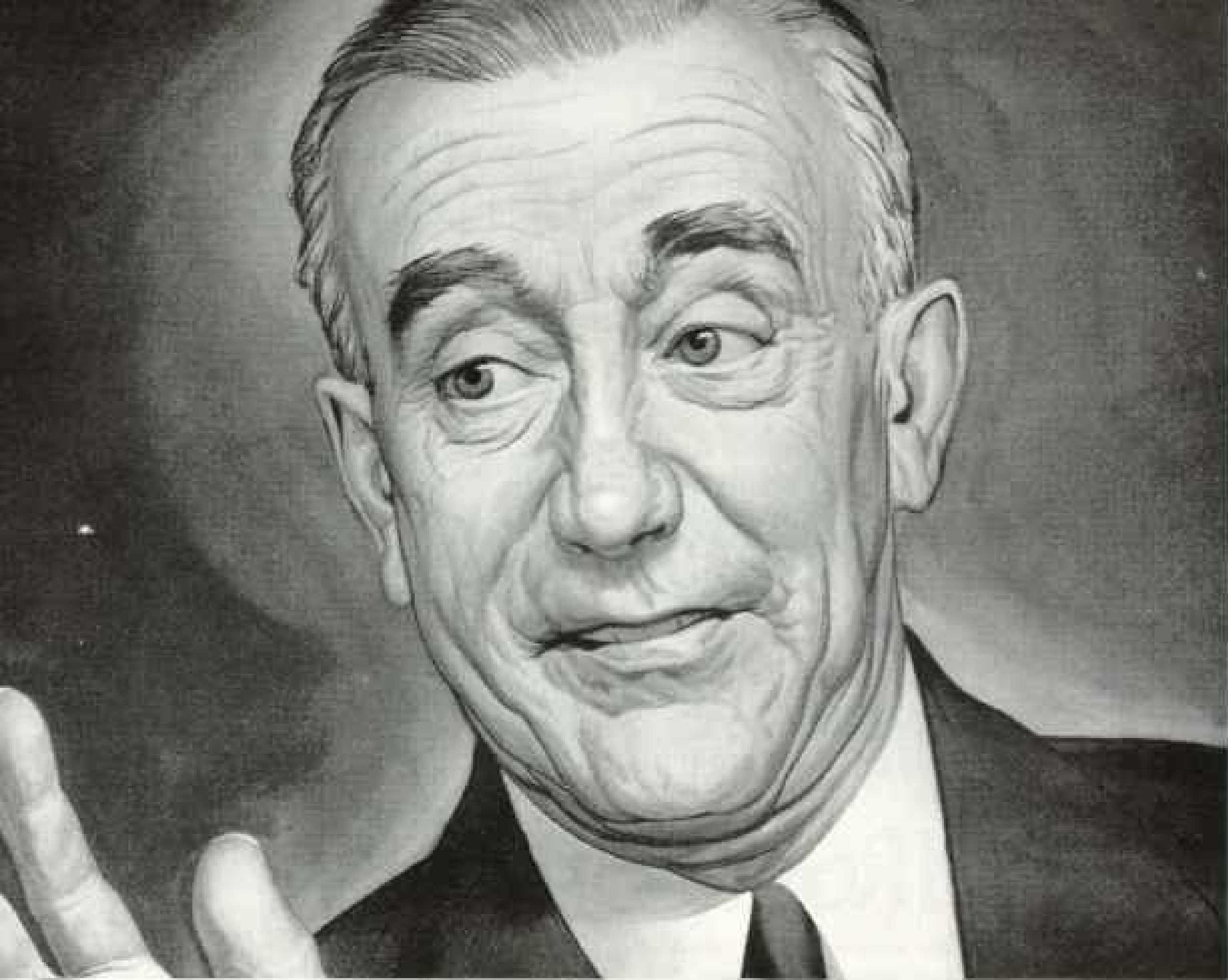
499 West Broadway, San Diego 1, California, Room 304

NAME _____

ADDRESS _____

CITY _____ ZONE _____ STATE _____

Mention the National Geographic—It identifies you



Are today's businessmen shrewd enough?

There is little doubt that the modern businessman is a go-getter. He's alert to every new trend and opportunity. He's a merchandiser. A promoter. A keen-minded business-builder.

But how well does he keep his guard up? How cagey is he about protecting the interests of his firm?

The shocking truth is that an incredibly high percentage of businessmen are permitting a situation to exist which could put them completely out of business practically overnight.

The odds are that you, *yourself*, are entrusting your accounts receivable and other

business records to an "incinerator" safe. A safe which does not bear the independent Underwriters' Laboratories, Inc. label, and could *consume* those irreplaceable records if a fire started.

If you are counting on a fireproof building to prevent such a tragedy, look out! For fireproof buildings just *melt-in* fires. Make them *hotter!*

And if you expect your fire insurance to cover all losses under all conditions, just remember that there's a clause which says: "proof-of-loss must be rendered within 60 days." Could you "render" it without records?

Don't leave yourself wide open. It's dangerous!

Out of every 100 firms that lose their records in a fire—43 never reopen. And the other 57 struggle for years to recover.

Check *your* safe, today. Get a *free* Mosler FIRE "DANGERator" to determine your exact risk. Then get the protection it calls for. But trust nothing but the best. Mosler is recognized as the leader in protection, styling, value. Check classified telephone directory for the Mosler dealer in your city. See his complete line of Mosler Record Safes. Or mail the coupon for free "DANGERator," now!



FREE! TELLS YOUR RISK!

The FIRE "DANGERator" dial in 30 seconds the answer which may save your business from ruin. Easy to use. Accurate. Authentic. Based on experience with thousands of fires. Figures in over a dozen vital factors about your business. Mail coupon for your free "DANGERator," now. No obligation.

The Mosler Safe Company, Dep't NG20
32nd Street and 5th Avenue, New York 1, N. Y.

Please send me (check one or both):

Free Mosler FIRE "DANGERator."

Catalog, showing the new series of Mosler Record Safes.

NAME.....FIRST.....

FIRM NAME.....

ADDRESS.....

CITY.....STATE.....

IF IT'S MOSLER . . . IT'S SAFE

The **Mosler Safe** *Company*
Since 1848

World's largest builder of safes and bank vaults . . . Mosler built the U. S. Gold Storage Vault at Fort Knox and the famous bank vaults that withstood the Atomic Bomb at Hiroshima.

Yessuh!



An Autumn Time
is Country Ham and
Hot Biscuit
Time

in

Old VIRGINIA

Come thrill to the many exciting attractions of this romantic land during leisure travel time.

Virginia is magically alive—a thrilling combination of flaming festive autumn colors—a tang of the sea—mellow sunshine—invigorating mountain air—and the enticing scent of hickory smoke with its promise of mighty good eating . . . making a perfect background for leisure travel to fully enjoy the historic glories of the Old Dominion . . . beautifully restored Colonial Williamsburg . . . boyhood homes of famous Americans . . . the first permanent English settlement and hundreds of fascinating historic cities and towns.

A network of wide modern uncrowded highways will take you wherever you want to go—to the scenic peaks of the great Southwest Virginia Mountain Empire . . . through the historic Shenandoah Valley . . . to explore fantastic underground caverns and world-famous natural wonders—Natural Chimneys, Natural Tunnel and Natural Bridge—one of the seven natural wonders of the world . . . to look for antique treasures . . . to visit colorful fairs, hunts and tobacco auctions . . . to meet your every desire for outdoor fun on unrivaled golf courses, pine-scented horseback trails, some of the finest fishing grounds and famous resorts for complete relaxation along the ocean, bay and rivers.

Hotel, motel and resorts offer you gracious living of the Old South—famous Virginia foods—excellent service—and a warm friendly welcome to make your stay in Virginia ever so pleasant.

Write for Pictorial Booklet and let us know the places in which you are most interested.

DEPARTMENT OF
CONSERVATION AND DEVELOPMENT
Room 819, 914 Capitol St.
Richmond 19, Virginia

Motion Pictures in Virginia Available.



Lobbies are fine,
but not to sleep in

Be sure you've a room
to count your sheep in

**New WESTERN UNION
Hotel Reservation
SERVICE**

Tell us the kind of
hotel accommoda-
tions you need,
where and when.
We do the rest.

*On any occasion
it's wise
to wire*

WESTERN UNION

AIR-SEA

Cruises to **EUROPE**
and the *Mediterranean*

By air to and through Europe, by sea through the balmy Mediterranean to the romantic Near East. Complete cruises, 30-50 days, start weekly.

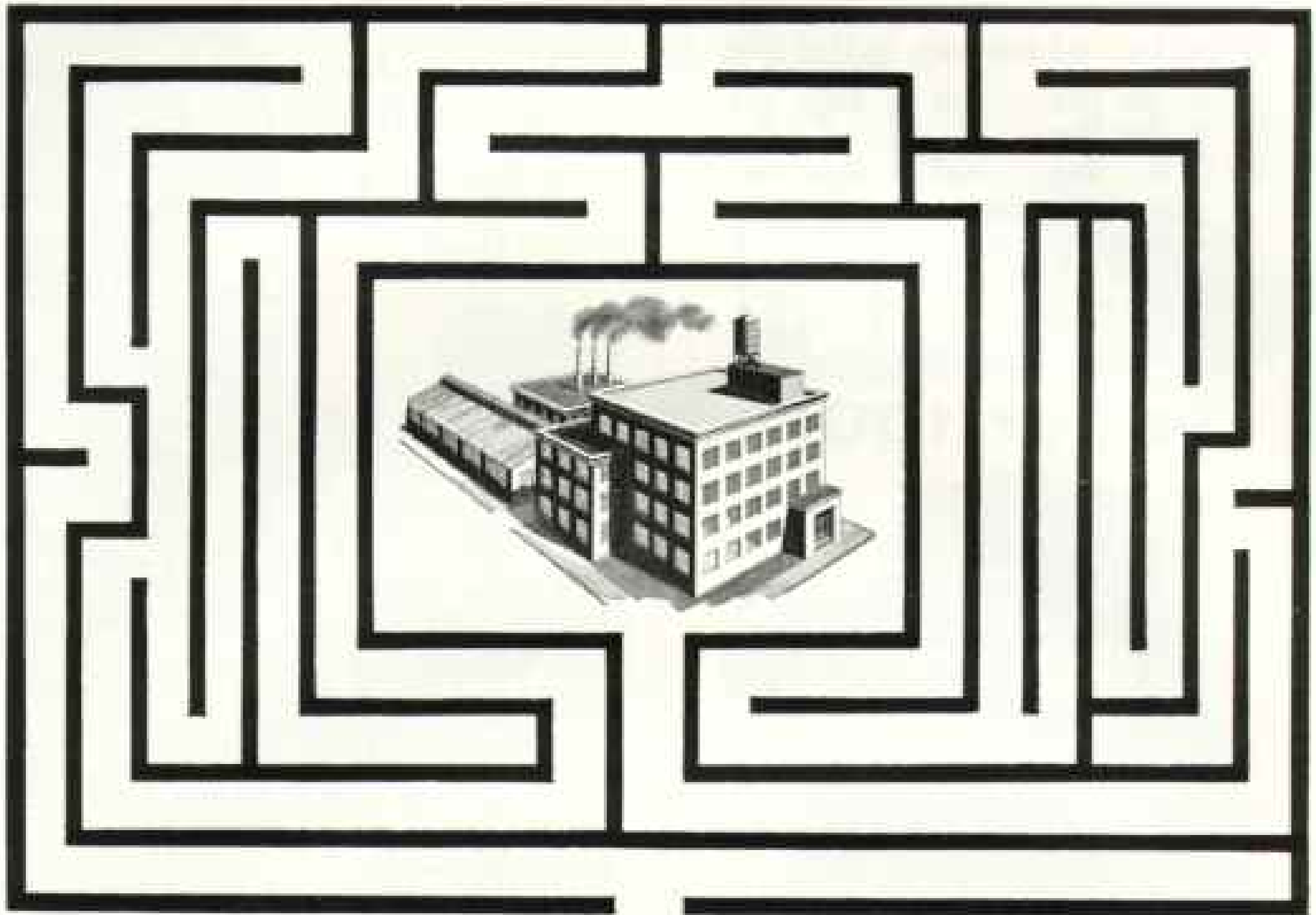
**GO NOW —
PAY LATER**
on S-A-S
Signature
Travel Plan

SEE YOUR TRAVEL AGENT

G-10
30 Rockefeller Plaza, New York 20, N. Y.

Please send me the items checked:

Name _____ Air-Sea Cruises
Address _____ Golden Autumn Tours
City _____ State _____ Extra-City Trips
 Signature Travel Plan



Want out?

TIMES CHANGE! What once may have been an ideal factory site when grandfather was running the plant can be completely out of step with present conditions. And it's no fun to do business these days surrounded by a bewildering maze of economic handicaps and hardships.

There's a realistic way out of a situation like this—*look South!* You'll find that the modern, industry-minded Southland offers a host of down-to-earth advantages of every kind. Efficient transportation. Intelligent, willing workers. Large and expanding consumer markets. Rich natural resources nearby.

Take a good look at the land of the "new look" in industry. You'll like what you see.

"Look Ahead—Look South!"



SOUTHERN
RAILWAY SYSTEM

WASHINGTON, D. C.

Harry A. DeBetta
President

The Southern Serves the South

Mention the National Geographic—It identifies you

show stereo slides
LIFE SIZE



to 1 or 100!



COMPCO-Triad
Stereo Projector
gives you perfected
STEREO PROJECTION

Now you can project your 3-dimension slides in life-size—with all their brilliantly clear colors and true natural depth. One or a hundred people can enjoy them simultaneously—in full-size breath-taking reality. The new TRIAD Stereo Projector, for the first time, brings simplified focusing, automatic blackout between slides to eliminate eye strain—and is instantly convertible for projecting standard 2 x 2 (35mm.) slides. Has "one knob" lens control; illuminated "preview panel"; rear focusing control, plus many other outstanding features.

Mail Coupon Today for full details, prices, specifications on Comco TRIAD Stereo Projector—and new Comco Stereo Slide Mounts and Comco Slide Files.

COMPCO CORPORATION, 2753 W. St. Paul Ave., Chicago 47, Ill.

Without obligation please send me brochure giving full details and prices on your new COMPCO-TRIAD STEREO PROJECTOR.

- Enclosed is 10c (post or stamps) for sample Comco-Triad Stereo Mount.
- Send me complete information on Comco Stereo Customties.

Name.....
Address.....
City..... Zone..... State.....

It's easy to take
striking pictures

IKOFLEX
II-a



All controls at your fingertips. Winding the film automatically cocks the shutter... EXTRASITE focusing screen shows picture in full 2 1/4 x 2 1/4" size... Fast 1/125 Zeiss Tessar lens.

Speeds to 1/300 sec.

At leading dealers
Write for literature



CARL ZEISS, INC., 485 Fifth Ave., New York 17

the complete reference!

REPLOGLE
DELUXE
GLOBE
AND
ATLAS
SET



Here is the ultimate in geographical reference! Beautiful 12-inch lighted globe...accurate, up-to-date...shows the world as it really is with every country in true size, shape and relative location. 375-page world atlas fits conveniently in base; has detailed maps of every area, U.S. and world gazetteers, valuable world information. A truly distinguished gift!

\$32.50

including 375-page world atlas. At stationery, book, or department stores. (Other Replogle Globes from \$3.95 to \$895.00.)


Send for FREE WORLD TIME-FINDER... Set the dial—compare time in major cities of the world.



REPLOGLE GLOBES, INC., Dept. 2
1301 N. Dearborn Ave.
Chicago 25, Illinois

Please send free World Time-Finder and full color literature describing Replogle Globes.

Name.....
Address..... (please print)
City..... Zone..... State.....

How much do you tip waiters in Paris? 

Should ladies wear slacks in Spain? 

Why is Fall the gay season in Europe? 

You get all the answers in these new 1954-1955

TWA TRAVEL GUIDES TO EUROPE



20 *Search*

complete set of six \$1.00

Packed with valuable tips — where to go, what to see, what to do.

Compact, easy to carry, pocket-size for prompt reference.

Simple explanations of customs, currency, eating habits.

Money-saving tips on where to shop, stay, how much to pay.

Written and edited by travel experts, complete in every detail.

Acclaimed by leading travel authorities here and abroad.

FREE! As a reward for promptness, TWA will send you a full-color map of the principal city in each country for which you order a guide. Offer expires October 31. Mail the coupon today.

Allow two to three weeks for handling and postal delivery.

Fly the finest... FLY TWA
TRANS WORLD AIRLINES

ORDER BLANK

TWA, Trans World Airlines, Dept. N10, PO Box 1400, Grand Central Station, New York 17, N. Y.

Dear Sirs: Please send me your wonderful new travel guides. I am enclosing 20¢ in coin for each travel guide I have checked below, to cover the cost of handling and mailing—complete set of six—\$1.00.

Name _____

Address _____

City _____ State _____

FRANCE SWITZERLAND ALL SIX
 ITALY SPAIN
 GREAT BRITAIN PORTUGAL

High Fidelity at its Best!

THE INCOMPARABLE

Capehart

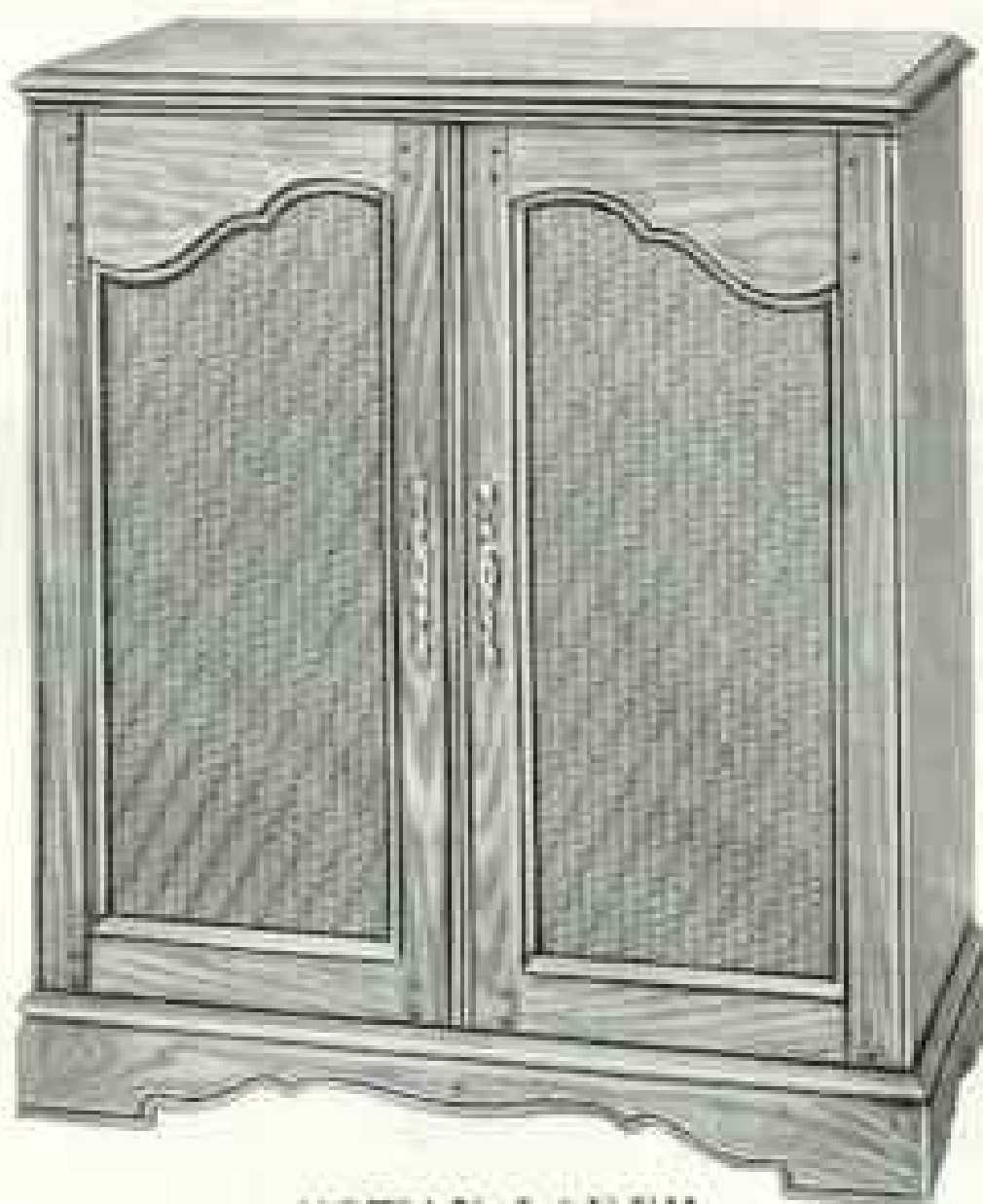
This magnificent Capehart brings all the splendor and brilliance of "living music" into your home.

The "Swan Lake" has a superb AM-FM Tuner Amplifier, heavy-duty 4-pole motor,

Variable Reluctance Pick-up, The Record Changer plays all types, sizes and speeds of records. There is a Record Balance Control for proper adjustment for recordings. The Two-Way

Speaker System has a specially designed tonal chamber and tonal aperture to complement the acoustical reproducers. The beautiful French Provincial Cabinet is of mellow cherry.

Here is true High Fidelity — and far less costly than similar custom installations. Hear it today! Other High Fidelity instruments from \$129.95*.



"SWAN LAKE"
Phonograph — AM-FM Radio — \$549.95*

Capehart DIVISION OF
ITT

*Suggested retail price. Prices slightly higher in the South and West.

CAPEHART-FARNSWORTH COMPANY, Fort Wayne 1, Indiana
A Division of International Telephone and Telegraph Corporation

To make your vacation
in CANADA
even more wonderful

Canadian National

buys

359

new passenger cars

**CANADIAN
NATIONAL
RAILWAYS**

Ask about Canada's 10 Top
Maple Leaf Vacations

Offices in principal U.S. cities or Passenger
Dept., 360 McGill St., Montreal, Canada.



KEEP THE SOUNDS YOU WANT TO REMEMBER

Just push a button and the RCA Tape Recorder captures every note, every word, every sound. Press the button again and it plays back with true RCA fidelity. Use it to record parties, music, speeches, business conferences. Try it now at your RCA Dealer's.

RCA PUSH-BUTTON TAPE RECORDERS

Priced from \$169.95*
Suggested retail price



RADIO CORPORATION of AMERICA

LONG-PLAYING 33 $\frac{1}{3}$ R.P.M. HIGH-FIDELITY

8 MASTERPIECES \$1⁰⁰

NOT \$1.00 EACH!—BUT \$1.00 FOR ALL EIGHT!

Long
Playing

No Strings Attached!

Without any obligation to ever buy another record from us — now or later—you can now obtain all the advantages of trial membership.

NOW YOU can get a real start on a complete record collection. You get ALL EIGHT masterpieces—complete to the last note—for only \$1.00. NOT \$1 each, but \$1 for ALL EIGHT!

Of course, this price bears no relation to the value of the recordings. Even for 20 times that, you could not buy these masterpieces in recordings of equal quality.

We were FORCED to make this "give-away" offer . . . for only by putting our recordings in your hands can we convince you how extraordinary their tonal quality is. Performed by internationally-renowned orchestras, conductors, and soloists. Custom-pressed on the purest vinyl plastic. Reproduced with a fidelity of tone which encompasses the entire range of human hearing . . . 50 to 15,000 cycles!

How Club Operates

As a trial member, you are not obligated to *ever* buy another record from us. You do, however, have the right to try—free of charge—any of the Society's monthly selections which interest you. You receive prior notice of these. You pay nothing in advance. And you are not obligated to keep those you try . . . even after you have played them and read the interesting music notes which accompany each selection. You pay only for those which—*after having tried them*—you decide you really want to own. And for these, you pay only the low member's price of \$1.50 per long-playing disc, embodying on the average about 40 minutes of music by the great masters. *A saving of about 2/3 off the usual retail price!*

There Shall Be Music In Your Home

Think how much beauty and serenity these recordings will add to your life—at a trifling cost. Think what a cultural advantage your children will gain by having great music as an everyday inspiration.

Mail Coupon Now

We obviously cannot keep "handing out" such magnificent long-playing recordings indefinitely. Production capacity limits the membership rolls, so avoid disappointment. Rush coupon with a dollar today. *The Musical Masterpiece Society, Inc., Dept. 4610, 43 West 61st Street, New York 23, N. Y.*

SCHUBERT

Symphony No. 8 (The "Unfinished"),
Zurich Tonhalle Orch.,
Otto Ackermann, Conducting

BEETHOVEN

The Ruins of Athens (March and Choir),
Netherlands Philharmonic Choir and Orch.,
Walter Guehr, Conducting

BRAHMS

Academic Festival Overture,
Utrecht Symphony,
Paul Hupperts, Conducting

MOZART

Piano Concerto in E Flat, K 107
Arthur Balsam, piano,
Wintertbur Symphony Orch.,
Otto Ackermann, Conducting

BACH

Tocatta and Fugue in D Minor,
A. Schreiner, Organ of the Tabernacle,
Salt Lake City

WAGNER

Die Meistersinger, Prelude, Act 1,
Zurich Tonhalle Orch.,
Otto Ackermann, Conducting

DUKAS

Sorcerer's Apprentice,
Utrecht Symphony,
Paul Hupperts, Conducting

MOUSSORGSKY

Night on Bald Mountain,
Netherlands Philharmonic,
Walter Guehr, Conducting

FREE Mail coupon at once. You will receive FREE, a fascinating brochure written by the dean of American music critics, Olin Downes. It is a guide to the valuable musical annotations and program notes which come free of charge with every selection. Prepared by eminent musicologists, these will in time provide you and your children with a well-rounded course in music appreciation and musical history.



The Musical Masterpiece Society, Inc., Dept. 4610,
43 West 61st Street, New York 23, N. Y.

ALL 8 MASTERPIECES — \$1.00

Here is my dollar in complete payment; please send me ALL 8 of the masterpieces listed above and enroll me as a trial member. Send me notice of future selections which I may try for 3 days without cost or obligation. For those future selections I decide to keep after I have tried them I will pay only the special member's price of \$1.50 each, plus few cents shipping. I may cancel my trial membership at any time.

Name _____

Address _____

City _____ State _____ 4610

In Canada, address: 688 Balfour St., Toronto 4, Ont.

TRAVEL QUIZ (FOR OCTOBER)



What island has no wheeled vehicles?

- Mackinac Capri Itsuku

You'll travel by foot if you visit Japan's sacred island of Itsuku. There are no wheeled vehicles allowed. Whatever transportation you use—wherever you travel—always carry your money in safe, convenient First National Bank of Chicago Travelers Checks. Only you can cash them. Prompt refund if lost or stolen.

What state leads in automobile drivers?

- Texas New York California

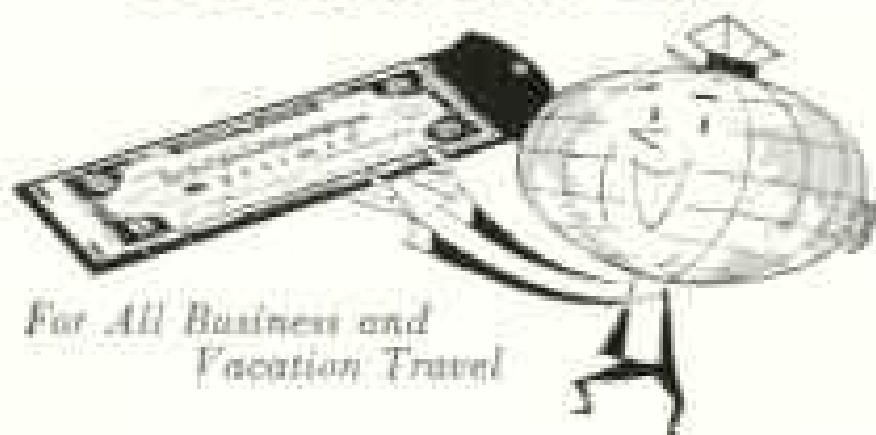
California has the most—5,803,946 automobile drivers in 1953. On your driving trip, be sure you're prepared for all emergencies. Carry First National Bank of Chicago Travelers Checks—the checks that are accepted everywhere—all over the world (and have been for more than 45 years). All that's needed to cash them is your signature.

Where's the largest meteorite crater?

- U. S. Canada U. S. S. R.

Canada's Chubb Crater in Quebec is the world's largest—almost 2 miles wide. Russia—as yet—hasn't claimed a larger one. Nor have they claimed a travelers check as easy to use as The First National Bank of Chicago Travelers Checks. Each denomination (\$10, \$20, \$50 and \$100) is a different color. Ask for them at your bank.

The First National Bank of Chicago Travelers Checks



For All Business and
Vacation Travel

MEMBER FEDERAL DEPOSIT INSURANCE CORPORATION

"The comfort
is guaranteed
in writing"



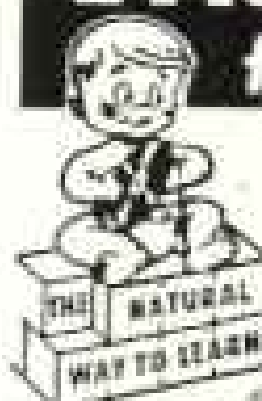
THE BRENTWOOD
\$25.95

Allen-Edmonds
THE SHOE OF TOMORROW

Combining all 'round stitching, nailless construction and heel-to-toe flexibility. The comfort is guaranteed—in writing.

Write for catalog NG-4
ALLEN-EDMONDS, Belgium, Wisconsin

LINGUAPHONE for LANGUAGES



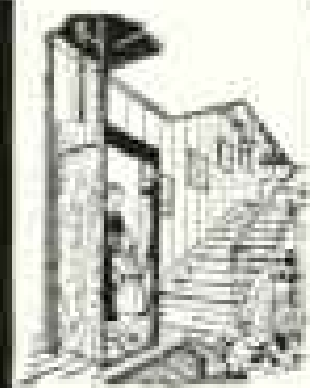
FRENCH, JAPANESE, SPANISH,
RUSSIAN, MODERN GREEK,
GERMAN—29 Languages available

Learn another language AT HOME as easily, naturally as you learned English long before you went to school. It's like living in another land. With Linguaphone, World's Standard Conversational Method, you LISTEN—you hear native men and women speak—YOU understand—YOU SPEAK—you learn to read and write.

Used internationally by schools, colleges, governments and business firms for personnel training. Over a million home-study students of all ages. Write for FREE BOOK, "Passport to a New World of Opportunity." LINGUAPHONE INSTITUTE, 200-10 RCA Bldg., N. Y. 20, N. Y.

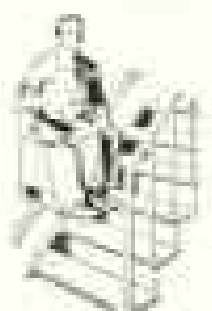
make
life
easier...

INSTALL
A HOME LIFT!



SHEPARD
HomeLIFT

SHEPARD
EcoLIFT



Nothing in your home can save you so much effort... provide so much convenience... as a SHEPARD HomeLIFT or EcoLIFT. Designed and built by home elevator specialists to give the step-saving convenience of a one-floor plan to any multi-story home. Write for descriptive literature.

THE SHEPARD ELEVATOR CO.
5004 Brotherton Road Cincinnati 9, Ohio

SHEPARD

Now! Travelers

“Protection+Plus” Policy gives you

protection + retirement income

+ cash values at

low cost!

HERE is the insurance policy you *need*—with plus features you’ve always *wanted!*

If you’re 25 years old, for example, here’s what \$16.20 a month (even less if you pay annually) buys:

- \$10,000 Life insurance to age 65
- Or should you die before you reach 65: \$100 a month for your family for nine years and three months
- At age 65: \$50 a month for as long as you live (a very important plus to your Social Security benefits)
- Cash values for emergencies (Only 15 years after you’ve bought Protection + Plus, your policy will have a cash value of \$2290.)

At age 30, the comparable, low-cost premium would be \$19.20 a month. At age 35, \$23.30.

And there are *more* plus benefits available with this exciting Protection + Plus Policy. Of particular value to younger men whose children are not yet fully grown, is the combination of Protection + Plus with *double or triple* protection for these crit-

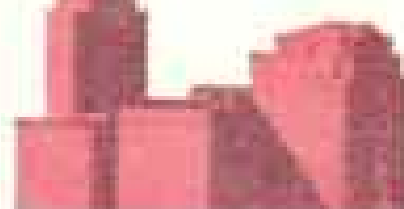
ical years at a small additional cost. Protection + Plus may be issued to provide for double indemnity for accidental death, and waiver of premiums for permanent total disability, as defined in the contract.

The man to see is your nearby Travelers agent. With his exclusive Retire-O-Meter demonstration, he can quickly show you exactly how this policy will work for you. No obligation.

Meanwhile, fill in and mail this coupon.

PROTECTION + PLUS IS NOT AVAILABLE TO WOMEN. RATES AND VALUES SLIGHTLY DIFFERENT IN CANADA.

HELP YOURSELF TO
SECURITY THROUGH *The*
Travelers
HARTFORD IS, CONN.



ONE OF THE LEADING LIFE
INSURANCE COMPANIES

Please send me a free copy of the booklet *The Story of Protection + Plus.*

NAME

STREET

CITY

STATE

AGE: N.Y. 10-1088

"I drink all the coffee
I want..."



"I get all the sleep
I need!"



**DON'T STOP DRINKING COFFEE...
JUST STOP DRINKING CAFFEIN!**

If you've been losing precious sleep at night, don't give up coffee. Just give up *caffein*—for it's the nerve-jangling *caffein* in ordinary coffee that can keep you tossing and turning.

Make the wise move millions have made. Switch to New Extra-Rich Sanka Coffee. It's one of today's most flavorful coffees, and it's 97% *caffein-free*—gives you all the *goodness* of fine coffee, yet *can't* keep you awake!

DELICIOUS IN EITHER
INSTANT OR
REGULAR FORM

Products of General Foods



**NEW EXTRA-RICH
SANKA COFFEE**

*It's delicious! It's 97% *caffein-free*!
It lets you sleep!*



Bienvenue!

You indeed—you are always welcome in La Province de Québec. Come this Fall when the Laurentian hills flame with color and the Eastern Townships' maples see at their most beautiful. Clear warm autumn days—long cool nights. Enjoy French-Canadian hospitality in comfortable modern inns and hotels.

For road maps and booklets—write: Provincial Publicity Bureau, Parliament Buildings, Québec City, Canada, or 48 Rockefeller Plaza, New York 20, N.Y.

LA PROVINCE DE
Québec

You can see distant detail clearly and brilliantly only if you choose a binocular of advanced optical design and precision manufacture. Trouble-free service throughout a lifetime of use can be yours, too, if your binocular is of sturdy mechanical design and construction.

How to
CHOOSE
a binocular



Bausch & Lomb 7x, 35mm Binocular \$170.50

one-year theft insurance policy at no extra cost

**FREE
32-PAGE
CATALOG**

Tells about tests you can make before you buy any binocular. Helps you select a model best suited to your use. Write to

BAUSCH & LOMB

1886 1950

Bausch & Lomb Optical Co., 10934
Lomb Park, Rochester 2, New York.

This Year!
Thousands Are Accepting Startling
NEW FREE BOOKLET OFFER,

*Revealing how 33,432 pictures make Encyclopaedia
 reference as fascinating as the latest picture magazine.*

*The New 24-volume edition is called the
 Greatest Treasure a Family Can Possess!*



Outlining Sensational

ENCYCLOPAEDIA BRITANNICA

Book a Month PAYMENT PLAN

The new edition of Britannica is the greatest treasure of knowledge ever published, the work of 4,479 of the world's best minds. It is the final authority on factual knowledge, and a constant inspiration that will continuously enrich the lives of yourself and your family.

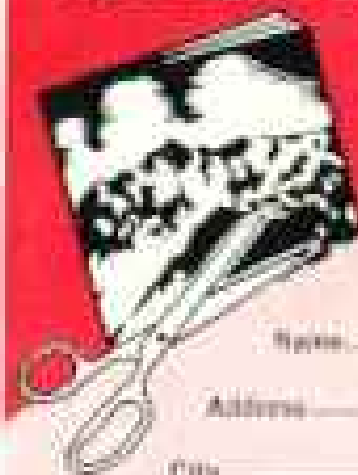
See the new pictorial method portrayed in the free preview booklet. Mail the coupon today! We are sure you'll be glad to help spread the news by showing your copy to one other family. Fill in and mail the coupon now!

So fascinating, so different, so unlike the average person's idea of an encyclopaedia . . . Yes, this new Britannica depends vastly on pictures—33,432 of them, over 1,500 pictures average *per volume*.

That is why we are now prepared to send valuable 32-page preview booklets, containing beautiful, large-size, full-color pictures, to a number of people.

These booklets are sent free and without any obligation except that, because of the high cost of printing, we ask you to show the booklet to one other family, friends or neighbors. That is all you have to do to acquire free this gorgeous and valuable booklet.

EXTRA! FREE! beautiful book sent
 if you agree to show it to a
 neighbor



ENCYCLOPAEDIA
 BRITANNICA, INC.
 425 N. Michigan Ave.
 Dept. 13-B, Chicago 11, Ill.

Please let me have the FREE PREVIEW
 BOOKLET and complete details about the
 Book a Month Payment Plan. I agree to show
 booklet to a neighbor—there is no other obligation.

Name _____
 Address _____
 City _____ State _____

In Canada, with E. E. LTD., Terminal Bldg., Toronto, Ont.



EUROPE

is wonderful in Wintertime!



During its brilliant social season, Europe offers you an endless choice of day-time fun and sports, night-time entertainment, marvelous foods and wines. Colorful customs and old-world hospitality make everyday life a constant delight. And "Thrift Season" rates let you see and do more for less!

See your Travel Agent—now! For further information, write each country in which interested. Address National Tourist Office of (name of country), Box 258, Dept. D, New York 17, N. Y.



EUROPEAN TRAVEL COMMISSION

AUSTRIA • BELGIUM • DENMARK • FINLAND • FRANCE • GERMANY • GREAT BRITAIN
GREECE • ICELAND • IRELAND • ITALY • LUXEMBOURG • MONACO • NETHERLANDS
NORWAY • PORTUGAL • SPAIN • SWEDEN • SWITZERLAND • TURKEY • YUGOSLAVIA

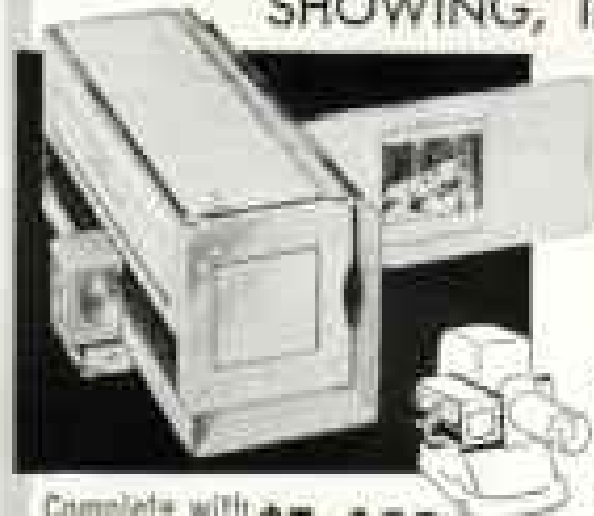
Mention the National Geographic—It identifies you

VACATION
MEMORIES
AUTOMATICALLY
YOURS

with the
Airequipt SYSTEM

SHOWING, INDEXING AND
STORING
2 x 2 SLIDES

For your projector!



**AIREQUIPT
SLIDE CHANGER**

Simply slip into place on projector, operate lever, slides change automatically. Hands never touch a slide... show in sequence, or select slides by titles.

Complete with
one magazine
for 36 slides. **\$14.95**



MAGAZINES
"Heart" of Airequipt System. Holds 36 slides in all-metal unit permanently, safely! Each **\$2.25**

AUTO-VIEW
Automatic table viewing, precision unit. **\$24.50**
Viewers only, without changer. **\$10.95**



Your Dealer will gladly demonstrate. Illustrated catalog free.
AIREQUIPT MANUFACTURING CO., Inc. • New Rochelle, N. Y.

Love Organ Music?

GET THIS FREE GUIDE!

"HOW TO CHOOSE AN ORGAN"



Tells just what to look for, what to avoid. Assures selection of most satisfactory organ for your purpose. Will save you money, time, and possible disappointment if used before you buy an organ! Write

to **CONNSONATA**,
Div. of C. G. Conn Ltd.,
Dept. 1026, Elkhart, Ind.
"America's Finest
Electronic Organ"



Connsonata
THE CONN ORGAN

RICHARDSON

mobile living



offers you more



Richardson offers you more living space for your dollar along with all the furnishings and utilities found in the finest of homes. When you buy a Richardson, it is a COMPLETE livable mobile home. Write today for literature on all models.

RICHARDSON TRAILER MFG. CO., INC.

Dept. N, Elkhart, Indiana



Throughout Britain, as here in ancient Rye, old hostels display their signs of welcome. At many fine hotels and inns, bed and breakfast can cost under \$3.

ROYAL GOAT HOTEL BEDDGELERT

LUNCHEON 6/-

(Three courses)

VEGETABLE SOUP

POACHED TURBOT HOLLANDAISE
GRILLED HAM STEAKS, SWEET CORN
BEEFSTEAK & KIDNEY PIE

The Cold Table

RIBS OF BEEF BOAST LAMB
JELLIED VEAL OX TONGUE

BLACKBERRY & APPLE TART & CUSTARD
BAKED RICE PUDDING
ICES
CHESHIRE CHEESE

Typical menu: lunch in Wales for 34¢

How little would a vacation in Britain cost you today?

THERE was never a better time than now for visiting Great Britain. Her New Elizabethan Age is still in its first splendor. Her people's spirits are riding high on the surge of a great renaissance.

Maybe you've dreamed of making such a trip—but never dreamed how *little* it need cost you. You can spend two wonderful weeks in Britain for less than \$600—including round-trip trans-Atlantic fare during the "Thrift Season."

The fact is, British prices today are staggeringly low by American standards. Indeed, it's the modest cost of things that now gives American visitors to Britain their first startling impression of having really arrived *abroad*.

Your Dollar Goes Further

Wherever you go in England, Scotland, Wales or Northern Ireland, you'll be struck by this welcome change in your cost of living. "Scaled-down" prices of rooms, meals, travel and entertainment will all seem pleasantly in keeping with Britain's miniature villages, tiny fields and toy-like trains and automobiles. At first, you

can hardly believe that your dollar goes so far. For instance, almost anywhere in Britain you can find roast beef on the menu for \$1 or less. Theater tickets cost from 70¢ to \$2.45. London bus fares start at 2¢—for about a mile. For 35¢, you can get a first-class haircut.

Same thing when you shop. You can buy a genuine Scotch tweed jacket for \$20; and real bargains await you in cashmeres, Irish linen, leather goods, silver, glass and china.

For less than \$200, you'll be able to stay for two thrilling weeks in Britain—then come back with a wealth of memories and treasure. Your round-trip ticket by sea or air needn't cost you more than \$500—and, during the "Thrift Season," you can travel to Britain and back in very comfortable accommodations for as little as \$330.

Write for Free Literature

So start things moving. Drop in for a chat with your Travel Agent, and write for free illustrated literature—including the folder, "What Does it Cost?"—to the British Travel Association, Box 182, 336 Madison Ave., New York 17, N. Y.

NINE ACRES
OF
SPLENDOR



"BATHE YOUR WAY TO HEALTH"

We call it "Occupational Fatigue"—some call it *nerves* or say they're just plain *bushed*. Anyway, you can find relief and rest at the Majestic where you can spend your time with beneficial pleasure. Golf, Fishing, Sun Bathing, Shuffleboard, Horseback Riding, Hiking, etc.; Social Director sees that there's never a dull moment with parties and entertainment for everyone!

MAJESTIC
HOTEL & BATHS
"Famous for Hospitality"
HOT SPRINGS NATIONAL PARK, ARKANSAS

47 hot springs supply water for world's most famous thermal baths under regulations of the National Park Service, U. S. Department of Interior.

AFRICA FOR YOUR MOST EXOTIC VACATION

AT SEA—Sun-filled days aboard the *African Endeavor* or *Enterprise* from New York to Capetown, Port Elizabeth, Durban, Lourenço Marques, Beira. Superb food, spacious decks, outdoor swimming pools.

Also our modern, express cargo ships have good accommodations for a limited number of passengers.

HAPPY SHIPS TO AFRICA



ON LAND—Wondrous beauty and strange contrasts . . . Explore the rolling veld, "shoot" wild animals with a camera in fabulous Kruger National Park . . . enjoy fine beaches, good hotels, all the comforts of cosmopolitan cities like Johannesburg, Durban, Capetown, Lourenço Marques.

See your Travel Agent or consult Farrell Lines.

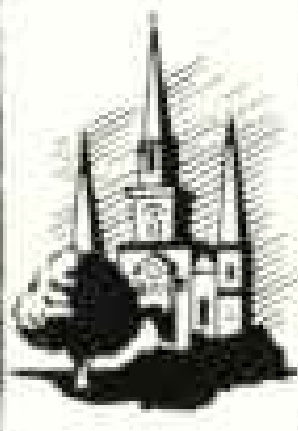
FARRELL LINES

26 Besser St., New York 4, N. Y. • Telephone: WHitehall 4-7460



Where Summer reigns perpetual

LOUISIANA



... Lovely the year 'round. Whether you like the restful green of cool, shaded cypress trees . . . golden, rolling hills or the whiteness of sand and sun, LOUISIANA will excite you. You'll enjoy, too, historic plantation homes in the friendly Audubon, Acadian and Natchitoches areas—and the old and new world charm of beautiful New Orleans.

*Lovely the moonlight veils as it glances and gleams on the water,
Gleamed on the columns of cypress and cedar sustaining the arches,
Down through whose broken vaults it fell as through chinks in a rain.
Dreamlike, and indistinct, and strange were all things around them.*
"Evangeline"—Henry Wadsworth Longfellow



Write for beautiful free booklet

Tourist Bureau G-10
Dept. of Commerce and Industry
Capitol Bldg., Baton Rouge 4, La.

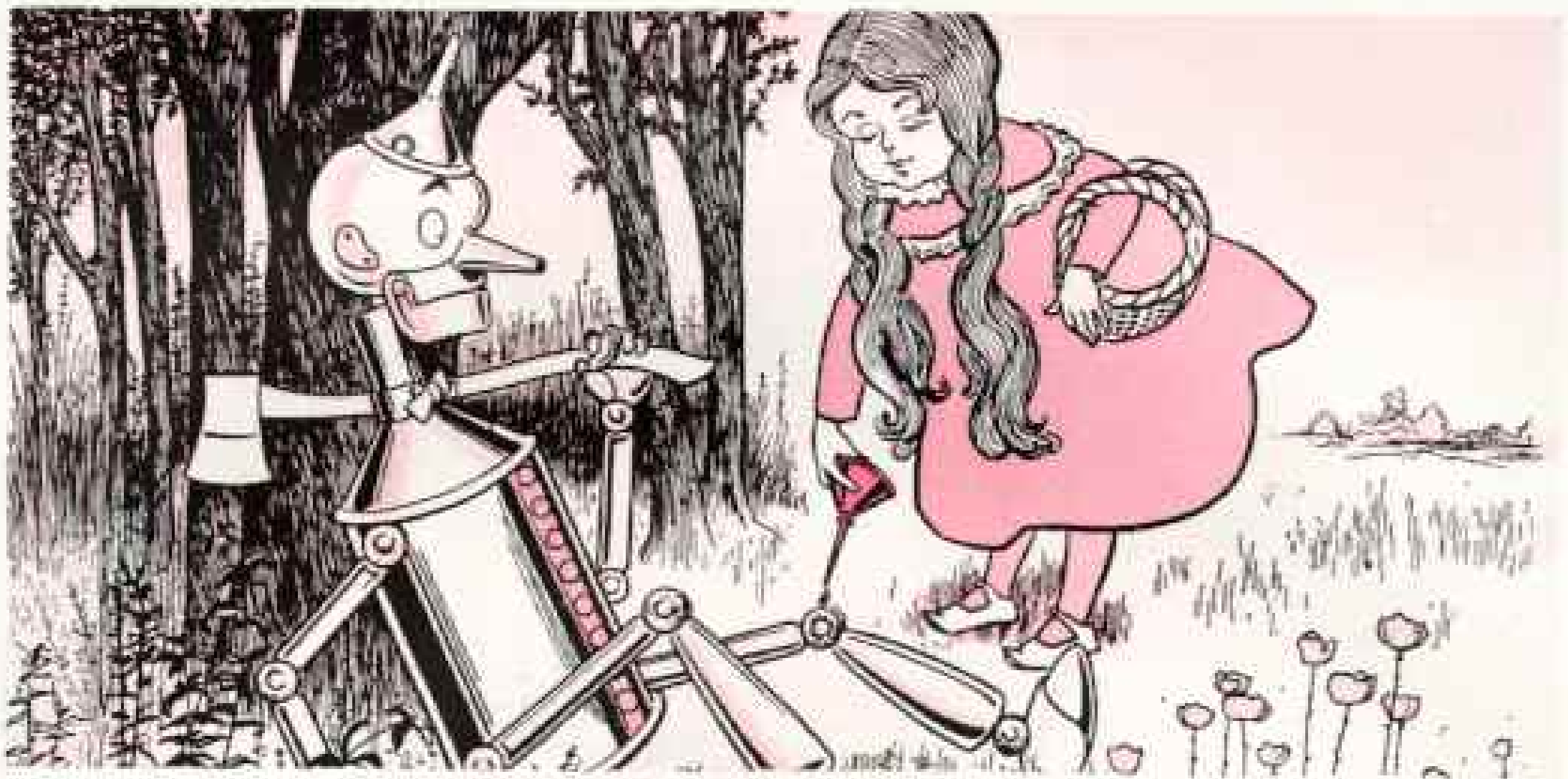
Name

Address

City

State

Mention the National Geographic—It identifies you.



Here's a good "lesson" about ARTHRITIS . . .

NEARLY everyone knows the story of "The Wizard of Oz" . . . and how Dorothy, the little girl in this tale, met a man made of tin.

As the story goes, the Tin Woodman, after a year of exposure in the forest, could not move because his joints were badly rusted. So, Dorothy oiled his joints. Thereafter, he was able to journey with Dorothy to see the wonderful Wizard of Oz.

In a way, this fable points up some important facts about the joints of the human body and the disease that often affects them—arthritis. Like the joints of the tin man, the body's joints can also "rust" or become stiff over the years. However, with proper medical care, they can usually be kept flexible and workable in most cases despite arthritis.

The most common type of arthritis . . . called *osteoarthritis* . . . occurs in middle age and later life, probably because of wear and tear on the joints. While it usually does not lead to severe crippling, it may cause varying degrees of disability. Consequently, recurring aches and pains in and about any joint . . . as well as tenderness and stiffness of the joints . . . should never be disregarded.

The second most common form of arthritis occurs most often in younger people. Known as *rheu-*

matoid arthritis, it is a serious disorder that may involve all the joints. It can also be controlled in many cases when proper treatment is started early.

There is as yet no *cure* for either osteo or rheumatoid arthritis. Doctors, however, have many effective treatments for relieving pain and restoring joint function. Greater gains against arthritis will undoubtedly be made as new methods of therapy are perfected.

Meantime, there are some safeguards that all of us can take to lessen the chances of developing arthritis or to control arthritis if it does occur. To prevent arthritis, keep your weight down; maintain good posture; get enough rest and sleep and have periodic health and dental examinations.

To control arthritis, see your doctor promptly whenever persistent symptoms occur in any joint, or when you feel "run down." *Give him your complete cooperation and always rely on the individualized treatment he prescribes. So-called "sure cures" generally provide only temporary relief.*

Today, when proper treatment is continued persistently, at least 70 percent of all arthritis patients are spared serious disability and returned to reasonably good health.

* Copr. Bobbs-Merrill Co., Inc., Publishers

REPRINTED BY METROPOLITAN LIFE INSURANCE COMPANY

Metropolitan Life
Insurance Company
 (A MUTUAL COMPANY)



1 MADISON AVENUE, NEW YORK 10, N. Y.

Metropolitan Life Insurance Co.
 1 Madison Ave., New York 10, N. Y.

Please mail me a copy of your booklet, 1654-N.

Name _____

Street _____

City _____ State _____





The metal that makes time stand still

Thanks to chromium, steel now serves you with strength and beauty that lasts a lifetime

IN TIME, one of man's most useful materials—steel—is often the victim of such destructive forces as rust, corrosion, heat, or wear.

THESE NATURAL ENEMIES of steel now are mastered by the metal called chromium. When the right amount of chromium is added to molten steel, the result is strong, lustrous stainless steel that defies the ravages of time.

IN HOMES, TODAY, stainless steel is a shining symbol of modern living. It brings us care-free sinks, gleaming tableware and kitchen utensils—all with beauty that lasts a lifetime.

IN INDUSTRY—Food is prepared in super-sanitary stainless-steel equipment. Streamlined trains and buses are made of this wonder metal. Vital parts of jet planes that must withstand

both blazing heat and sub-zero cold are made of tough, enduring stainless steel.

SERVING STEEL . . . AND YOU—The people of Union Carbide produce alloys of chromium for America's steel-makers. This is another of the many ways in which UCC transforms the elements of nature for the benefit of everyone.

FREE: For the full story of the everyday miracles made possible by alloying metals such as chromium, write for the illustrated booklet, "Hot-Metal Magic." Ask for booklet G.

UNION CARBIDE

AND CARBON CORPORATION

30 EAST 42ND STREET  NEW YORK 17, N. Y.

In Canada: UNION CARBIDE CANADA LIMITED

UCC's Trade-marked Products include

ELECTROMET Alloys and Metals PREST-O-LITE Acetylene ACHESON Electrodes SYNTHETIC ORGANIC CHEMICALS
 HAYNES STELLITE Alloys NATIONAL Carbons PYROFAX Gas PRESTONE Anti-Freeze UNION Carbide LINDE Oxygen
 LINDE Silicones EVEREADY Flashlights and Batteries Dynel Textile Fibers BAKELITE, VINYLITE, and KRENE Plastics



**People on the go
... go for Coke**

In Thailand, it's โคลา-โคลา. Moroccans call for *كولا كولا*.

In 81 countries around the globe, busy people relish the pause for ice-cold Coca-Cola. It's the world's favorite way to refresh, for Coke gives a bit of quick energy ...and with as few calories as half an average, juicy grapefruit. No wonder Coke is the most asked-for soft drink in the world.



See *EDDIE FISHER*
on "Coke Time" NBC
Television twice each week.

Kodak
a trademark since 1888



Kodak's finest – the ROYAL!

Quiet...brilliant...lubricated for life

Kodascope Royal Projector (16mm.). See the finest silent movie projector Kodak has ever built. Faultlessly engineered. Smartly styled. Its outstanding features:

Superior screen brilliance. Powerful 750-watt lamp (1000-watt also available). Ultra-fast $f/1.6$ lens, Laminized for extra brightness and contrast.

Corner-to-corner definition. Special lens element insures over-all image sharpness.

Easy operation. All controls conveniently located, readily identified, simple and sure in operation.

Film protection. Inside sprocket guards are made of plastic Tenite for protecting film.

Reverse control. Lets you review scenes of

special interest. Or you can use reverse for comedy effects.

Fast power rewind. No belts to change. 400-foot reel arms fold for storage.

No maintenance. Permanent lubrication eliminates chief cause of projection wear.

Quiet operation. Minimum of moving parts keeps noise level way down.

Built in its case. Cover carries reel, cord, extra lamp. Over-all weight, only 20 lbs.

Auxiliary lenses. For extra-long projection "throws," extra-large screens.

Only \$240, complete. See and operate the Royal at your Kodak dealer's. Chances are he offers convenient terms.

Price includes Federal Tax and is subject to change without notice

Eastman Kodak Company, Rochester 4, N. Y.



Seamaster.

SEALS OUT WATER... SEALS IN ACCURACY

What assures Seamaster supremacy is its impregnable shield of protective armor. Three exclusive Omega features tenaciously resist every element of the atmosphere...allow the movement within to go its precise, even way. And the high precision of Omega knows no equal.

SEAMASTER: Self-winding, water-resistant, 18K gold applied figure dial... \$82.50 to \$400, Seamaster Calendar models with date indicators, \$140 to \$300. (Federal tax included) Other fine Omega watches for men and women from \$71.50.

Ω
OMEGA

THE WATCH THE WORLD HAS LEARNED TO TRUST

Spain

an exciting new Fall and Winter haven for YOU!

This year, why not plan a rewardingly different "escape" from bleak, dreary weather... to the luminous sunshine and lilting excitement of lovely, lively, altogether entrancing Spain.

Relax completely, renew your whole outlook at quiet and unspoiled resorts. Enjoy the uncrowded Fall and Winter highlights of gay-mooded Barcelona and Madrid... fabulous treasures of art and antiquity... enthralling excursions into the past... breath-taking sweeps of spectacular scenery.

Spectacular values await you too... in travel and hotel accommodations... in exquisite products of Spanish craftsmanship and popular Spanish fashions as well. Come soon and stay long in the land where you see and do the most for the least.



Consult your Travel Agent or

SPANISH TOURIST OFFICE

NEW YORK: 485 Madison Avenue, New York 22, N. Y.
CHICAGO: 39 South La Salle Street, Chicago 3, Ill.
SAN FRANCISCO: 68 Post Street, San Francisco 4, Calif.

Mention the National Geographic—It identifies you!

Too Late?



Are you waiting until **Too Late?**

Too Late?



If you become involved in an accident or if your property is damaged or destroyed—you will be confronted with many pressing, confusing problems all at once.

Now is the time to prepare to meet a possible loss:

- Go over all your policies with your local agent or broker to be sure you understand exactly what risks are covered by your policies.
- Make sure the limits of your insurance protection are adequate to meet today's values.
- Keep an inventory of your belongings and their values in a safe place with your fire insurance policies. In event of loss this will help you in preparing your claims.
- Carry your auto insurance identification card and the name and phone number of your local agent with you at all times.

If you are traveling out of town and are insured with a company of the America Fore Insurance Group, you can obtain prompt help in case of accident by contacting an America Fore claims office or agent in practically any community. Simply call Western Union by number and ask for Operator 25.

Yes—a little foresight now can save you worry, assure proper protection and bring prompt action in case of loss.

You can now pay your premiums monthly, quarterly or semi-annually. Ask your America Fore agent about this new plan.

Too Late?



For Peace of Mind Insure with

America Fore
INSURANCE GROUP

- ★ The Continental Insurance Company
- ★ Fidelity-Phenix Fire Insurance Company
- ★ Niagara Fire Insurance Company
- ★ American Eagle Fire Insurance Company
- ★ The Fidelity and Casualty Company of New York

Proved on a camel in Pakistan...
It brings the world to you!



"I've used my Zenith TRANS-OCEANIC Radio all over the globe", says Captain Ranson Fullinwider USN, Karachi, Pakistan.

This is the set that makes radio listening an exciting, globe-trotting adventure... and you don't have to step out of your living room! Brings in news reports from world capitals, music from faraway lands, amateurs, marine and weather bulletins, ship-to-ship and ship-to-shore phone conversations. Operates, really operates, in planes, trains, aboard ship, in steel buildings. Tropically treated against high humidity. The Zenith TRANS-OCEANIC Portable Radio is backed by 36 years of Zenith experience in radionics exclusively. It's the only short-wave portable world-proved for 13 years.



International Shortwave plus Standard Broadcast. Works on AC, DC, or battery. Ask your dealer to demonstrate Zenith's 7 all-new powerized features. In Black Stag, only \$139.95. In genuine brown cowhide, \$159.95. (Manufacturer's suggested retail prices, batteries extra. Slightly higher in Far West and South.)

ZENITH



Super Deluxe TRANS-OCEANIC Radio

Backed by 36 years of Experience in Radionics Exclusively
ALSO MAKERS OF FINE HEARING AIDS

Zenith Radio Corporation, Chicago 39, Illinois

Be ready
to
DEFEND
your
tall
stories!



If you use *photographic* evidence, be sure your photos are good. Just follow the example of most travel and sports photographers. Use a WESTON Exposure Meter. Then every still or movie you shoot... even your color shots... will all be perfectly exposed. Sold by all leading camera stores.

8262



WESTON
exposure meters

The Meter Most Photographers Use



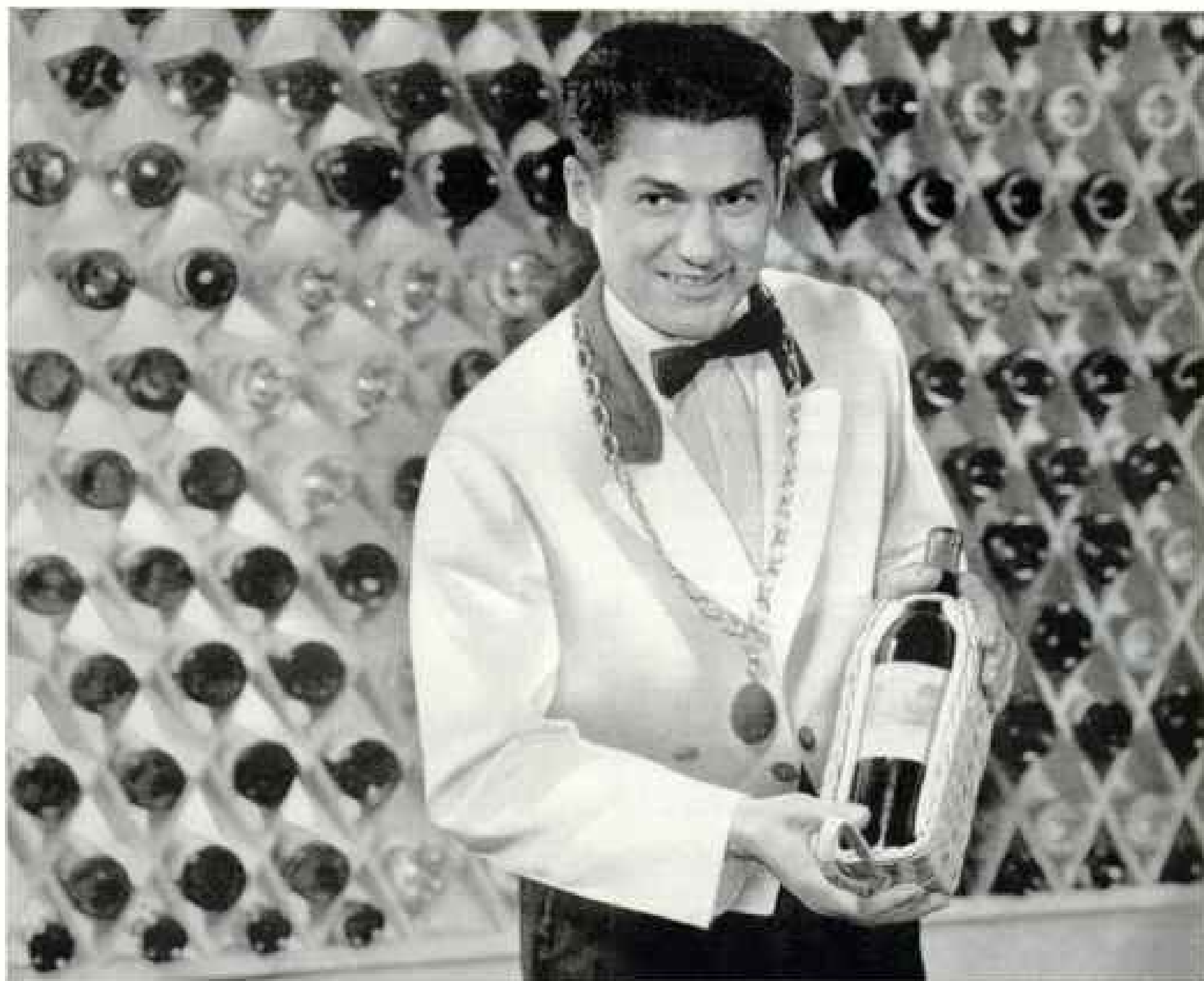
Built for all day comfort and service! Write today for free style booklet and name of a nearby Connolly Store.

#8600

Available in Kid and Kangaroo, Capbridge last. Black or brown, oxford or high. Sizes 1/2 - 15, AAA to EEEE. \$9.95 to \$14.95

CONNOLLY SHOE COMPANY, STILLWATER 62, MINNESOTA

Mention the National Geographic—It identifies you



This man is a Sailor

He didn't learn his trade beside the helm. He learned it at the Waldorf Astoria and the Ritz-Carlton and at Fouquet's on the *Champs Elysees*, where more than twenty years ago he started serving wine.

He is Henry Sirgue, a wine steward of the *S.S. Constitution*. The world-famous wine expert, Alexis Lichine, rates the wine cellars of the *Constitution* and *Independence* among the greatest ashore or afloat. And M. Sirgue can advise you wisely on every precious bottle, whether it be a simple *vino da pasto*, a fine chateau-bottled Bordeaux, one of the great

estate-bottled Burgundies or a superb Rheingau, Moselle or vintage Champagne.

It's men like Henry Sirgue, with many different specialties and skills, who make great crews and *happy ships*. Such men have won that sea-going accolade for the big Sunliners *Independence* and *Constitution* . . . they're "*Happy Ships*."

1955 GRAND CRUISE to the ENTIRE MEDITERRANEAN

e.g. INDEPENDENCE • FEB. 11—APRIL 9, 1955
20 Romantic Ports • 57 Days • from \$1550

See your Travel Agent or

AMERICAN EXPORT LINES

39 Broadway, New York 6, N. Y.



THE SUNLANE TO EUROPE || INDEPENDENCE • CONSTITUTION • EXCALIBUR • EXCAMBION • EXOCHORDA • EXETER
Gibraltar, Cannes, Genoa, Naples • Franco, Italy, Egypt, Lebanon, Syria, Turkey, Greece, Spain

Mention the National Geographic—It identifies you

See for
yourself!

Why

Rolleicord



gives better pictures, easier
than any other camera

You focus and compose easily,
perfectly, get each picture ex-
actly as you want it, because
you see your subject *full picture*
size on the brilliant ground
glass. No small sights to peer
through; not even a red window,
for the film positions automati-
cally for each shot. And with
controls operable while compos-
ing, plus finest lens and shutter,
Rolleicord insures perfect black

and white or color pictures every time, including
flash shots... easier than with any other camera.
At all dealers. Write for literature.

Burleigh Brooks, Inc. 10 W. 46 St., New York 36, N. Y.

West, Alaska & Hawaii

PONDER & BEST, INC. 814 N. Cole Ave., Hollywood 38, Calif.



For 55 years

a member of the

Audit Bureau of Circulations,

NATIONAL GEOGRAPHIC

MAGAZINE

salutes this guardian

of periodical and newspaper

circulation integrity on this,

its 40th Anniversary.

STAMP COLLECTORS



567 DIFFERENT
GENUINE STAMPS only \$1⁰⁰

Receive collection of design stamps showing Famous Americans, Great's "Truman" commemorative, Dignity "Eisenhower" set, Washington, Lincoln, Robert Fulton, Franklin, Jefferson, MacArthur stamps. Also fantastic Monte Carlo designs of grand old "United States". You get this American collection worth more than the price of the entire set! plus more! \$1.00! Also YEMEN set, Pope Pius XII set, African nations, two sets Bahamas, Israel, San Marino, Allied Military set and many, many other fine stamps—607 different stamps in all! \$1.00 cover for just \$1.00 in literature and postage approval.

MONEY BACK GUARANTEE

FREE ACCESSORY KEY, Magnify glass, stamp tongs, perforation gauge FREE with above order while supply lasts.

NATIONAL STAMP SALES 832 Eighth Ave., Dept. GD
New York 19, New York

WE BUY STAMPS, U. S. or foreign, used or mint. We buy collections, old original envelopes, accumulations, estates, etc.

COLOR PRINTS From Your Transparencies

Prints from any positive
transparency.

Fast Service	ANSCO COLOR KODACHROME EKTACHROME	
4 x 5	5 x 7	8 x 10
50c	\$1	\$2

Satisfaction or your money back
PROCESSING: Ansco-Ektachrome
120-620, 35mm 20-exps \$1 per roll
DUPLICATE 35mm slides 25c each

COLORFAX LABORATORIES Dept. G-104, Box 3521
Georgetown Sta. Wash. 7, D.C.

25c
2 1/4 x 3 1/4

Minimum order \$2
No C.O.D.'s please

The Book of Fishes



THE NEW 340-page edition of this famous book presents 236 salt- and fresh-water fishes and aquatic creatures of the U. S. It features 116 COLOR PAINTINGS, 91 photographs in COLOR and 170 in monochrome, and 15 fascinating chapters. Richly bound; 7" x 10 1/2"; \$6.50 in U. S. & Poss., elsewhere, \$6.75 in U. S. funds. Postage is prepaid.

Stalking Birds with

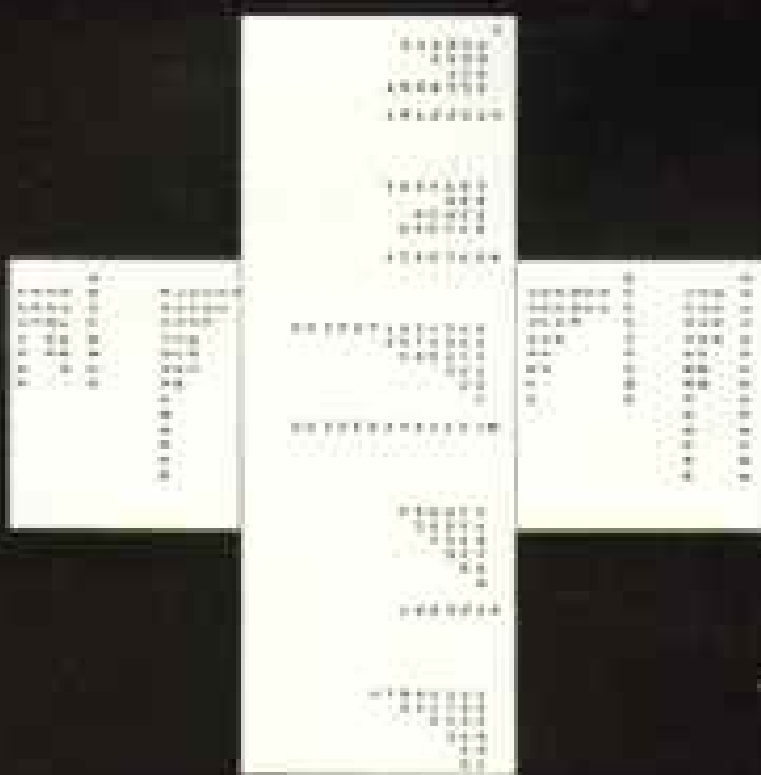
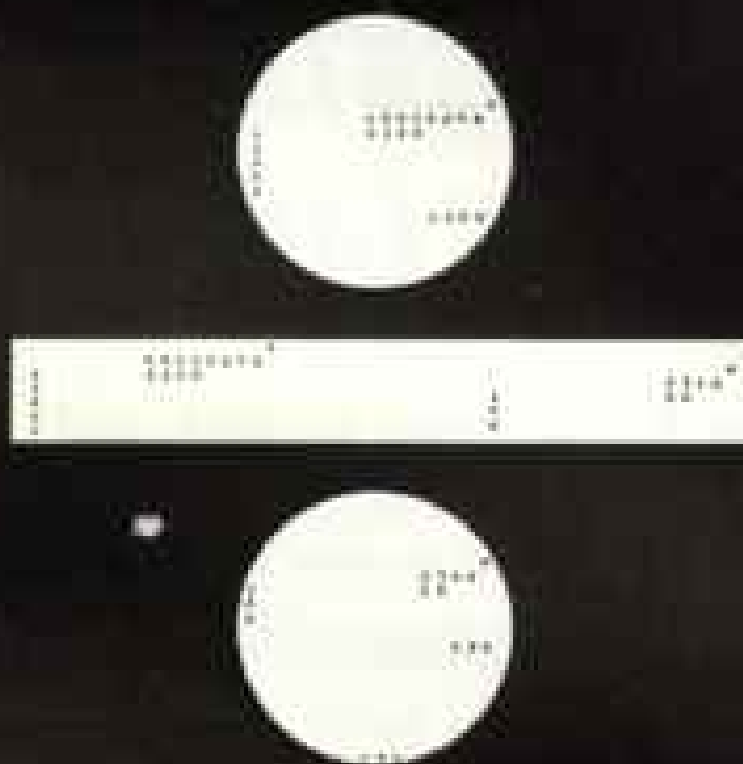


Color Camera by Arthur A. Allen

THIS UNIQUE, 328-page volume, with 189 FULL PAGES of NATURAL-COLOR PHOTOGRAPHS of wild birds, 93 monochrome pictures, and 13 absorbing chapters, provides a rich fund of new information on bird behavior, from the National Geographic Magazine. Handsomely bound; 7" x 10 1/4"; \$7.50 in U. S. & Poss., elsewhere, \$7.75, U. S. funds. Postpaid.

OBTAINABLE ONLY FROM

NATIONAL GEOGRAPHIC SOCIETY, Dept. 410, Washington 6, D. C.

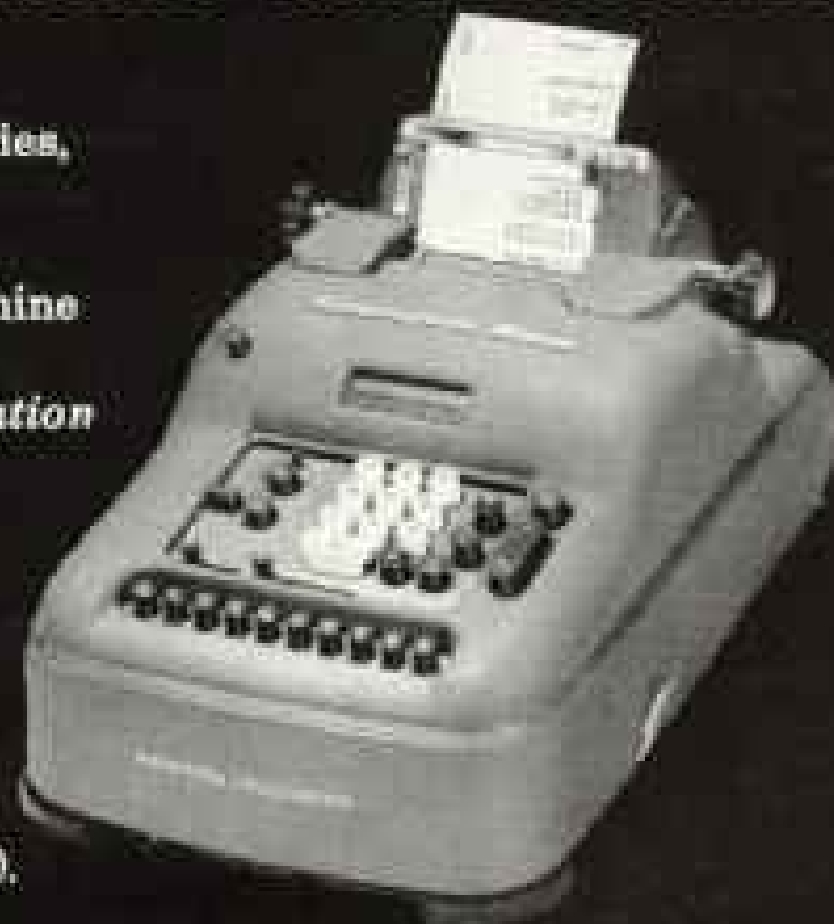


**Completely new—Totally different...
The fully automatic Calculator that PRINTS!**

The Model 99 Printing Calculator multiplies, divides, adds and subtracts. It performs every one of these calculations with greater efficiency than any previous machine of its kind. Among its many outstanding features, it provides *automatic multiplication* and *credit balances* plus *Simpla-tape*, the two-color printed record of every calculation performed. Write for free booklet number C669.

Remington Rand

Room 2001, 315 Fourth Ave., New York 10.



SHE LIKES **ORA** **DENTURE CLEANSER!**



"ORA is a wonderful product, and doesn't harm dentures," says Mrs. Lena Crockett, Baltimore, Md.

NO MORE BRUSHING! Clean your denture with ORA, made especially for this purpose. Easy, quick. Simply leave denture in solution for 15 minutes or overnight. Denture comes out sparkling clean. ORA is pure. Guaranteed not to harm dentures. Removes tobacco stains. Join the thousands who have switched to ORA. All druggists.

A product of **McKESSON & ROBBINS, Incorporated**

NEW MIRACLE TUBELESS HEARING AID REVEALED

- Costly B-Battery Eliminated
- All Battery Costs Slashed 80%
- Powered by Three Transistors
- Vacuum Tubes Banished Forever

FREE BOOK! Write today for authoritative illustrated book describing this new Atomic Age miracle invention, the Transistor, and what it means to the field of hearing. No obligation whatsoever! A postcard will do.

Beltone HEARING AID CO.

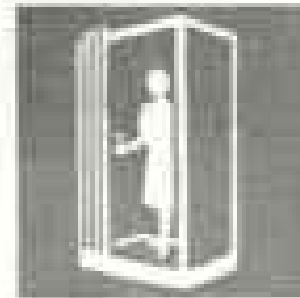
2900 W. 36th St., Dept. 281D, Chicago 32, Ill.

Climb Stairs Sitting Down



You can add energy to your days and years to your normal life span by saving yourself the strain of stair climbing. People who have been told to "take it easy" by their doctors can enjoy the convenience of one-story living in any type house.

◀ **INCLIN-ATOR** is a low-cost installation for straight stairways. Operates on house-lighting circuit. Folds against wall when not in use.



◀ **"Elevette"** can be installed in stairwell, closet or corner and operates on house-lighting circuit. Custom-built to fit space. Completely safe for all ages.

Write for full information and name of nearest dealer.

INCLINATOR COMPANY OF AMERICA
3228 Paxton Blvd. Harrisburg, Pa.

Originators of the simplified home passenger lifts.

PLEASE FILL IN BLANK BELOW. DETACH AND MAIL TO THE SECRETARY.

Recommendation for Membership IN THE NATIONAL GEOGRAPHIC SOCIETY

* *The Membership Dues, Which Are for the Calendar Year, Include
Subscription to the National Geographic Magazine*

To the Secretary, National Geographic Society,
Sixteenth and M Streets Northwest, Washington 6, D. C.:

1954

I nominate _____
PRINT NAME OF NOMINEE

Occupation _____
(This information is important for the records)

Address _____
PRINT ADDRESS OF NOMINEE

for membership in The Society.

Name of nominating member _____
PLEASE PRINT

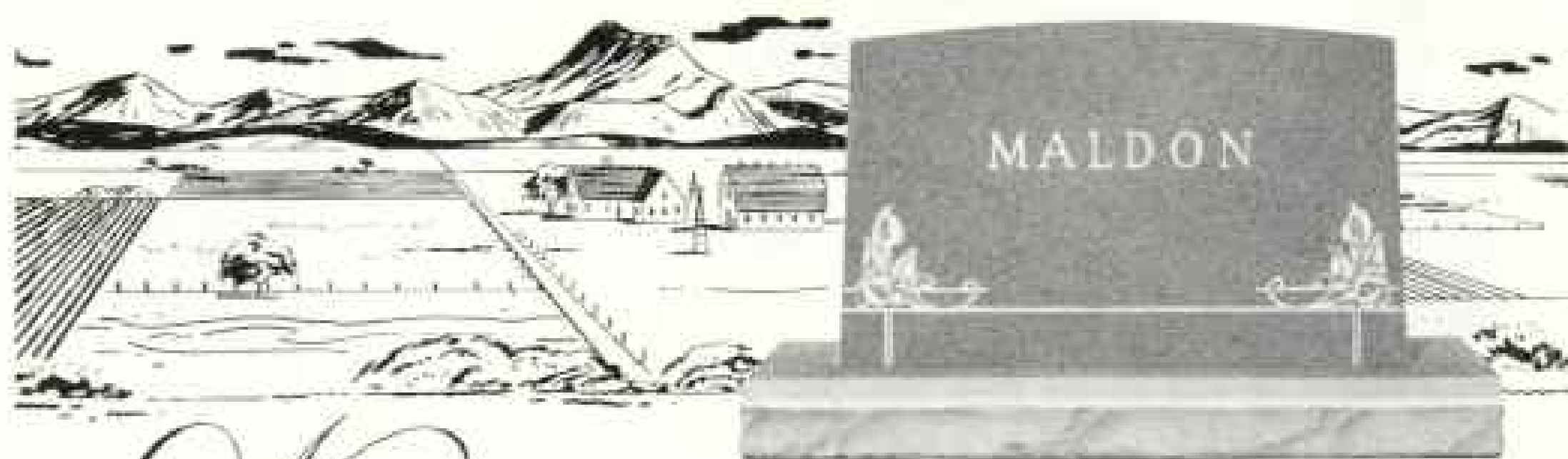
Address _____

* **DUES:** Annual membership in United States, U. S. Possessions, and Canada, \$3.00; countries in the Postal Union of the Americas and Spain, \$6.00; British Isles, £2 2s. 0d. British sterling; elsewhere abroad, \$6.75. Life Membership, \$150.00 U. S. funds. Remittances should be payable to National Geographic Society. Remittances from outside of continental United States and Canada should be made by New York draft or international money-order.

10-54



Wherever in the lanes of memory you walk . . . you find the qualities of those who were loved the deepest . . . expressed for all time in Rock of Ages family monuments.



*Whenever your heart
guides your hand*



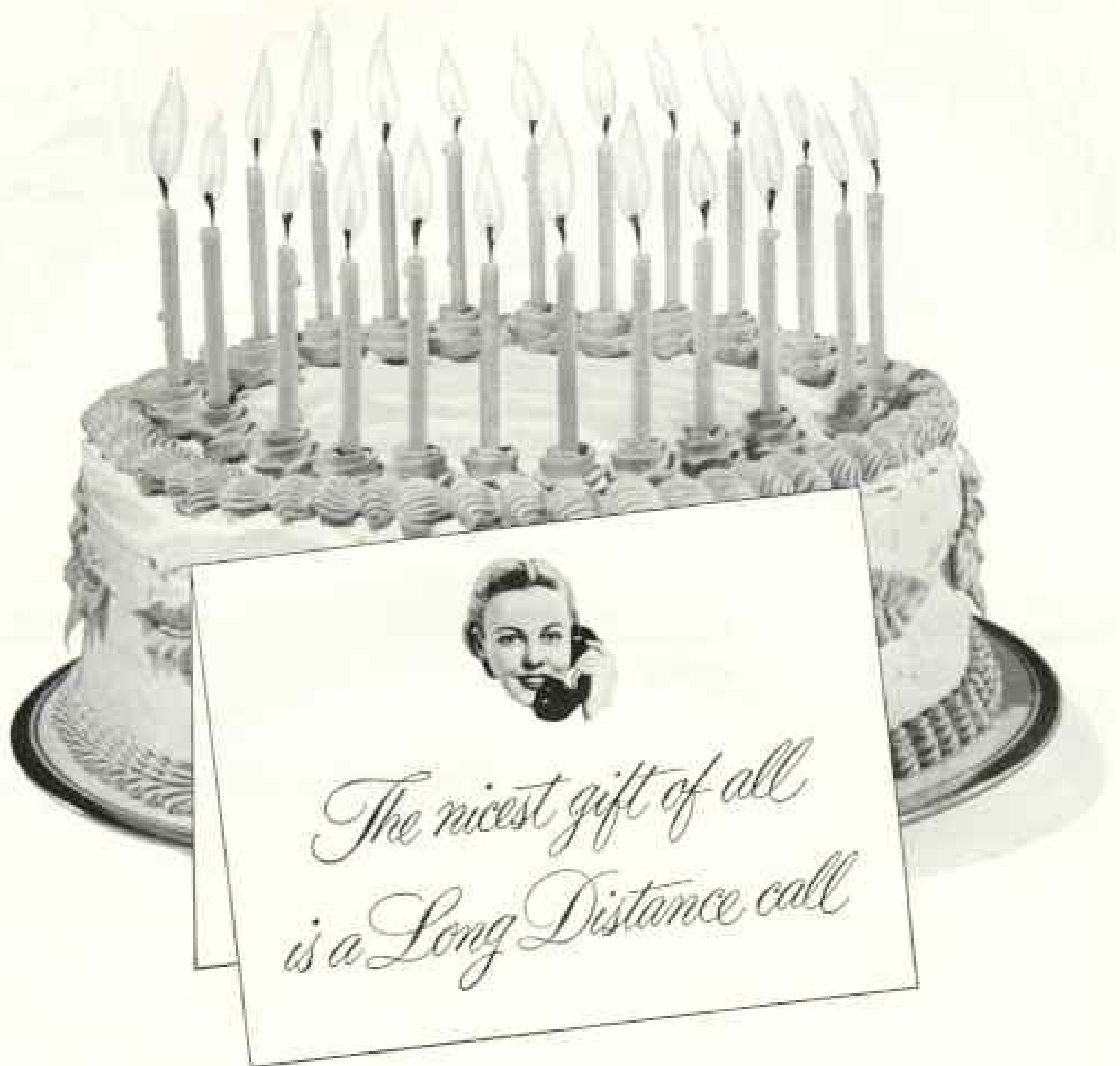
The Rock of Ages seal—so tiny yet so meaningful—assures you that you have chosen the finest family monument there is . . . that above doing the fitting and proper, your heart has guided your hand . . . and your love shall stand out for all to see, for all time.

Ask your Rock of Ages Authorized Dealer for a free copy of "How to Choose a Family Monument". You'll find his name in the Yellow Pages of the Telephone Directory.



Reg. U.S. Pat. Off.

Rock of Ages BARRE, VERMONT
BARRE GRANITE FAMILY MONUMENTS



Next to being there in person, there's nothing quite so warm and satisfying as a voice-visit by telephone. Long Distance service is quick, friendly and courteous. And rates are surprisingly low, especially after six o'clock every night and all day Sunday. Somewhere today there is someone who would like to hear your voice.

BELL TELEPHONE SYSTEM



Long Distance Rates Are Low

Here are some examples:

New York to Philadelphia . . .	40¢
Cleveland to Baltimore	75¢
Atlanta to Indianapolis	85¢
Chicago to Dallas	\$1.20
Los Angeles to Boston	\$2.00

These are the Station-to-Station rates for the first 3 minutes, after 6 o'clock every night and all day Sunday. They do not include the federal excise tax.

When you call, remember to Call by Number. It's faster.



• How's your map I.Q.? Some maps push continents around, but this map shows you where South America *really is!* Almost all of it lies *east* of Miami! That's why, no matter where you live in the U.S.A., the shortest way to "B.A." is via *El InterAmericano's* route straight down the West Coast.

Choose from 12 flights weekly: Deluxe *El InterAmericano*, daily DC-6, or thrifty *El Pacifico*, DC-6B tourist service. Call your Travel Agent or Pan American, Panagra's U. S. Sales Agent.

Short cut to

SOUTH AMERICA



Doorway to low-cost luxury in Lima, Peru. You don't know South America until you've seen its West Coast.

Pan American-Grace Airways

PANAGRA
WORLD'S FRIENDLIEST AIRLINE