VOL. 119, NO. 6 JUNE, 1961

# NATIONAL GEOGRAPHIC



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THE JOURNAL OF THE NATIONAL GEOGRAPHIC SOCIETY WASHINGTON, D. C.

# NATIONAL GEOGRAPHIC Society

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# National Geographic Magazine

**ORGANIZED IN 1888 "FOR THE INCREASE AND DIFFUSION OF GEOGRAPHIC KNOWLEDGE"**

The National Geographic Society is chartered in Washington, D. C., in accordance with the laws of the United States, as a nonprofit scientific and educational organization for increasing and diffusing geographic knowledge and promoting research and exploration.

The Society has conducted more than 160 major expeditions and scientific projects. It disseminates knowledge to millions through its world-famous National Geographic Magazine, its 19 million color maps a year, its books, monographs, bulletins for schools, its information service for press, radio, and television.

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COVER: *Feminine eyes admire a Grenadier Guards sentry outside the Tower of London* (page 777).


Watches featured, left to right: Stardome, $75. Stardust VII, $85. Jody, $85. Hamilton Watch Company, Lancaster, Pa.

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## GEOGRAPHIC STAFFMAN HELPS MEASURE THE ROOF OF THE WORLD

Sir Edmund Hillary needed a glaciologist to head one phase of his 1960-61 expedition to the Himalayas. He asked for Barry C. Bishop, National Geographic staff *photographer*.

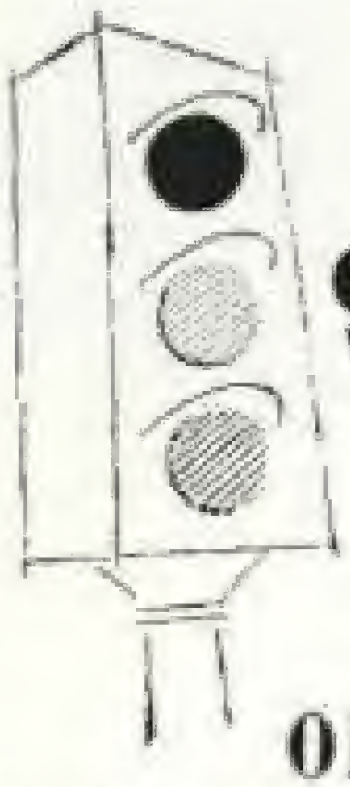
A strange choice? Not when you consider Mr. Bishop's background. He's seen many a mountain peak—and not always through a camera's view finder.

In the past ten years, he has helped map Mt. McKinley—conducted research on the Greenland Icecap—served as Scientific Adviser on the staffs of Rear Admiral Byrd and Rear Admiral Dufek—and was Official United States Observer on an Argentine Antarctic Expedition.

Last year Mr. Bishop was given a leave of absence and later received a National Geographic Society research grant. Above (plaid shirt), he takes altitude readings with Lt. Peter Mulgrew of the Royal New Zealand Navy, in the Himalayas' Mingbo Valley.

Mr. Bishop wintered at 19,200 feet, studying glaciers, weather, and solar radiation—while other expedition scientists studied *him* to see what man can endure at high altitudes.

Geographic research grants, such as the one to Mr. Bishop, help widen man's knowledge. Members take pride in helping to make them possible. They can share that pride by nominating friends for membership in the Society.



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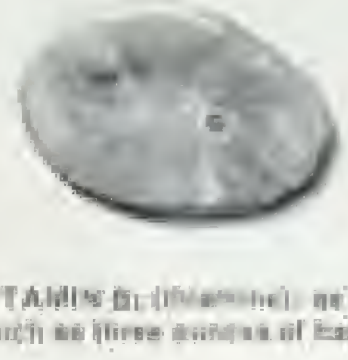

VITAMIN B1 (thiamine): as much as three ounces of ham.

VITAMIN B2: more than five carrots.

VITAMIN C: about as much as a four-ounce glass of tomato juice.

NIACIN: more than three ounces of beefsteak.

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VITAMIN D: as much as two glasses of vitamin D milk.

VITAMIN B12: as much as an ounce of meat or fish.

RIBOFLAVIN: more than four ounces of Cheddar cheese.

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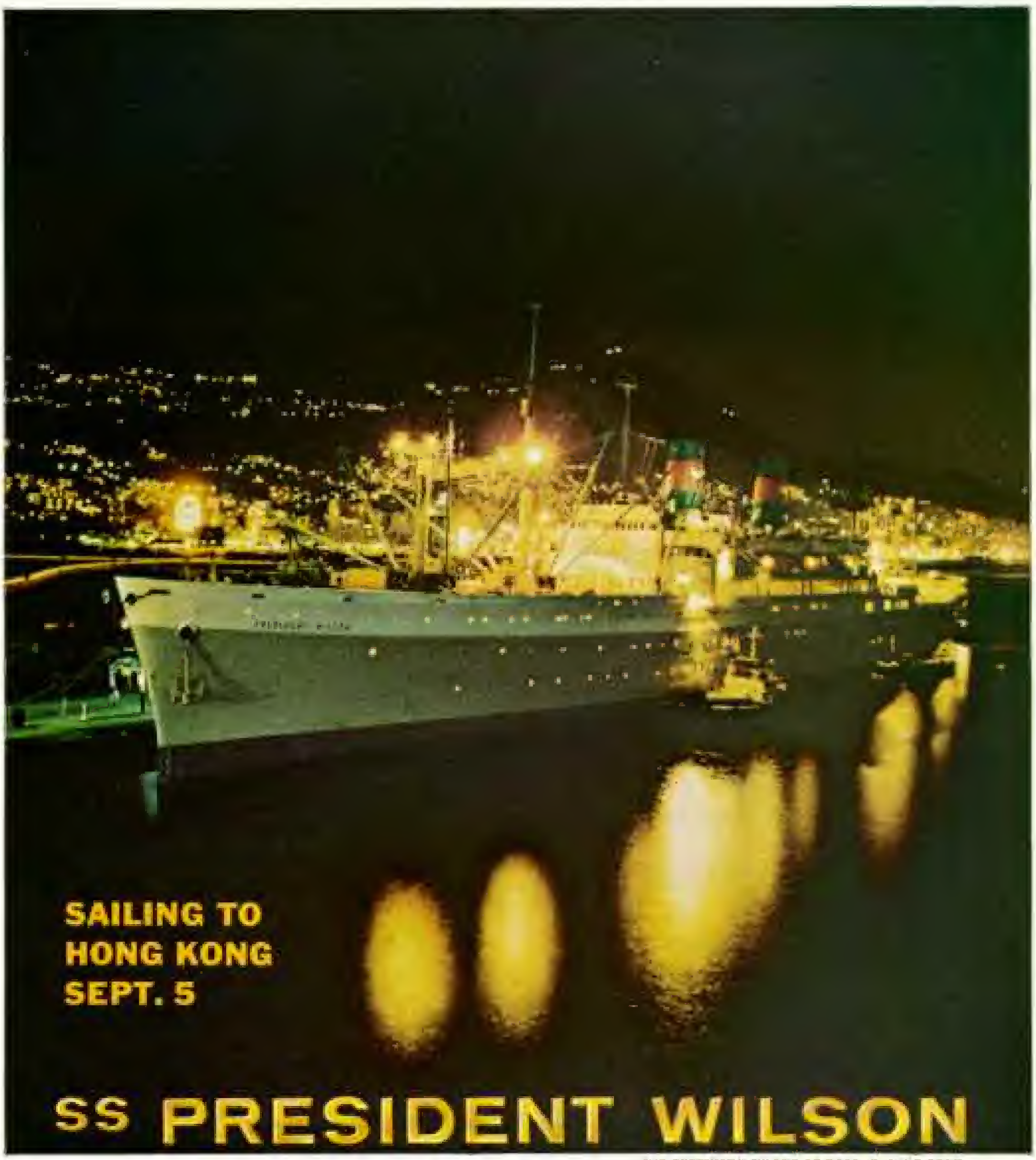


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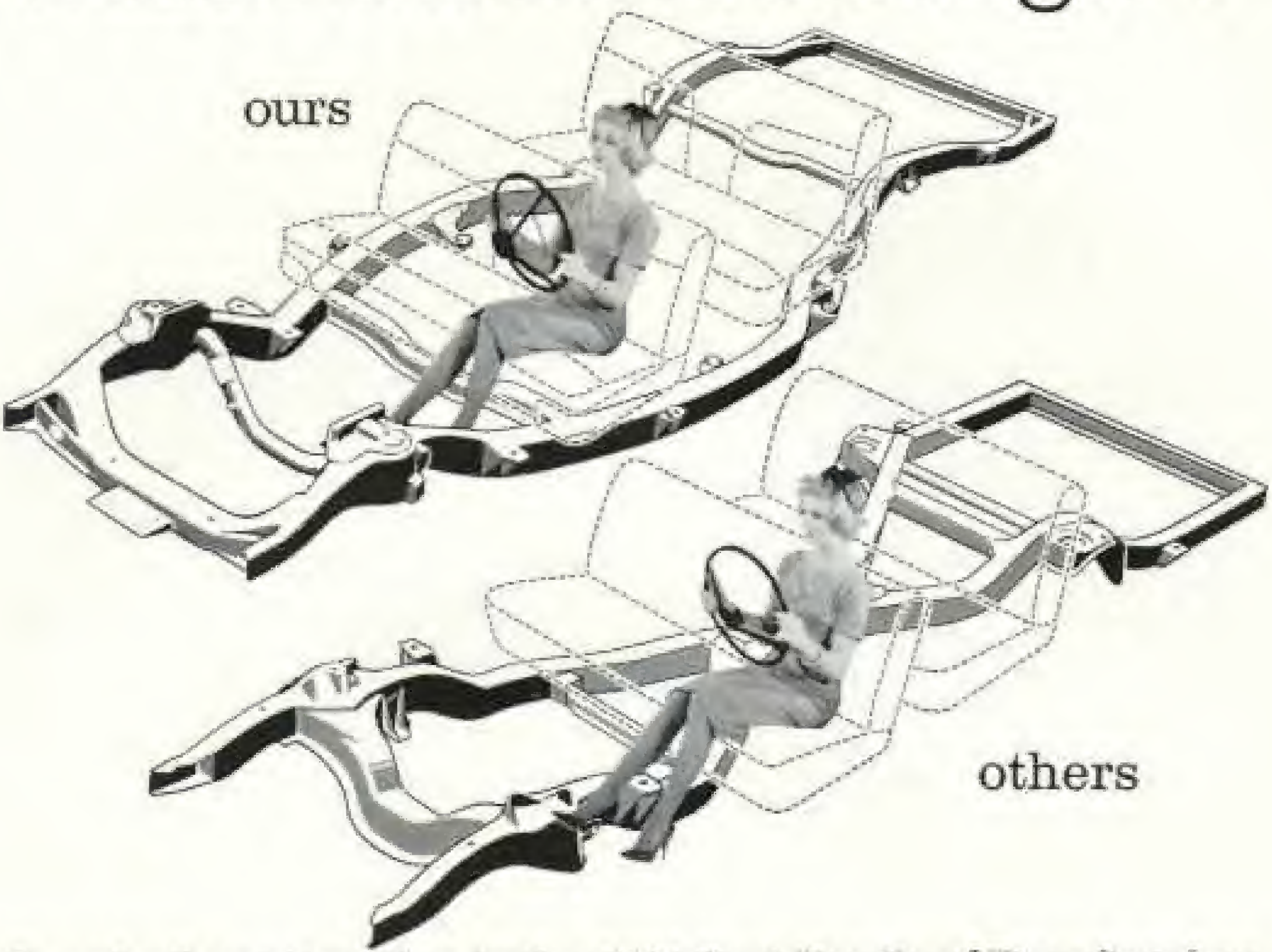


Guardrail construction in the 1961 Ford Family of Fine Cars has greater rigidity, offers the strength of strong side rails.

## *Ford Motor Company builds better bodies*

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• In the Ford Family of Fine Cars, the most vulnerable underbody parts are galvanized, zinc-coated to protect them against rust and corrosion.

• Doors in our cars are stronger. They are reinforced with steel beams. This means they are more rigid and therefore close tighter and quieter, reducing the likelihood of developing squeaks and rattles.

• One reason for the unusually quiet ride in the Ford Family of Fine Cars is the soundproofed floors. Where other cars have only two layers of sound insulation, our cars have three layers of sound insulation. Each layer eliminates a different range of sound from rumbles to squeaks. As a result, very little noise gets through to the passenger compartment.

*There are 4 of the many reasons we think you will find upon comparing our cars with other cars that Ford Motor Company builds better bodies.*

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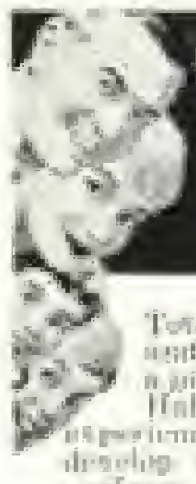

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THE NATIONAL GEOGRAPHIC MAGAZINE



VOL. 119, NO. 6 JUNE, 1961

# "The City"—London's Storied Square Mile

By ALLAN C. FISHER, JR.
Assistant Editor


ONCE EACH YEAR a robed and bewigged delegation strides purposefully into London's Royal Courts of Justice and seeks out that specialist in matters ceremonial, Queen Elizabeth II's Remembrancer. With a grave bow of acknowledgment, the Remembrancer accepts in Her Majesty's behalf these items: six horseshoes ("suitable for the forefeet of a great Flemish warhorse"), 61 horseshoe nails, a hatchet, and a billhook.

Warrants attesting receipt of the token hardware are recorded. Then, presumably, the Lord Mayor of London can breathe a bit easier. Once again his resolutely independent City of London, a self-governing domain of one square mile in the heart of Greater London's 720 square miles, will have paid its annual land rents to the Crown.

The Remembrancer always remembers to appear for the October ceremony because it has been held without break for more than 500 years. In some mysterious fashion the horseshoes and nails find their way back to City officials and are bestowed upon the Queen again the next year. However, custom requires that she annually receive a new hatchet and billhook.

### Lord Mayor Rules a Tiny Fief

The City—always spelled with a capital C to distinguish it from the rest of London—is a conspicuous anachronism, and proud of it. The metropolis grew from this little fief, whose motto is "God Direct Us," and it exists by ancient right as a law unto itself, with its own police force and other services. Its municipal corporation is the oldest in England—older, even, than the great Mother of Parliaments.

Within the City, or Square Mile, as it is also called, one can still see remnants of the stone wall that encircled Roman Londinium

and medieval London. William the Conqueror, rather than attack the fortified town on the Thames, gave its stubborn citizens their first charter. Even in those distant days the City knew how to make the most of a precedent, and it continued wresting charters from reluctant monarchs.

The Lord Mayor of London presides over this small area with medieval pomp and ceremony. He has no jurisdiction beyond its boundaries; within them, he ranks second only to the Sovereign. If the Queen pays a state visit to the City, as she does when attending civic luncheons in her honor, she must pause at the City's outskirts, in deference to the Lord Mayor, and receive his welcome. In fealty he offers her the Pearl Sword —traditionally with point downward, lest someone suspect his intentions.

### From Medieval Warren to Financial Citadel

Small it may be, but the Lord Mayor's "kingdom" is never lightly dismissed. It is often called the wealthiest square mile on earth.

London's storied heart has evolved from a plague-ridden, medieval warren into a modern and vastly powerful financial center, the citadel of the sterling area (pages 736-7). Here are grouped Britain's great fiscal and commercial institutions: wealthy banks, including that symbol of stability, the Bank of England; Lloyd's of London; big shipping firms; the London Stock Exchange; and marts for wool, metals, tea, sugar, grain, and rubber.

Here, too, cluster merchant houses older than the United States, such as the Hudson's Bay Company, and brokerage firms that deal in scores of exotic commodities—gum arabic, ambergris, shark fins, rhino horn.

Tourists know a different City. They venture into picturesque pubs, like the Cheshire Cheese, or walk with history on Fleet Street, canyoned by newspaper and publishing houses. They pause reverently at St. Paul's Cathedral or stroll with mental shudders through the grim, gray Tower of London, which lies outside the City but adjoins it.

### Population Soars and Falls Daily

Actually, the Square Mile is an irregular rectangle of 677 acres, somewhat more than a square mile (see foldout map, pages 744-9). A current estimate indicates only 4,000 permanent residents, but during a business day some 400,000 office workers pour in by subway, bus, train, and car.

Recently I spent memorable weeks exploring this vital little realm. I became familiar with the haunts of the Lord Mayor and the businessman as well as those of the tourist. The City quickly wins the respect of the visitor, but it also won my admiration and affection.

Its No. 2 personage, after the annually elected Lord Mayor, is the Governor of the staid Bank of England, Lord Cobbold. Like preceding Governors, Lord Cobbold shuns press interviews. But a radio interviewer once suggested to him that his bank was "extraordinarily attached" to tradition.

"The handling of tradition is an art at which this country excels," Lord Cobbold replied. "We know how to keep what is old and useful and to add in each century what is new and useful. So that in the end tradition is not just an archaic form, but a plant, with its roots in the past, with a history of continuing development, and with a lively present."

This philosophy might be termed the "City Man's Creed." A City man epitomizes tradi-

**Tower Bridge Guards the River Road to London's Square-mile City**

When Londoners speak of the City, they refer to a tiny, self-governing domain, the Londinium of Roman times, nucleus from which Greater London grew. The old walled City received a charter from William the Conqueror in the 11th century and has jealously guarded its independence ever since. Today the little fief is financial center of the world's sterling area.

Though called the Square Mile, the City contains 677 acres, 37 more than a square mile, in an irregular rectangle. Here sunlight outlines most of the area, a cluster of buildings on the Thames's north bank (see foldout following page 744). Tower Bridge, opened in 1894, is owned and operated by the City but lies outside its boundaries. Designers planned the turrets to harmonize with the tree-bordered Tower of London (right). Seagoing ships, docked at wharves on the south bank (left), passed through the bridge's center drawspan. London Bridge, a railroad span, and Southwark Bridge lie upstream. Lacking drawspans, they mark the head of navigation for large vessels.

PHOTOGRAPH BY W. E. GARRETT © N.G.S.

White lace cascades from the fur-trimmed robe of Sheriff Adam Kennedy Kirk. His ceremonial regalia has not changed in ten centuries. Pendent gold medallion denotes his office.

## City Officials, Holding Fragrant Nosegays, March Into Guildhall for an Election of Sheriffs

Tradition demands that each dignitary in this stately procession carry a bouquet of flowers. The custom began in medieval times, when the fragrance was thought to ward off the plague. Unlike their forebears, officials no longer hold bouquets to their noses as they pass through the crowd in the Guildhall, the City's historic civic center.

Last year's Lord Mayor, Sir Edmund Stockdale, in scarlet gown, trails the procession behind his omnipresent attendants, the Swordbearer and Mace-bearer.

Medieval guilds, meeting each year on June 24—Midsummer Day—elect the City's two sheriffs. Their coveted office, mentioned in seventh-century documents, is 500 years older than that of their august peer, the Lord Mayor.

tion, and he preserves it zealously, particularly in his municipal government.

In medieval times, guilds selected the City's principal officials—and they still do. Today there are 82 of these "misteries," or trade associations. Their representatives gather as electors twice each year, once to name sheriffs and other dignitaries, and later to choose the Lord Mayor. Long ago the guilds adopted distinctive robes and insignia, so they became known as livery companies. The City recognizes 12 "Great Companies" and assigns them this precedence: Mercers, Grocers, Drapers, Fishmongers, Goldsmiths, Skinners, Merchant Taylors, Haberdashers, Salters, Ironmongers, Vintners, and Clothworkers.

Somehow the Weavers, established in the 12th century, didn't make this inner circle, though it is the

**Robed Aldermen in the Historic Guildhall Witness the Silent Change of Mayors**

Mace-bearer bows low as he enacts his role in the age-old ceremony transferring civic authority from the old Lord Mayor to new. Not a word is spoken during most of the ceremony; hence its title, the Silent Change. Sir Edmund Stockdale, ending his one-year term, sits at the head of the table beside Sir Bernard Waley-Cohen, the present Lord Mayor. Mace, Sword of State, Crystal Sceptre, and other symbols of authority await Sir Bernard. This ceremony predates the Guildhall's 15th-century walls.

**Waving from his gilded coach,** Sir Bernard rides in the Lord Mayor's Show, a parade preceding the swearing-in ceremony. A reference in 1638 first describes the ceremony as the Lord Mayor's Show, a means of showing the new official to the citizens.

oldest guild. Other lesser ones include the Armourers and Brasiers, Bowyers, Farriers, Needlemakers, and Saddlers.

As you might suspect, most guilds no longer regulate their old trades. They exist as fraternal and charitable organizations of businessmen. Some, however, still perform services. The Goldsmiths, for example, conduct assays and grant a hallmark, and the Apothecaries give certificates to pharmacists and diplomas to physicians and midwives.

Many livery companies maintain baronial meeting halls, showplaces of the City. *The* Guildhall, however, always refers to the City's historic center of government, a magnificent place of assembly whose crypt and scarred walls survive from the early 15th century. Two disasters, London's Great Fire of 1666 and the Nazi blitz in 1940, badly damaged the old pile. But skilled hands each time faithfully—one could almost say with reverence—restored the roofless, gutted main chamber, called the Great Hall.

### Sheriffs' Office Dates From 7th Century

There, on the traditional Midsummer Day, I witnessed a ceremony that brought back the look, the sound, even the smell, of bygone centuries—a sheriffs' election (page 739).

Two sheriffs represent the City. Their office, mentioned in seventh-century documents, is 500 years older than that of the Lord Mayor. Gowned as splendidly as cardinals, they attend sessions at the Old Bailey, London's famous Central Criminal Court, and head the Lord Mayor's official retinue.

Have you ever attended a costume party in a business suit? Then you can imagine my sense of unease upon arrival at Guildhall.

Approaching the Gothic porch, I confronted a phalanx of guild beadles, each wearing a gown and a gold-laced, tricornered hat, each carrying a formidable mace. Behind the beadles the liverymen rallied, many in fur-trimmed robes, dignified specters from the past forming for a solemn procession.

I slipped warily between two mace-bearers and entered Great Hall. To record the interior setting, let me quote from my notebook:

> Here, in the solid reality of stone and oak, is the old English hall of everyone's fancy: great arches soaring to meet a high ceiling, galleries of intricately carved wood, stained-glass windows, the statuary of revered heroes—Nelson, Wellington, a stern Churchill . . . the picture lacks nothing.
>
> Normally the room's dominant color would be a subdued brown, but the reddest carpeting I have ever seen extends down the central aisle and flows up onto a large dais. "Sweet-smelling herbs," saffron in color, have been sprinkled on the carpet. This dates from times when the fragrance of herbs was thought to ward off the plague that might lurk in every public gathering.
>
> The fragrance once also masked the rather gamy odor of medieval crowds. A charming custom, now preserved by some of the best-scrubbed men in the realm.

Soon the liverymen, following their beadles and the masters of their companies, filed in and took seats on either side of the aisle.

*(Continued on page 750, after foldout)*

**Shaking festive streamers,** a young onlooker salutes the Lord Mayor's Show. This colorful spectacle traces its origin to the 13th century, when the City's mayors journeyed to Westminster (now a London borough) to receive the Crown's approval, as they still do.

**Artillery rumbles** past the Royal Courts of Justice (background) during a drizzle. Bank banner and British flags fly in honor of the Show.

**Geographic Artists Paint the City, Building by Building, in a Six-page Color FOLDOUT**

From specially made low-level aerial photographs, staff artist-architect Robert W. Nicholson transferred each structure to a perspective map. Then, in London, he checked every detail with City planning officials. Finally he and six other artists brought the scene to life with color.

The painting shows the City obliquely, as if seen from a plane south of the Thames. Perspective compresses the famed Square Mile, whose length, east to west, is roughly twice its depth.

"We are absolutely staggered," said City Planning Officer H. Anthony Mealand upon seeing the finished work, "that any organization should undertake and complete in such detail a map of this quality."

**For a print of the unique painting, 41 x 14 inches, uncreased and on heavy paper for framing, send $2.50 to Dept. 73, National Geographic Society, Washington 6, D. C.**



# CITY OF LONDON

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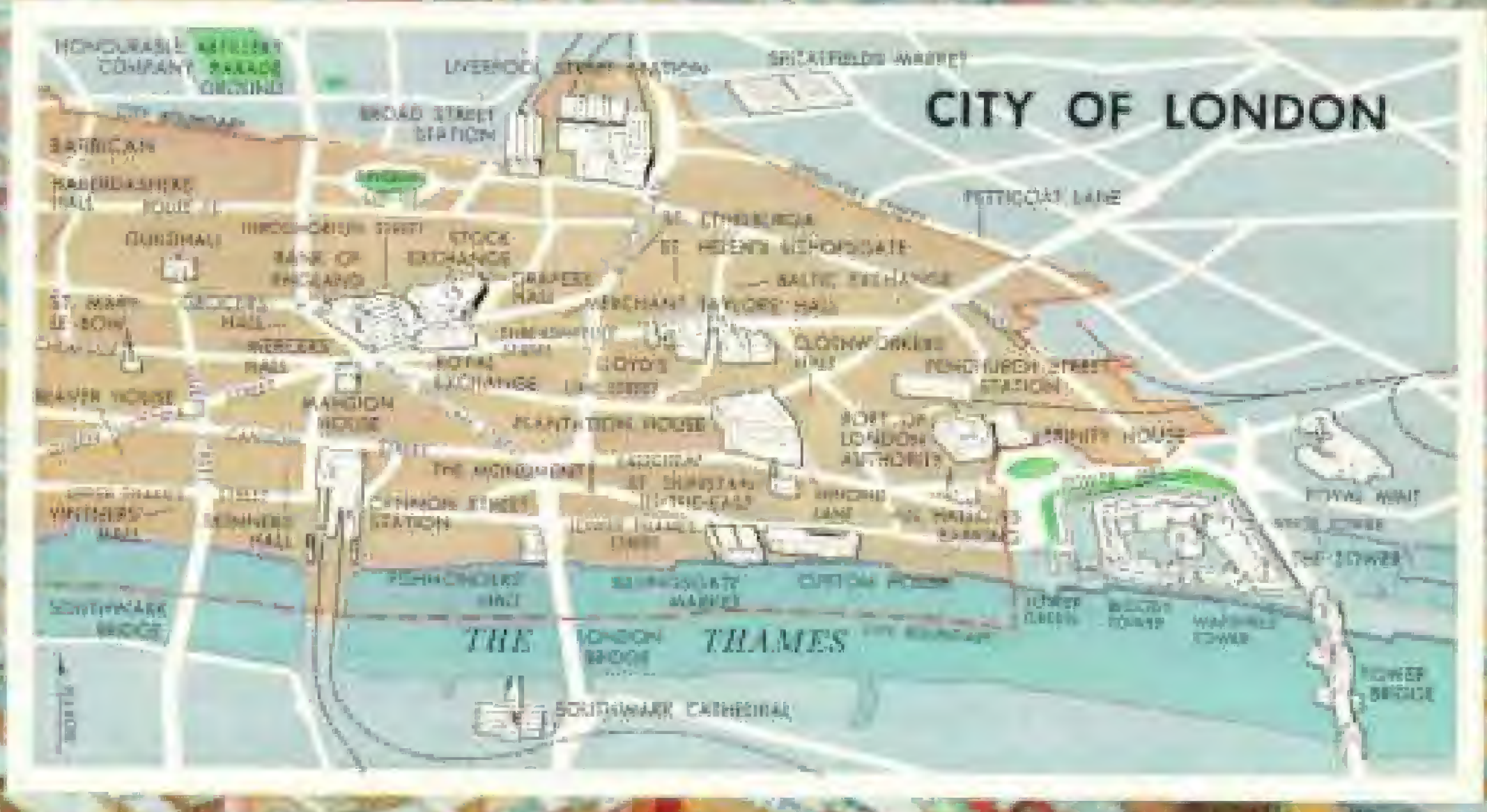
AVIANCA BUILDING
HOLBORN CIRCUS
SMITHFIELD MARKET
CHARTERHOUSE
ST. GILES CRIPPLEGATE
REMAINS OF ROMAN WALL
ST. BARTHOLOMEW THE GREAT
NEWGATE STREET
HOLBORN VIADUCT
GUILDHALL
ST. BARTHOLOMEW'S HOSPITAL
BANK OF ENGLAND EXTENSION
LINCOLN'S INN
ST. SEPULCHRE & HOLBORN
ST. JOHN'S GATE
HOUSE
PUBLIC RECORD OFFICE
U.S. OFFICE
OLD BAILEY
DAILY TELEGRAPH BUILDING
ROYAL COURTS OF JUSTICE
ST. CLEMENT DANES
AUSTRALIA HOUSE
INFORMATION CENTRE
ST. PAUL'S CATHEDRAL
TEMPLE BAR MEMORIAL
ST. BRIDE'S
CITY OF LONDON SCHOOL
MERMAID THEATRE
COURT OF ARMS
INDIA HOUSE
ST. MARY-LE-STRAND
KINGS COLLEGE
MIDDLE TEMPLE
INNER TEMPLE
UNILEVER HOUSE
BLACKFRIARS STATION
BLACKFRIARS BRIDGE
H.M.S. PRESIDENT
H.M.S. CHRYSANTHEMUM
THE
THAMES
SOMERSET HOUSE
H.M.S. DISCOVERY
H.M.S. WELLINGTON
WATERLOO BRIDGE
KINGSWAY
WATERLOO PLACE

*Painted by National Geographic Magazine staff artists*
*Robert W. Nicholson, Snežinka Stefanoff, B. H. Baker,*
*G. R. Emerson, J. W. Lothers, R. C. Magis, and W. R. Palmstrom*


NEW BRIDGE ST.
BLACKFRIARS BRIDGE
QUEEN VICTORIA STREET
ROUTE 11


MOORGATE
LONDON WALL
OLD BROAD ST
BISHOPSGATE
THREADNEEDLE ST
THROGMORTON ST
OLD JEWRY
GRESHAM ST
QUEEN VICTORIA ST
CANNON ST
QUEEN ST
DISTRICT LINE
CIRCLE LINE
METROPOLITAN LINE
HAMMERSMITH & CITY LINE
NORTHERN LINE
CENTRAL LINE
WATERLOO & CITY LINE
JUBILEE LINE
SOUTHWARK BRIDGE
LONDON BRIDGE




TOWER BRIDGE

After them came the main procession, the City fathers. When they entered, color rioted in the old hall.

Sheriffs' chaplains, undersheriffs, and various officers led the group. Then came the outgoing sheriffs in scarlet gowns, aldermen in robes of violet, and the Lord Mayor's two ceremonial attendants, the Swordbearer and the Mace-bearer. The former wore a tall fur hat and held aloft the Sword of State; his bewigged partner marched along with shouldered Mace. Behind them walked the Lord Mayor, clad in scarlet, his gold chain of office around his neck.

### Dignified Officers Carry Bouquets

The procession moved to the dais with the measured tread of a bridal party. Everyone carried a bouquet of flowers. This, too, is a very old custom. The fragrance of flowers once served the same purpose as the fragrance of herbs underfoot. I watched closely, expecting to see some dignified official sniff his bouquet. None did.

Not a hint of self-consciousness could be detected on any of the faces. These were Englishmen reasserting their age-old legacy of free assembly, renewing an almost mystic tie with their forefathers.

"Oyez, oyez, oyez!" called the Common Crier. "All you who are not liverymen depart this hall on pain of imprisonment."

I glanced uneasily at my colleagues of the British press, but none seemed to take the admonishment seriously. Relieved, I sniffed deeply, trying to catch the elusive perfume of the herbs.

A show of hands quickly determined the two sheriffs. Liverymen always know in advance who will be named—and who can afford to serve. Like the Lord Mayor, the sheriffs must spend large sums of their own money on entertainment.

Guildsmen also cast most of the ballots in the election of two venerable legislative bodies, the Court of Aldermen and the Court of Common Council. The Lord Mayor presides over both. He is the City's chief magistrate and admiral; in its behalf he may "crave audience with" the Queen at any time.* Traditionally he is the first to be told of a monarch's death, and he, in behalf of the Common Council, confers the Freedom of the City, a condition for holding office or guild membership.

Old London installed its first Lord Mayor, Henry Fitz Eylwin, in 1192. In the next century his successors began journeying to nearby Westminster to receive an official blessing from the monarch or Crown representatives. The procession grew into London's most famous spectacle, the Lord Mayor's Show, a rousing parade through the City to the Royal Courts of Justice in the Strand, where red-robed judges see the new executive sworn into office (page 743).

Sir Bernard Waley-Cohen, the present Lord Mayor, chose the theme "Meet the Navy of Today" for his show last November 12. His choice proved appropriate. The City was awash in a sea of rain during the pageant.

I witnessed it from an open gallery atop the Courts of Justice. Below me bands blared, Marines and other units strode by in sodden but impeccable ranks, and throngs, six feet deep along the curbs, cheered spiritedly from beneath massed umbrellas.

Occasionally a huge float rumbled past. On one, half a million fresh flowers formed the naval crown and fouled anchor insignia of the Board of Admiralty. Atop it, drenched but smiling, rode Britannia, a 22-year-old Navy enlisted woman. Other floats bore large models of H.M.S. *Dreadnought*, Britain's first nuclear submarine, and H.M.S. *Bulwark*, a commando carrier.

Last of all came Sir Bernard, riding in a massive coach drawn by six horses. Fresh gilt and red paint had been lavishly applied to the coach, and it blazed like a tropical sunset (page 741). Dignitaries hovered about Sir Bernard like courtiers around a king as he walked into the Courts of Justice to become the City's 633d elected Lord Mayor.

### Six-foot Bobbies Guard the City

The municipal government headed by the Lord Mayor still works very well. Businessmen run it as a public trust. They bar political parties, and corruption is unknown.

In addition to its police, who must be strapping six-footers, the City boasts its own magistrates' courts and health and engineering departments. It maintains four spans over the Thames, including historic London Bridge, and large recreational areas outside the City, such as Epping Forest.

This year the civic budget will exceed £11,000,000 ($30,800,000). Most of this money goes to the neighboring London County

*See "In the London of the New Queen," by H. V. Morton, NATIONAL GEOGRAPHIC, September, 1953.

### As Exposes a Gold Bar, Sawdust Packing Flies

As a powerful financial center, the City of London looks for leadership to that rich, conservative dowager, the Old Lady of Threadneedle Street, the Bank of England. Founded in 1694, the Old Lady is Britain's national bank.

A workman in the bullion receiving room splits a wooden box containing a gold bar worth $14,000. The author watched him open many cases with unerring strokes. None of the bars received a scratch.

**Counterbalance scale,** 77 years old and accurate to the 40th part of an ounce, weighs a gold bar. A. C. G. Mason adds metal weights to the scale, which employees affectionately call the Lord High Chancellor. For finer measurements he would use another old scale, accurate to the 1,000th part of an ounce. Gold worth millions is stacked in the background. Bars vary in weight from 25 to 30 pounds.

Council, which governs a large area of London and provides fire protection, sewage disposal, and other services to the Square Mile.

German bombs and rockets devastated one-third of the City's acreage in World War II. No other part of London suffered a more grievous agony. But the Common Council, principal legislative body, was planning reconstruction before the last bomb fell.

Public and private sources have poured an estimated £100,000,000 ($280,000,000) into repair and rebuilding. Modern structures, including towers of gleaming glass, mingle with surviving buildings of traditional Portland stone. Londoners have always mixed their architecture with good effect, and the "new" City is impressively handsome.

Some scars remain, principally within a 35-acre area along the northern boundary. There an attractive city within a city, containing schools, a theater, shops, and 2,150 apartments, is planned.

The City's skill at interchanging two faces, old and new, is perhaps its greatest charm. The Guildhall can be a place of modern assembly one day and on the next a glittering reception hall echoing to the drumbeat of marching pikemen and the peal of silver trumpets.

Handsomely engraved invitations bade me appear at civic tributes to the President of Argentina and the King and Queen of Thailand. On each occasion, while trumpets flourished, the Lord Mayor and his lady walked their guests through an applauding throng and led them to gilded thrones in the library off Great Hall, where greetings were read in behalf of all London.

A crescent of pikemen in scarlet jackets, pantaloons, and burnished breastplates stood guard over the thrones. They belonged to the Honourable Artillery Company, a Territorial Army unit with many historic ties to the City. Its pikemen once served as a virtual private bodyguard for the Lord Mayor; today they

MURALS BY W. T. WILSON

## Lloyd's Committee Governs an Insurance Empire That Accepts Almost Any Risk

World's best known insurance organization, Lloyd's of London takes its name from Edward Lloyd, proprietor of a 17th-century coffeehouse where underwriters created a society of independent but associated members, a form Lloyd's 5,000 underwriters retain today. They pioneered modern marine insurance, contributing greatly to the growth of international commerce.

**Man-made lakes,** an expanse of 230 acres beside the Thames, comprise the world's largest area of impounded dock water. Ocean-going freighters, many insured by Lloyd's, crowd these wharves at London's King George V, Royal Albert, and Royal Victoria Docks. Ships enter the sheltered anchorage through locks adjoining the river. Berths can accommodate 58 vessels.

Though outside the City, the docks are operated by a powerful City institution, the Port of London Authority.

## Raw Gum Samples Line a Glass Counter in Mincing Lane

Hale & Son, brokers, established in 1780, deals in exotic commodities in the old lane where many wholesale houses got their start in the spice trade.

Charles W. Gunn, a partner in the firm, displays raw shellac (upper left), used in varnishes; Kordofan gum arabic (upper right), an ingredient in adhesives; industrial gum tragacanth (lower left), used in various textile processes; and fine white tragacanth (lower right), which goes into pharmaceuticals, mayonnaise, and cheese.

turn out at his bidding to brighten civic ceremonies (page 761).

Again the clarion call, and a slow processional ushered the heads of state into Great Hall, where the cream of City society rose from banquet tables and bowed. Two hours, three toasts, and six courses later, the Lord Mayor bade his guests of honor farewell at the entrance to the Guildhall.

### Lord Mayor Makes 1,000 Speeches

Mayors have always been selected with an eye to stamina as well as business stature. Sir Edmund Stockdale, who held the office last year, told me the Lord Mayor's schedule may be the busiest in the world.

"He has well over 2,000 appointments and engagements in his year of office," Sir Edmund confided, "and he opens his mouth to say a few words, or to make a speech, more than 1,000 times. Banquets? He dines with each of the 82 livery companies, with 19 ward clubs, and with a great number of institutions in the City. Also, he attends over 30 evening receptions in the various London boroughs."

From his official residence, Mansion House, the Lord Mayor looks out upon the heart of the City. Across a busy intersection lies the fortresslike Bank of England; near by stand the Stock Exchange, Lloyd's, the "Big Five" among the public banks, and other powerful institutions. They, too, boast many traditions. The oldest, the most scrupulously observed, is one they all share, summed up by the Stock Exchange's Latin motto: *Dictum Meum Pactum*, "My Word Is My Bond."

Stock Exchange members meet daily on their floor to buy and sell immensely valuable holdings. A signature or a receipt? They aren't needed. A man's word is good enough. Let the paper work catch up later.

Imagine yourself, for a moment, amidst the gray-suited throngs in front of Mansion House. That chap with the bowler hat and umbrella is a Lloyd's underwriter. Yesterday, at his home, he took a telephone call and agreed to insure a ship for £30,000. This morning the ship caught fire. But he will pay—he gave his word.

That tall man in the silk hat called this morning on three of his banker friends. A pressing deal required immediate funds—and he got them immediately, on a handshake. Not until later will he post collateral.

See the distinguished-looking man hailing a cab? He just left the Baltic Exchange. There he engaged a ship to transport lumber out of Vancouver. The freighter will be days at sea before contracts are drawn up.

Walk the streets of the City, and, unknowing, you will encounter such men. They believe a man's best asset is integrity. Anyone who breaks his word has "blotted his copybook" or "put up a black." Faces turn from such a man; he may even leave England.

"This spirit—it's a difficult thing to de-

**Favorite Old Haunt of Famous Authors, the Cheshire Cheese Lives On**

"There is nothing which has yet been contrived by man," said Dr. Samuel Johnson, the 18th-century lexicographer, "by which so much happiness is produced as by a good tavern or inn." Perhaps he had in mind Ye Olde Cheshire Cheese, a pub off Fleet Street. Johnson, who lived near by, may have dined there often, though biographer Boswell fails to record a visit. Charles Dickens was a frequent patron; the management preserves several checks he cashed. These diners await thick slices of roast beef. A portrait of Johnson hangs on the wall above his "favorite seat."



fine," said F. L. Payne of the London Chamber of Commerce. "A City man depends upon personal contacts and the people he knows. If you let a chap down, you don't get any more business."

I once asked the Lord Mayor himself, Sir Bernard Waley-Cohen, if the tempo of modern life might not force a change in the City's way of doing business.

"The greater the pressures, the greater the need for relying upon one's word," said Sir Bernard, a Lloyd's underwriter. "In the rush of modern business, there is often no time for solicitors and contracts. If a man isn't good for his word, the stigma soon gets around."

The interdependence which results from the code gives the City's financial institutions a curiously similar atmosphere. I often felt I was calling at various branches of the same club, different in decor but one in spirit.

### The "Old Lady" Heads the Club

Traditionally this men's club looks to a feminine leader, the Old Lady of Threadneedle Street. A cartoon of 1797 depicted the Bank of England as a rich dowager sitting atop a money box, and the name stuck.

Arrowed street signs, pointing toward Threadneedle Street, say "To the Bank." Englishmen know this can only refer to the Bank of England, banker to other banks, and banker to the Government since 1694, when William III granted it a charter to raise funds for the war against Louis XIV of France.

A detachment from the Brigade of Guards still marches through the City nightly to take up posts inside the Bank, a custom that began during the anti-Catholic Gordon Riots of 1780. Bank messengers wear pink tail coats, scarlet vests, and top hats, believed to be the livery prescribed by the Bank's first Governor, Sir John Houblon, for his servants.

Until its nationalization in 1946, the Bank of England administered fiscal matters more by force of tradition than by force of law. Though privately owned, it controlled the banking system's interest rates, ordained other fiscal policy, and worked smoothly with the Chancellor of the Exchequer.

In a sense, this system still prevails. The Chancellor, after consulting with Bank officials, issues requests, not orders, and the Bank requests compliance by others.

"We call it the 'Old Boy System,'" I was told by the manager of one of the large public banks. "There is no deviation from it at all. Other people may call it 'muddling through.' To us it's flexible organization."

On June 30 the grande dame of Threadneedle Street is scheduled to install a new Governor, George Rowland Stanley Baring, 42, third Earl of Cromer. He will be the youngest Bank of England boss in nearly 200 years. But all those hoary traditions could not be in safer hands. Members of the Baring family have been merchant bankers in the City for two centuries.

### Tradition Bends to Changing World

When named to his new job, Lord Cromer was Economic Minister at the British Embassy in Washington, D. C., and his country's chief representative to the International Monetary Fund. Before his departure for London, he granted me an interview—a minor break with Bank of England precedent.

"Some people think adherence to tradition means an inability to change, an ossified attitude," said Lord Cromer. "But it doesn't work that way in the City. The merchant banks, for example, made London a great international banking center, and they have always had to adapt themselves to changing circumstances. Their ways are traditional but flexible, and the essence of the City is its flexibility."

Built of heavy stone, its first story a windowless wall, the Bank of England (opposite) looks almost as formidable as the Tower of London. In its subbasement I saw generators capable of supplying electricity to a city of 25,000 and pumps that drew water from nine artesian wells. Officials say the Bank could hold out under siege for three months.

In another inner sanctum, the bullion working vault, I walked among stacks of gold bars valued at £20,000,000 ($56,000,000). Most of the bars came from South Africa (page 751). While I hefted one, my guide dismissed the lot as "petty cash which will be sold in a few days."

One block from the home of the Old Lady lies Throgmorton Street, site of the Stock Exchange. Enter a narrow door, brave two flights of steps to the visitors' gallery, and pretty girl guides will show you Britain's financial lions in their den: the Stock Exchange's trading floor.

From the glass gallery you look down upon seeming chaos. In a cavernous room some 2,500 men mill about or gather in chattering groups. The scene's order and purpose be-


**Mother of Banks, the Bank of England (left) Stands as Solid as a Fortress**

In World War II a bomb fell near the building, whose columned first story is a windowless wall, and part of the street collapsed into Bank Station, a subway stop. A double-deck bus dominates midday traffic. In rush hours cars crawl bumper to bumper. Royal Exchange faces the square; three buildings of that name have occupied the site.

come apparent only with explanation by the girl guides, all in tailored uniforms.

Some of the men are brokers, agents of the public; others are jobbers, who buy and sell stock, but deal only with brokers. Jobbers specialize in certain securities and have their traditional gathering places, or "pitches," on the floor. An official pointed out some of these unmarked rallying points to me: "Oil," "Mining," "Gilt-edged" (meaning Government securities), and, off in a corner, "Americans," reserved for United States stocks.

A broker, approaching a jobber, usually does not reveal whether he wants to buy or sell. He may ask, "What's the price of General Amalgamated?" The jobber replies with two prices: he will buy at the first and sell at the second. If the broker doesn't like the figures, he may request better ones or try another man. Traditionally each deal is called a "bargain," and each man merely jots it down in a notebook. Clerks record sales the next day.

This system is unique among stock exchanges, and I asked officials if I could go on the floor to observe it. They smiled broadly and eyed me with the speculative look of men watching a lamb offer himself for sacrifice.

"We can't always predict the reaction of members to a visitor," one of the officials explained to me. "They usually spot him, and someone may cry, 'Fourteen hundred!' You see, years ago the Exchange had precisely 1,399 members. When an outsider appeared

**Rubble from the blast** of a German land mine parachuted in 1940 litters the Elizabethan great hall of Middle Temple, one of London's famous law schools known as Inns of Court.

## Great Hall of Middle Temple, a Cradle of English Common Law, Fetes Barristers and Their Guests

Middle Temple and Inner Temple have taught law to fledgling barristers for more than 600 years. Precincts of the two Temples, reached by narrow lanes off Fleet Street, lie within the City but remain an independent domain by ancient edict of the Crown.

A private guest night is held twice each school term in Middle Temple's magnificent great hall, completed in 1576. Queen Elizabeth I may have witnessed a performance here of Shakespeare's *Twelfth Night*. She donated one of the tables on the dais, here occupied by the Masters of the Bench, who sit beneath a portrait of Charles I. Plaques on the wall honor readers, or instructors. Armorial bearings of prominent Middle Templars, among them Sir Walter Raleigh, decorate windows.

German incendiary bombs could not ignite the ceiling's carved oaken beams. Typical of Elizabethan architecture, they are among the finest in England.

The view looks toward the hall's west end, which the blitz left undamaged.

on the floor, he became number 1,400, and up went the cry.

"Recently we let a photographer on the floor, and 500 men began following him about. I think he wore a sports shirt. On the other hand, they were delighted with another visitor, Sir Donald Bradman, a famous Australian cricket player. Members set up a cricket pitch on the floor, with wadded paper for a ball and a newspaper for a bat.

"But you might even pass as a member," the official added graciously. "You'll get by."

Thus cheered, I ventured on the floor with Richard Wheeler, general superintendent.

"In case of emergency," I confided to Mr. Wheeler, "I will retreat to 'Americans.'"

Members of the Exchange adhere strictly to the customary garb of City men: dark suits, sober ties, and black shoes, sometimes referred to as "the uniform." I soon realized that I was the only man on the floor with brown shoes. Despite my breach of the uniform, I attracted few stares and no outcries.

As we strolled around, Mr. Wheeler told me the Exchange has 3,500 members who deal in some 10,000 securities. The Exchange itself safeguards the public interest by policing new stock issues.

Another day I revisited the floor with a partner in a firm of jobbers. Business proved brisk—so brisk that a broker, mistaking me for a jobber, asked prices in an insurance stock. (I was wearing black shoes.)

Lord Ritchie of Dundee, Chairman of the Exchange, told me that disputes among members rarely involve a violation of the "My Word Is My Bond" code.

"I can't recall a dispute of that kind in the 14 years I have been on the Council of the Exchange," he said. "Those that we do get are technical. Few disputes reach the Council. Most are settled by the parties themselves."

### Lloyd's Started in a Coffeehouse

Like members of the Stock Exchange, Lloyd's of London underwriters gathered in the coffeehouses of 17th-century London to conduct their business. Eventually the underwriters settled in a favorite coffeehouse, that of Edward Lloyd, whose name became indelibly associated with insurance ventures.

Today Lloyd's counts some 5,000 underwriting members. They comprise a society of associates, not a company (page 754). Like jobbers, they do not deal directly with the public. More than 200 authorized brokerage firms bring them insurance proposals from just about every corner of the globe.

Lloyd's has a reputation for accepting risks considered too chancy by others. For example, it issued NATIONAL GEOGRAPHIC a policy insuring good photographic weather during a helicopter flight above the Thames. An underwriter, in figuring the premium, gave us odds of about 6 to 1 that the light would be good enough for picture taking. Anyone familiar with the vagaries of London weather will appreciate the risk. But the sun, as if by order, slid from behind clouds whenever photographer Bill Vaughn needed it.

### 1,400 Underwriters Work in One Room

Other Lloyd's risks verge on the bizarre. An American model, appropriately called "Treasure Chest," once insured her more-than-ample bosom. A policy protects the famed beard of Commander Whitehead, an advertising personality. Lloyd's insured the late publisher, Bernarr MacFadden, when he parachuted successfully from an airplane at the age of 83.

Such policies, of course, comprise only a minute fraction of the day-to-day business. Lloyd's has long been pre-eminent in marine insurance, and it is famed throughout the world for its fire, compensation, public liability, automotive, and aircraft policies.

In 1957 the society moved into a handsome new building on Lime Street. Its heart is "the Room," a huge, black-and-white marble hall where brokers scurry to and fro between desks seating more than 1,400 underwriters.

Seeking a policy, a broker writes details on a slip. He then bargains with various underwriters for the best possible terms. Anyone accepting part of the risk traditionally says, "I'll have a go at it," and scrawls the amount of his liability and his initials on the slip. Later a policy is issued, often bearing the names of hundreds of underwriters.

That famous old talisman, the Lutine Bell, dominates the Room from a central place of honor. The bell was salvaged in 1859 from the wreck of H.M.S. *Lutine*, which sank 60 years earlier off the Netherlands. Tradition says it must be rung once for an announcement of bad news, twice for good news.

The Stock Exchange and Lloyd's are by far the best known of the City's many marts. Others, such as the Rubber, Wool, and Metal Exchanges, seem enigmatic to all but their intimates. Traders bidding at an auction speak a jargon all their own. Usually you look in vain for evidence of what's being sold. The commodities may lie in warehouses miles away or in the holds of ships.

**Pageantry in the streets.** Pikemen of the Honourable Artillery Company march toward the Guildhall in scarlet uniforms designed in 1640. Henry VIII chartered the original unit in 1537.

**Bemedaled pikeman,** at headquarters, gets aid in adjusting his breastplate.

**Lace signifies** officer rank. Members form the Lord Mayor's guard of honor.

### Vintners Reward Young Students With a Title: Master of Wine

Guilds, the oldest dating from the 12th century, traditionally play a dominant role in City affairs. There are 82 of these associations, and the Worshipful Company of Vintners ranks 11th in the strict order of precedence assigned to them.

Here Alderman J. L. P. Denny gives a handshake and a Master of Wine certificate to a student. Other candidates (right) await their turn in Vintners' Hall. In all England there are only 30 Masters, trained for executive positions in the wine industry. When the Great Fire leveled London in 1666, this chamber, though damaged, survived the holocaust.

To capture this and other difficult interior views, the National Geographic Society sent to England a lighting specialist and 2,950 pounds of stroboscopic equipment.

Each year more than 57,000,000 tons of merchandise move in and out of the Port of London, and much of it is bought and sold in City markets. All of it comes under the control of a City institution, the Port of London Authority (page 752).

### Birds' Nests and Dragon's Blood

"There are no big merchant exchanges for birds' nests, beaver glands, ambergris . . . but the old firms of Mincing Lane still do a brisk wholesale business in these and other strange commodities (page 754). Graded samples line many counters, and the smell of lands over the far horizon hangs heavy on the air.

Hale & Son, established in 1780, is one of the deans of Mincing Lane. There I felt and sniffed a score of samples. Birds' nests, I knew, enriched Chinese soup: dark ambergris and russet beaver glands contributed to perfume. Other samples proved completely strange: red "dragon's blood," a resin from rattan cane, used to control the adhesion of printing inks . . . gum tragacanth, an edible gum from Iran . . . rhino horn, valued by the Chinese as an aphrodisiac . . . senna pods from the Sudan, used in laxatives.

Though the City buys and sells hundreds of different items, very little is actually made or produced there except newspapers, the Fleet Street area's vital export.

Geographically, Britain is small, so London's newspapers are national publications. You won't find the word "London" in their names. Many of them boast huge circulations. A Sunday paper, *News of the World*, distributes more than 6,500,000 copies, and the *Mirror*, largest of the dailies, sells 4,600,000.

Fleet Street has long recognized two schools of thought about the intellectual fare offered readers. In one school you find such papers as the famous old *Times* and the *Telegraph*, conservative, sober, and thorough in news coverage. The *Mirror*, *Sketch*, and *Express*, typical dailies of the opposite school, stress features, pictures, and spice.

Certainly the City's spokesman is the venerable *Times*, respectfully known as the Thunderer. Abraham Lincoln once described this newspaper as "one of the greatest powers

AN OIL PAINTING BY W. D. STEVENS AND NATIONAL GEOGRAPHIC PHOTOGRAPHER JOHN E. FLETCHER © N.G.S.

in the world . . . except perhaps the Mississippi." Its circulation, 260,000, may be modest, but its influence is great.

First published in 1785, *The Times* is remodeling its historic quarters in Printing House Square. But no one, I was assured, intends to remodel the first page of the paper itself, a solid mass of classified advertising. It contains some of England's favorite reading, such as the personal ads, known to Sherlock Holmes as "the agony column." Inside pages deal with the news. There are few pictures, but the paper has always prided itself on good typography. It developed the first mechanical press, the forerunner of the modern rotary press, and the first cylindrical stereotypes, metal castings of a page of type.

Traditionally the editor of *The Times* has a passion for anonymity. Though his identity is no secret, he is never photographed, never quoted, and "speaks only in *The Times*"—without a byline. Fleet Street still talks about the obituary the paper gave one of its great editors, Thomas Barnes—two lines among the paid obituary notices.

Unfortunately, I was unaware of these time-hallowed restrictions when I called upon Sir William John Haley, the present editor.



**Billingsgate, the City's historic fish market,** lent its name to racy and vituperative language. In the gray of early morning, porters crowd Lower Thames Street. Britannia with trident sits atop the market at left. Column at right commemorates the Great Fire.

The silence of the abyss, the chill of the arctic waste, entered the room when I began taking notes on our conversation. Then a few words set the matter straight. My notebook disappeared, and Sir William, who receives many foreign journalists, talked for half an hour with charming wit and quick erudition.

What did we discuss? Though they put me on the old headsman's block at the Tower of London, I shall refuse to tell.

Newspapers are by no means Fleet Street's only magnet for visitors. The Street of Ink is a rewarding locale for those who tour afoot, as I did, seeking out City landmarks.

The City, in fact, begins in the west on Fleet Street, at historic Temple Bar. For unknown centuries a real bar or gateway across the road marked the western boundary, and the last one was not removed until 1878. In its place now stands a sooty and spectacularly ugly statue of a winged dragon.

### Felons' Heads Decorated Gate

Tradition demands that Queen Elizabeth, when she pays a state visit to the City, pause at this statue to receive the Lord Mayor. When old "Tempull Barre" was a stout gate, Elizabeth I accepted the City Sword as she journeyed to St. Paul's to give thanks for the destruction of the Spanish Armada. Similarly, Queen Anne stopped at the gate en route to St. Paul's after the Battle of Blenheim. Even the dour Cromwell dutifully paused there when he went to the City to dine in state in 1649.

As late as the 18th century, heads of executed criminals adorned spikes atop the gate. Londoners wishing to scrutinize them rented spyglasses for ha'penny a look.

Near Temple Bar two inconspicuous gateways break Fleet Street's solid line of buildings. From them narrow lanes lead to the hidden precincts of Inner Temple and Middle Temple, schools of law for more than 600 years. With Gray's Inn and Lincoln's Inn, which lie outside the City, they comprise England's famous Inns of Court, comparable to the colleges of a great legal university.

The two Temples preside over an independent domain established by royal charter. In the 12th century their property belonged to the Knights Templars. Lawyers later became tenants, and James I granted them the land and buildings in 1608 for a rental of £10 a year from each Temple.

England recognizes two branches of the legal profession: barristers, who plead cases in upper courts, and solicitors, who prepare briefs and transact most of the day-to-day duties of a law office. The Inns of Court train barristers only; they may be "called to the bar" after three years of study, but their education continues while "deviling" as apprentices to established barristers.

Inner Temple and Middle Temple adjoin in a labyrinth of courts, gardens, halls, libraries, and legal offices. But students of the two schools know only one common meeting ground, Temple Church, whose round sanctuary dates from 1185. Members of the Inner Temple always sit on the right side of the church, members of the Middle Temple on the left.

An ancient rivalry exists between the two groups. R. S. Flynn, Sub-Treasurer of the Inner Temple, summed it up with a jovial, "There is an armed neutrality." He pointed out, however, that every seven years the groups meet for an "amity dinner."

Middle Temple Hall, completed in 1573, suffered blitz damage, but today it looks just as it did when Shakespeare's *Twelfth Night* was performed there during Queen Elizabeth I's reign (pages 758-9). The boards of the dais, where the Masters of the Bench sit, were trod by Shakespeare's players. The first Elizabeth donated one of the tables on the dais; a second may have been made from timbers of Sir

**Sweat and ice water** stream down the face of a Billingsgate porter who has just lifted a crate of iced fish from his hard-as-rock, thick-brimmed, leather hat. Fathers hand down the old headgear to sons.

BY PHOTOGRAPHY BY W. C. [illegible]


Francis Drake's *Golden Hind*.

Students long have been jealous guardians of the Temples' independence, and City officials even now can enter the legal precincts only by invitation. In 1678, when the Lord Mayor himself responded to a fire alarm at Inner Temple, fledgling barristers routed the Swordbearer, compelled the Lord Mayor to take refuge in a pub, and doused the fire with ale and beer.

Middle Temple, in particular, can point to famous literary figures among its membership, including Henry Fielding, William Congreve, Charles Dickens, and William Makepeace Thackeray. James Boswell was a member of Inner Temple. Charles Lamb, Oliver Goldsmith, and Dr. Samuel Johnson all had lodgings among the barristers, though they did not belong to either legal society.

Johnson loved London and knew the City intimately. His biographer, the devoted Boswell, quotes him as saying: "Sir, if you wish to have a just notion of the magnitude of this city, you must not be satisfied with seeing its great streets and squares, but must survey the innumerable little lanes and courts."

One of the "innumerable" little courts off Fleet Street is

**Fleet Street** has such a long association with British journalism that it is often called the Street of Ink. Offices of newspapers, magazines, and publishing firms line the thoroughfare, which takes its name from the Fleet Ditch, once a malodorous open stream, now an underground sewer.

This view from the *Daily Telegraph* building looks east toward Ludgate Hill and the dome of St. Paul's Cathedral

Johnson's Court. Though not named for the great lexicographer, it leads to tiny Gough Square and the 17th-century brick house, now a private museum, where Johnson wrote his two-volume dictionary. For two shillings the housekeeper will show you through and point out the doctor's walking stick, his teaspoons and china, and other mementos.

Near by, tucked away in Wine Office Court, you will find one of London's most picturesque pubs, Ye Olde Cheshire Cheese, occupying the site of a 13th-century monastery (page 755). Boswell doesn't record any visits to the Cheshire Cheese by Johnson, but the eminent doctor allegedly dined there often.* I sat in his "favorite seat" at luncheon. Above me a grim-looking Johnson gazed down from a framed canvas. He seemed to eye me, in particular, with sour disapproval.

It was midafternoon, and only a few patrons loitered over their pints of beer in the dining room usually reserved for "regulars." The looks this intruder got when he ventured into this upstairs sanctum brought to mind Dr. Johnson's portrait. I examined a first edition of his dictionary, displayed in a glass case, and then retreated.

### City Drops Old Ban on Theaters

Southeast of Fleet Street, on the Thames waterfront, London's most unusual theater occupies a remodeled warehouse. Called the Mermaid, it is the only playhouse permitted in the City in more than 300 years.

"Historically, City fathers were hostile to the theater," said actor Bernard Miles, the Mermaid's founder. "They complained that theaters took apprentices from their work and spread the plague."

The old ban continued until the coronation year 1953, when Miles was permitted to open an Elizabethan theater in the quadrangle of the Royal Exchange, opposite the Bank of England. This venture proved so successful that the City gave him use of the waterfront site. Business and private interests contributed £70,000 ($196,000) for the remodeling.

Miles's office atop the theater looks out upon the barge-laden Thames. While we talked, the actor fingered a Roman wine flagon found by theater workmen in the riverbank's ooze. A pet parrot, Jack Sprat, perched on his shoulder and squawked raucously.

"This warehouse was hit by a bomb in 1940, and for years there was only a shell," Miles said. "We threw a very simple arched roof over it, put in seats, and opened in May, 1959. Eight Lord Mayors have given our venture their blessing. The right friends in the right quarter—it means so much in England."

The Fleet Street area ends at the foot of Ludgate Hill. Atop the hill St. Paul's Cathedral lifts its shapely dome and gilded cross toward the sky (opposite). It occupies a site where prayer and worship have been offered to God for more than 1,300 years.

Officially the church is London Cathedral, but no one calls it that. Christopher Wren, its architect, began construction in 1675, and his son put the last stone in place in 1708. Wren's tomb lies in the crypt, surmounted by a plaque which says in Latin, "If you seek his monument, look around you." Near by are the massive tombs of Lord Nelson and the Duke of Wellington.

St. Paul's alone would have won Wren fame, but he designed 52 other churches in the City. His opportunity came when the Great Fire swept through London in 1666, destroying more than 13,000 houses, 87 parish churches, and medieval St. Paul's.

During the agony of the German blitz, Londoners took heart from the sight of St. Paul's unscathed dome, rising serene amidst devastation. But, beneath the dome, the cathedral suffered two bomb hits, and one destroyed the high altar. The British rebuilt it and added an American Memorial Chapel (page 769). General Eisenhower, while NATO Commander, presented a roll of honor containing names of 28,000 United States service men and women who died during operations from the United Kingdom.

### College of Arms Keeps Family Trees

From the exterior gallery of St. Paul's dome, 283 feet above Ludgate Hill, you can pick out other landmarks: to the south, the College of Arms, "keeper of the blood," or coats of arms, of British families; to the north, grim Old Bailey court and famous Smithfield, the wholesale meat market.

Though the age of chivalry is long past, the College of Arms still does a brisk business in grants of armorial bearings. Each year, on the average, several hundred British subjects and many Americans receive such grants on documentary proof of descent from families entitled to display arms. The college,

*See "Landmarks of Literary England," by Leo A. Borah, National Geographic, September, 1955.

**Choirboys attract an audience** during rehearsal in St. Paul's Cathedral, the masterpiece of architect Sir Christopher Wren, who began its construction in 1675. His body lies in a crypt near the tombs of Nelson and Wellington.

**American Memorial Chapel** lies behind St. Paul's high altar. Mr. and Mrs. Gordon Kidjoo and their son Kevin, of Zionsville, Pennsylvania, examine a book naming 28,000 Americans killed in World War II operations from the United Kingdom.

chartered in 1483, has records of thousands of pedigrees, including many a yeoman family as well as nobility and gentry.

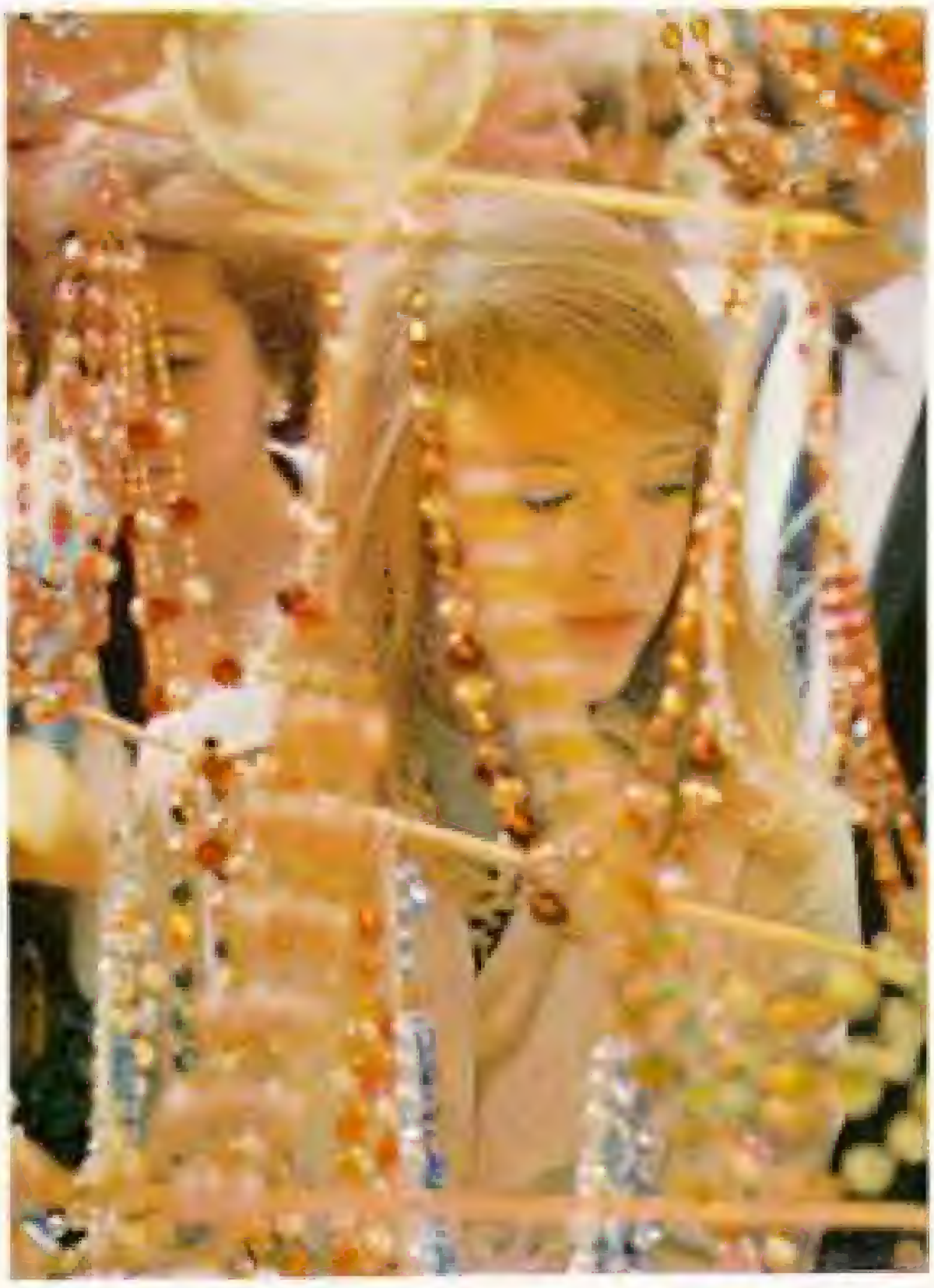
A handsome, late 17th-century brick building houses the college and its 13 Kings-of-Arms, Heralds, and Pursuivants, who are part of the royal household and attendants of the Queen on great ceremonial occasions. Their decisions on coats of arms carry the force of law, backed up by the Court of Chivalry. It has been convened only once since 1732, but it still has power to punish unauthorized use of arms.

Mr. J. P. Brooke-Little, bearer of the romantic title Bluemantle Pursuivant, told me that the college gets a constant flow of American visitors. Most are more interested in tracing family trees than in seeking arms.

"Our records go back to about 1264, the date of the earliest existing roll of arms, but the bulk start around 1480," he said. "About that time, following the Wars of the Roses, the Tudors ennobled all sorts of people."

Atop the Old Bailey a statue of Justice holds a sword in one hand and a scales in the other, but she lacks the customary blindfold. So Londoners say, "Justice is not blind at the Old Bailey." It is England's best known court, with jurisdiction over major crimes committed in metropolitan London.

The Lord Mayor opens each session. He is the court's Senior Commissioner, but he never presides at trials. On the first two days of the court's summer sessions, attendants



**Baubles, Bangles, and Beads Attract a Shopper in Petticoat Lane**

London's venerable street market takes its name from an old tale. So clever are Petticoat Lane's vendors, it goes, that they can whisk away a woman's petticoat without her knowing it—and then sell it back to her as a new one! Pitchmen, manning curbside stalls, hawk food, china, toys, souvenirs, even ladies' hats.

**Street band,** seeking coins from the jostling crowd, blares hymns and spirited marches in Middlesex Street, true name of Petticoat Lane.

strew herbs on the bench and the prisoner's dock, as at Guildhall elections, and the judge carries a nosegay of flowers.

The prisoner, when not in the witness box, sits in a dock in the courtroom's center. Bewigged counsel gather at benches, the jury sits along a wall, and the crimson-gowned judge, on a dais, faces the accused.

The Old Bailey takes its name from the street on which it stands. In turn, this street probably was named for the *ballium*, an areaway or wall in the City's defenses. Dread Newgate Prison, mentioned several times in Dickens's works, occupied the site until 1902. Executions used to be held outside its walls, and a rapt audience always attended.

Smithfield, too, was once a place for public executions. The name is a corruption of "Smoothfield," and old records describe the area as an open, grassy plain. At a spot in front of the present-day meat markets, many religious martyrs died in flames. Queen Mary I, best known as Bloody Mary, ordered 200 persons burned there at the stake during a four-year period ending in 1558.

A clerk to Archbishop Thomas à Becket, one William Fitzstephen, wrote in 1174 that Smithfield was "a celebrated rendezvous" for the sale of livestock. By 1400 the City had established tolls, or customs, for the market.

No livestock is sold there today. London Central Markets, known throughout England as Smithfield, deal only in dressed meat, more than 400,000 tons each year.



ENGLISHMAN (BELOW) AND HIS DOPPELGÄNGER BY W. D. HAMILTON © N.G.S.

The buildings cover about ten acres. I walked through red forests of carcasses slung from hooks, occasionally side-stepping wagonloads of meat pushed by men who shouted "Way-o! Way-o!" in the aisles and "Corner! Corner!" as they approached a turn.

Smithfield is owned by the City Corporation, as is Billingsgate Market. If you pass within a few blocks of Billingsgate, your nose will tell you what's sold there—fish. They have been marketed on or near the present riverfront site for 1,000 years.

There is an old saying, "If it's in the sea, it's in Billingsgate." Iced and crated, fish and shell creatures travel from British ports by train and truck, arriving before dawn. The day's trade begins at 6 a.m.; most of the trading is completed by 10 a.m.

The present Billingsgate, opened in 1876, is huge, and I threaded my way through row after row of stands displaying dozens of species of fish. But they were only sample lots; most of the seafood remained outside in trucks (page 764). Buyers engaged porters to

transport purchases to another truck or car.

Porters strode along with boxes balanced on their heads, studies in grace and sturdy strength. They wore leather hats, thick-brimmed, flat on top, and hard as rock, to cushion their loads. Fathers hand down headgear to sons. When a hat, needing repair, disappears for a time, the owner explains, "I sent it off to be soled and heeled."

Long ago billingsgate, when not capitalized, became synonymous with vituperative language. When I asked Charles Wiard, the

### Two Kings Met Violent Deaths in the Grim Tower of London

Since Norman times the Tower has been Britain's premier fortress. Here assassins slew Henry VI and the Little Princes, Edward V and his brother Richard, Duke of York. And here the headsman claimed many famous victims, among them the tragic Queens Anne Boleyn and Lady Jane Grey. Though still a prison, the Tower holds no captives; the last was the Nazi Rudolf Hess. William the Conqueror in 1078 began construction of the oldest part, the White Tower (center).

**Yeoman Warder** answers the questions of Dutch visitors. His costume is of Tudor origin. The warders, Tower custodians, often are mistakenly called Beefeaters, a term reserved for Yeomen of the Guard, who attend the Queen.

**Grinning helmet,** a gift of Maximilian I, Holy Roman Emperor, to Henry VIII, is part of the National Collection of Arms and Armour at the Tower of London. Spectacles fit in narrow slots alongside the nosepiece.

### Henry VIII in Effigy Rides in a Parade of Armor

Tailored steel made for the king reflects his increasing bulk. Henry wore the suit at left as a youth of about 19, the other in his corpulent middle age.

market superintendent, about it, he answered with a resigned air.

"The codwives who came here years ago used the bad language, not the market men," he said. "The talk you hear around the market is no worse than any other place where you have 3,000 men under one roof."

Brisk efficiency characterizes Billingsgate, but the atmosphere of the open-air market in Petticoat Lane, held each Sunday morning, verges upon chaos (page 770). Shouting barkers man flimsy counters on either side of the narrow thoroughfare and hawk a hodgepodge of wares: toys, watches, dresses, suits, luggage, rings, silver, china. Crowds mill about, gawking at the counters and listening to the pitchmen with stolid suspicion.

Street markets have a long tradition in London, and Petticoat Lane (Middlesex Street) is one of the oldest. According to legend, the lane got its nickname because the pitchmen are such clever sleight-of-hand artists that they can divest a housewife of her petticoat and sell it back to her as a new garment.

A determined shopper finds bargains, but many persons come, as I did, to enjoy the barkers' spiels.

"I'll sell these articles so cheap you'll think they're stolen—but they're only partly stolen!" shouts a china salesman. "Ten bob I'm offered? Your brains are active. You must have had fish and chips last night!"

At the next booth a tough-looking character in a battered silk hat brandishes artificial flowers for the lapel, rigged to squirt water on friends. "The money I make out of this, ladies and gentlemen, keeps me alive!" he declaims with hammy histrionics.

After shopping at Petticoat Lane, many visitors top off a Sunday in the capital with a tour of the Tower of London, a grim contrast to the blithe outdoor market (page 772). Every bleak chamber in the warren of buildings comprising the Tower has its own tales of intrigue and heartbreak, often culminating in death on the headsman's block.



BELOW, ARE ACCORDING TO NATIONAL GEOGRAPHIC PHOTOGRAPHER JOHN E. FLETCHER © N. G. S.

Chief Warder of the Tower (left) and the Yeoman Gaoler hold the symbols of their authority: a mace, in the form of a copy of the White Tower, and a ceremonial ax. They wear their scarlet-and-gold Tudor garb only on special occasions.

William the Conqueror, desiring a stronghold whence his men could keep a wary eye on the City, began construction of the central White Tower in 1078. Other kings added tower after tower, walls, and moat. To this day the old pile remains a "Liberty," or independent domain, of the Sovereign, who appoints its Constable, Lieutenant, and Resident Governor. They command the Tower's colorful custodians, the Yeoman Warders, who still dress in the scarlet tunics of the Tudor era.

From Norman times the stronghold has been a state prison, its captives ranging from Ralph Flambard, Bishop of Durham, in 1100 to Nazi leader Rudolf Hess in World War II. No one has been imprisoned here since Hess; and long ago the torture implements and a headsman's block and ax became grisly curios preserved in the White Tower.

A tablet on Tower Green marks the scaffold site—now paved, legend says, because grass would not grow on the spot. Here Queen Anne Boleyn lost her head, chopped off by a sword, as she requested, instead of an ax. Here, too, the headsman claimed Queen Catherine Howard and her lady in waiting, the Viscountess Rochford; the Earl of Essex; Lord Hastings; and the aged Countess of Salisbury, who would not put her head on the block and was hewn down as she dashed about, gray hair streaming in the wind.

Brigadier Leslie F. E. Wieler, the Tower's Resident Governor, roused me from bemused thought at the dread site by gesturing toward an old brick residence across the green.

"From those windows Lady Jane Grey probably watched her husband being led to his execution," said the Governor. "Later she saw his headless body being returned. She was executed the same day, on this spot."

### Little Princes Died in Bloody Tower

Many of the massive towers have known famous, unwilling guests. Elizabeth I, when a princess, was imprisoned two months in Bell Tower. Sir Walter Raleigh spent much of his 13 years' imprisonment in Bloody Tower, also notorious as the place where the Little Princes, Edward V and his brother, the Duke of York, were murdered in 1483. Their uncle, who became Richard III, is believed by some historians to have ordered their deaths.

England keeps its Crown Jewels in Wakefield Tower, and thousands view the priceless gems each day. There assassins killed

Henry VI, according to old belief, and this deed, too, is often attributed to Richard III.

Armed with an afterhours pass, I entered the ancient fortress one evening to see the Ceremony of the Keys, an unvarying lockup ritual held each night for more than 700 years. The Chief Warder, flanked by soldiers who guard the Tower, marched to West Gate, then Middle and Byward Towers, locking each in turn. En route to the Queen's House, where the keys are kept, he was stopped by a sentry, backed by a guard of soldiers.

"Halt! Who comes there?"

"The keys."

"Whose keys?"

"Queen Elizabeth's keys."

"Advance, Queen Elizabeth's keys, all's well."

Thus reassured, the Chief Warder passed through Bloody Tower's arch. As the soldiers presented arms, he doffed his Tudor bonnet and cried:

"God preserve Queen Elizabeth!"

"Amen," said the guardsmen, and a bugler sounded last post. It was precisely 10 p.m., the hour when the old pile reverts to its headless ghosts.

Warders let me out a small night gate, and I stepped from past into present. Once the abrupt change would have seemed novel. But, in the City of London, one soon gets used to retreating from, and returning to, the 20th century.

Reverence for the old . . . acceptance of the new. Nowhere else on earth do they blend so successfully as in the old Square Mile.

**Unabashed young lady** admires the bearskin cap and scarlet tunic of a soldier in the Grenadier Guards as he paces his post outside the main entrance to the Tower. Coats of red, now parade garb, served as combat dress in the North American wars.

# Martha's Vineyard

By WILLIAM P. E. GRAVES
National Geographic Staff

*Photographs by JAMES P. BLAIR*

Sunset kindles the gaudy ramparts

A FIFTH-GRADE PUPIL on Martha's Vineyard Island once wrote an essay on Julius Caesar.

Summing up his disapproval of the Roman dictator, the author began: "In the first place, Julius Caesar was an off-islander."

I don't know if the story is true. I have only been visiting Martha's Vineyard for 25 years, so you see I'm an off-islander myself.

How, then, do you become an islander—or, to use the proper term, a Vineyarder? First of all, you must be born on 100 square miles of moor and dunes lying off the Massachusetts coast. Immigrating is not enough: you must be born there. It would help if you became a fisherman, a carpenter, or a boatbuilder; but a lighthouse keeper, a stonemason, or a wharfinger would do very well. So would a schoolteacher, an oceanographer, an editor, or a doctor with a talent for separating fishhooks from fingers.

To qualify further as a Vineyarder, you must know when the beach plums that border the back lanes are ripe for making jam. You must know when a no'theaster—not a casual storm, but a three-day no'theaster—is



**of Gay Head on Martha's Vineyard Island. Swordfishing boat (opposite) calls it a day**

blowing up. You must know when the terns start nesting in early summer along the south shore, and it must mean something to you.

To be a true islander, you must know each Vineyard fog signal by its peculiar mournful tone; you must know the size of the first swordfish catch of the season, and how big a lobster must be before you can keep him.

Above all, you must never admit that neighboring Cape Cod or Nantucket Island can compare with Martha's Vineyard – only an off-islander would believe that.

Well, but you reply, you are not an islander —or rather, a Vineyarder—and who wants to be one, anyway? That's easy: about 40,000 people, who come every summer to set foot on the Vineyard. And why do they pick Martha's Vineyard? That's not so easy, but I'll try to explain.

### Wild Grapes Inspire a Name

Guidebooks will tell you, if they bother with the Vineyard at all, that the island is 20 miles long by 9 wide; that it consists of six towns (as shown by dashed lines on the map at right); and that its 5,763 permanent residents depend for a living on summer visitors, fishing, and farming.

The guidebooks say that Bartholomew Gosnold, an English navigator, discovered Martha's Vineyard in 1602, though some believe the island is actually "Vinland the Good," mentioned in the Norse sagas, and thus was known much earlier to the Vikings.

Gosnold, the guidebooks add, named his discovery for the profusion of wild grapes ("... we could not goe for treading upon them," says a chronicle of the voyage). No one really knows who Martha was.

"To reach Martha's Vineyard," a guidebook might say, "take the ferry or the steamer from Woods Hole, Massachusetts, across four-mile-wide Vineyard Sound. Either boat will take you to Vineyard Haven, one of the largest communities. The steamer, however, continues to historic Nantucket, a scenic vacationland of unequaled charm. ..."

But that's enough from the guidebooks – they are written by off-islanders.

Time was when the steamer stopped at Oak Bluffs, a town near Vineyard Haven. Now you must drive there, but it's worth the trip, for Oak Bluffs is pure Hänsel and Gretel. It's a gingerbread town—there is no other word for it.

Festooning the balconies, porches, and eaves of many a summer cottage is the most elaborate woodwork imaginable. Here, above



BAY

Quissett Harbor

QUISSET

Falmouth

FALMOUTH

Falmouth Harbor

Woods Hole

Hadley Harbor

NOBSKA POINT

NONAMESSET ISLAND

Wequoit Bay

GREAT NECK

MEP-CUTANT

L'Hommedieu Shoal

NANTUCKET SOUND

Hedge Fence

SOUND

Middle Ground

WEST CHOP

VINEYARD HAVEN HARBOR

EAST CHOP

Squash Meadow

MAKONIKY HEAD

Lamberts Cove

Lake Tashmoo

Vineyard Haven

STATE ACCESS HATCHERY

Oak Bluffs

Lagoon Pond

TISBURY

OAK BLUFFS AIRPORT

MARTHA'S VINEYARD

LAMBERTS COVE ROAD

INDIAN HILL

STATE ROAD

OAK BLUFFS

CAPE POGE

Edgartown Harbor

Cape Pogue Bay

North Tisbury

COUNTY ROAD

MARTHA'S VINEYARD AIRPORT

WEST TISBURY

Edgartown

TAKEMMY TRAIL

West Tisbury

EDGARTOWN

CHAPPAQUIDDICK ISLAND

CHILMARK

Oyster Pond

Tisbury Great Pond

Edgartown Great Pond

EDGARTOWN AIRPORT

Katama Bay

South Beach

WASQUE POINT

Wasque Shoal

Muskeget Channel

### Sun, Sand, and Sea Spell Summer for Bathers on a Vineyard Beach

Discovered in 1602 by an English navigator, the Atlantic-washed island was missionary colony, sheep-raising center, and whaling settlement before winning fame as a vacation resort. Summer visitors swell the population to seven times its winter size and provide the island's main source of income. Vineyard residents, convinced providence has favored their home above all others, tend to look down on all things "off-island."

Boats, umbrellas, and beach chairs announce open season at Oak Bluffs.

**Shaggy crew member** and youthful skipper, in their surfboardlike Sailfish, sit out a calm off Edgartown. Superb training craft for young mariners, the unsinkable Sailfish readily capsizes but rights easily. Edgartown's fleet numbers about 30.

a doorway, a hunting dog flushes a covey of birds, there a whale spouts an endless geyser. A knight on a charger thunders into battle, a saint spreads his arms in peace. Fleurs-de-lis and sunbursts, like the paper lace in a bakery shop, fill every corner. The results are tinsel-and-frosting houses right out of the Grimms or Hans Christian Andersen (pages 784-5).

Oak Bluffs is famous for this pageantry in wood, a Victorian architectural craze that some think charming, others a nightmare, but in any case a sight that everyone comes to see at least once.

"We call it 'American Carpenter's Renaissance.'" Henry Beetle Hough, editor of the highly respected *Vineyard Gazette* and a student of the carvings, told me with a smile. "Others label it the Jigsaw Era.

"The sad thing is, it's a dying art. No one has the time and skill to repair this priceless work. It's a thing of the past."

The past, in fact, seldom bothers Oak Bluffs. Begun in 1835 as a Methodist camp meeting,

Silhouetted above and on beach by James P. Blair © National Geographic Society

it is the youngest of the Vineyard's towns, and it sometimes forgets its solemn origins in the carnival air of a busy resort. Today the Methodist tabernacle, sprawled where revivalists once pitched their tents, competes with the island's only merry-go-round, two movie houses, a penny arcade, salt-water taffy stands, and a hall that has offered the spectacle of women wrestlers from the mainland battling in mud.

### Vineyard Bewitched Explorers

Oak Bluffs, however, is but a small corner of an island whose charm is variety. As befits the home of sailors and fishermen, Martha's Vineyard lives mainly by the sea. Four of its six largest settlements—Vineyard Haven, Oak Bluffs, Edgartown, and Menemsha—hug a coast scalloped by lagoons and inlets, here and there buttressed by a sea wall of dunes.

Inland, the Vineyard resembles the Scottish Highlands, with boulder-pocked moors and miles of lichen-spattered stone walls. Still elsewhere the land stretches in forests of stunted oak and clumps of pine. Through it wind narrow dirt roads all but hidden by hedgerows of thorn and beach plum, where rabbits and quail make their homes.

It is a bewitching region, and its spell is old. John Brereton, Gosnold's chronicler on the voyage of discovery, wrote of that first landing three and a half centuries ago: "We stood a while like men ravished by the beautie and delicacie of this sweet soile. . . ."

But scenery can hardly set Martha's Vineyard apart. New England has plenty of that. Katharine Cornell, the actress, thinks the difference lies in the Vineyarders themselves. She should know, for she has visited the island since girlhood, and the Vineyarders come as close to worshiping her as they ever could an off-islander (page 798).

"I think of Columbus Iselin down the road, who once directed such a dignified organiza-

(Continued on page 789)

# Oak Bluffs: monument to the jig saw

REVIVALIST campground in the 19th century, Oak Bluffs grew into a resort. Until the turn of the century, summer residents vied with one another in creating architectural fancies. Lavish scrollwork festooned cupolas, turrets, dormers.

Some cottages (opposite) favored birds and flowers; others, Oriental temple styles. Still others forsook shutters for curlicue trimming (right), or ran heavily to Gothic window arches. "It kept a regiment of carpenters busy," one fancier told the author. Styles and skills have changed so much that Oak Bluffs folk today can find almost no one to repair or replace their woodwork.

Vacationists above hold a bowling tournament on the town common, or green. Once each summer, on Illumination Night, citizens decorate the cottages with strings of paper lanterns.

## Spinnakers Ballooning, Rails Awash, Winnno Sloops Gallop Capeward

Heeled to a sou'wester, racers from Cape Cod roll-lick home across Nantucket Sound after the annual Edgartown Regatta (page 788). Visitors in Vineyard waters, the sleek, speedy Wianno were

AT CENTERVILLE BY JAMES A. BROCK © NATIONAL GEOGRAPHIC SOCIETY

first built in 1914 on the Cape, with a gaff rig and centerboard design ideally suited to the shoal and unusually rough waters of the region. The fleet once numbered as many as 122 craft. Most famous of her class is 29-year-old *Victura*, whose owner, President John F. Kennedy, sailed her off Hyannis Port last year after his victory at the Democratic National Convention in Los Angeles, California.

**Keen Eyes in a Regatta Race Take Bearings on a Buoy**

Each summer yachts from Maine to Chesapeake Bay steer a course for Edgartown and its three-day regatta.

Main event, the Round-Island Race, calls for a grueling 77-mile circuit of Martha's Vineyard through rip tides, shoals, and occasional dense fog. Tradition demands that the race be run in any but the worst weather. On some starting days, veteran fishermen simply shake their heads and retire to their shacks.

Lifeline in hand, this slickered crewman aboard the yawl *Impala* crouches by the lee rail to sight a racing marker.

**Ready hands trim in the main** as *Impala* fights off a challenge from another yawl. A Sparkman & Stevens 57-footer, *Impala* swept her class in the Round-Island Race of 1959 and 1960. Her owner is James A. Farrell, Jr., of the Farrell Lines, Inc. This year's regatta begins July 21.



tion as the Woods Hole Oceanographic Institution, and who still gets into jeans and brings in his own hay.

"Or Ralph Mitchell over at the hospital, scrubbing up after an operation and then dashing to the harbor to work on his boat.

"Or Hariph Hancock in Vineyard Haven, announcing his first real vacation in thirty years. And where does he take it?" She smiled. "Why, in a cottage at Menemsha. Where else?"

Where indeed? Though to a man with Hariph's love for old buildings, "where else" could easily have been Edgartown.

### Whaling "Widow" Keeps Eternal Watch

If Oak Bluffs is the Vineyard's incorrigible reveler, Edgartown is its sober aristocrat.

I am reminded of Edgartown's past each time I walk its narrow, elm-arched streets; its immaculate white houses are worthy of a New England picture calendar. And little wonder, for Edgartown is a former whaling port, one of the great names with New Bedford, Nantucket, Westport, and Sag Harbor in that epic of seafaring history.*

Edgartown's streets themselves read like a roster of great New England whaling captains: Starbuck Neck Road, Pease's Point Way, Mayhew Lane, Tilton Way.

The houses, too, reflect Edgartown's whaling legacy. Many were built with fortunes from sperm oil and whalebone, like the home of Capt. Valentine Pease, whose ship *Acushnet* carried Herman Melville on the voyage that led him to write *Moby Dick*.

The Dukes County Historical Society building, a cable's length or so from the Pease house, lays equal claim to a seafaring heritage. Built in 1765-66 by ships' carpenters, the house has floors that slope away from the chimney as a vessel's decks cant from the mast to carry water to the scuppers.

Another whaling house, known simply as the Captain's House, was built in 1832 by Capt. Jared Fisher. Mr. and Mrs. E. Jared Bliss, Jr., the fifth-generation owners, showed me through it one afternoon.

"Don't mind the museum atmosphere," urged Mrs. Bliss. "People forget that the house was built to live in."

"Sail in" would be more like it, I thought, for there was little here familiar to the landlubber. Coffee tables were huge ships' blocks laid flat and polished till the wood shone like agate. Desk lamps turned out to be navigators' octants, and binnacle lamps gleamed from walls all but papered with yellowed navigation charts.

Inspecting a whale-oil lamp on the mantel, I nearly capsized a ship model.

"That's the old *Canton*, my great-grandfather's whaling bark," explained Mr. Bliss, a member of the America's Cup Race Committee. "But speaking of whaling, come and meet Mrs. Howes."

I picked my way gingerly among the nautical heirlooms and followed the Blisses up three flights of stairs to the widow's walk. On such a parapet crowning many an old whaling home, the captain's wife used to watch for her husband's return—sometimes in vain.

The only thing different about this widow's walk was that it still had a widow on it. I was a moment realizing that the sunbonneted and calicoed woman with the spyglass to her eye was only a dummy (next page).

"Mrs. Howes has been up here three years," Mrs. Bliss said, after I had been properly introduced. "From the street, she fools nearly everyone. The women sometimes notice her 19th-century clothes and want to know what's keeping Captain Howes. They get quite indignant about it."

### Island Lures Generations of Visitors

Families like the Blisses are proud of their long association with the Vineyard, but there are summer residents, too, whose grandparents and even great-grandparents knew the island well.

Among the "near-Vineyarders" is William H. Hart, a retired business executive from New Britain, Connecticut, whose family boasts five generations of summer visitors.

"I'm in the middle group," Hart explained to me in his beachfront house up the road from Edgartown.

"My grandfather, William H. Hart, Sr., bought a tract of land at the turn of the century, and all his children eventually built houses on it. Now I have grandchildren who are regular visitors."

There are so many Harts on the Vineyard, in fact, that the original holding is known as Hart Haven. William H. Hart went his brothers and sisters one better: He married another summer visitor, Lucy Upham.

"We met at a dance here," Hart recalls, "and I guess it was a Vineyard romance, all

*See "Windjamming Around New England," by Tom Horgan, NATIONAL GEOGRAPHIC, August, 1950.

**With lifeless eye,** a whaler's widow sights through her long glass for the husband who never returns. Faithful Mrs. Howes, who stands atop the Captain's House in Edgartown, is a dressmaker's dummy that deceives many a passer-by. Enduring all sorts of weather, she gets an occasional new wardrobe.

**Decorating a whaler's journal,** flukes symbolize whales sighted, full-bodied "fish" those taken by the ship *Canton*. Mementos include harpoon head, Eskimo shoes, and scrimshaw, an etched whale tooth.

**Retired octant,** forerunner of the sextant, lights a table in the Captain's House. Once it guided a whaling master on his three-year voyages in search of oil.

right. We married a year or so later, and we've been coming here ever since."

I asked how many years that added up to.

"I'm sixty-five now, but I lost a year," he replied a little sadly. "My family didn't bring me here till I was nearly two."

### Headstones Read Like Gazetteer

From Vineyard romances I turned to the sobering side of the past. On the advice of Mrs. Henry Hough, who co-edits the *Gazette* with her husband (page 798), I wandered one day through Edgartown's cemetery to learn a little about early Vineyarders.

The weathered headstones give a running biography of the island over the past 200 years. But none of the tablets dates back to the days of the young Rev. Thomas Mayhew, Jr., who arrived in 1642 from the Boston area to found Edgartown, once known as Great Harbor. His father had obtained grants to the island from the Earl of Stirling and from Sir Ferdinando Gorges.

One of the oldest stones sheds light on the Vineyard's difficulties as an offshore settlement during the Revolutionary War. The tablet, raised to a Joseph Dunham who died in 1796, reads:

"During the seven years of the revolutionary war with our mother country, he was employ-ed in conveying corn to feed the starving people of this place . . . and was so fortunate as to escape the enemy unmolested."

Fortunate Joseph Dunham. But later Vineyarders who followed him to sea weren't always so lucky. The markers to Edgartown's whaling dead, and to those of other island towns, read like a world gazetteer:

"Mr. Peter Pease 3d . . . died at Port-au-

**Light cruiser of yesteryear,** the 1839-vintage sloop of war *Decatur* sails in miniature at Vineyard Models, Edgartown. Eldon West repairs foremast rigging on the model, which is valued at $2,000.

Prince; Thomas [Dunham] . . . drowned in the harbor of Lahaina, Sandwich Islands; Roland, son of Roland & Mary Jones. Was killed by the Natives at one of the Mulgrave Islands; James Skiff . . . Died in the West Indies; Capt. Philip Smith, Jr . . . buried at Point Melano, E. Coast of Africa, Tristram W. . . . Norton . . . Died at Madagascar; Capt. Hiram Fisher, Lost at Sea near the Coast of New Zealand."

Violence runs like a somber theme through the inscriptions. Time and again I came across words like "struck overboard," or "foundered," "cast away," and once even "murdered," a clear reference to mutiny.

Not all the Vineyarders who lost their lives in the hunt for the bowhead and the sperm whale were men. I found a pathetic memorial to a three-year-old girl who sailed with her parents aboard her whaling father's ship, and who found a grave marked only by a cross on a navigator's chart:

Grace Ann,
Dau. of
R.M. & Harriet Coon;
born at the
Sandwich Islands,
Aug. 9, 1851;
died May 1, 1855;
at sea in
Lat. 40 deg. S.
Lon. 78 deg. W.

Whale oil came high in lives and suffering, and the Vineyard paid dearly in both.

Until recently Edgartown had a blacksmith. His name was Orin Norton, and he rarely touched a horseshoe. Orin died last winter, and there are many who will miss him. As one might expect of a Vineyard smith, Orin worked with broken anchors, with turnbuckles and rudder pins, with scallop dredges and swordfish harpoon shanks—all the tools of that island occupation and preoccupation, fishing (page 799).

"Oh, I get the odd horse to shoe now and then," Orin told me once in his weathered shop by the waterfront. "Happens so seldom, though, I almost forget how."

A hundred years ago Orin might have been a whaling captain. His shop, in fact, stands in view of Chappaquiddick, an island across Edgartown Harbor that once gave the Vineyard some of its greatest whaling masters.

Orin was grizzled and powerful, blunt of speech, afraid of nothing—essential traits among the hardy mariners who went out in the old whaling ships. He had Yankee independence and a healthy distrust of authority. He also had a sense of humor.

Once he invented a rake for digging the large clams called quahogs. He wrote to Washington for a patent and got it without trouble. I said I had a friend who tried to get a patent and had to wait for years.

"Oh well," Orin replied sympathetically,

**Surf fringes South Beach,** the Vineyard's dune-studded Atlantic flank. Photographer Blair caught this view from a helicopter, whose shadow races along the sand. At left lies Tisbury Great Pond, which islanders open to the sea each spring so herring can spawn in the brackish waters. Residents also open the pond at intervals to regulate its salinity for growth of oysters and clams.

**Fresh from the waves,** a picnicker attacks an ear of corn roasted in a driftwood fire.

"he probably had a bureaucrat helping him."

Many of Orin's customers were summer people: yachtsmen whose graceful sloops and sleek cruisers limped into port with a parted stay or a cracked gas line; visitors with sets of andirons or a weathervane from Edgartown's antique shops. Orin doctored them all, and somehow found time to forge his own doorstops and hearth fenders and do a little carpentry around his house.

But the ones who perhaps will miss Orin's skill most are the Vineyard fishermen. And that means Menemsha.

### Harpooners Ride Seagoing Pulpits

Early on a summer morning when the fog lies cotton-wool thick on the water, I like to go down to Menemsha village and watch the fishing fleet leave. The Vineyard has been sending her men to sea since island history began, yet the sight of boats setting out somehow never grows old.

Menemsha's fleet is not a large one, nor is it very pretty (page 802). Its flagships are the swordfishermen, the boats with dark-green-and-black hulls, towering masts and hoops above the crosstrees to brace the lookouts, and catwalk bowsprits, called pulpits, where the harpooners work.

There are draggers, battered and rust-stained veterans, with their jumble of booms, cables, and nets for scooping fish from the ocean floor. Then there are the rank and file, the smaller boats of the lobstermen and the line fishermen, like a fleet of tenders to the larger craft.

I try to arrive in Menemsha ahead of the fishermen, for I enjoy the harbor's ghostly daybreak mood. Fog shrouds the fleet, blurring masts and rigging and turning each boat in the imagination into some Flying Dutchman come home to port at last.

The only signs of life at such hours are the herring gulls, scouring the quiet shore for fish scraps or standing sentinel in solemn ranks atop the deserted fishing shacks.

Menemsha wakes with a start. Suddenly fishermen appear out of the fog, shouting their good mornings and clumping down the dock in their rubber boots. Wheelhouse doors bang open, starters groan, and diesel engines thunder to life. The gulls, all but blasted from their perches, flap aloft, complaining about the invasion.

All is commotion now as the boat captains, with a skill verging on magic, coax their clumsy craft through a maze of hawsers, dories, and yachts, and steer for the narrow harbor exit to Vineyard Sound.

Pounding seaward in single file, draggers with booms cinched high, swordfishermen with harpoons lashed and ready across the pulpits, the boats suddenly break formation as they pass the outer buoy and scatter for their chosen grounds. Long after the fog has swallowed them, the mutter of their engines drifts faintly in from the sea.

Menemsha is wide awake after that, and Captain Poole is in his shack. Capt. Donald LeMar Poole is a lobsterman and something of a patriarch among Menemsha fishermen (page 804). He captained a swordfishing boat for 29 years, but turned to lobstering when, in his words, "my eyes lost their edge." Yet he can still pick out a needle-thin spar buoy at distances where others would overlook a lighthouse.

Captain Poole is a student of whaling. His collection of books, logs, and mementos would wring tears of envy from whaling-museum curators. Many of his best volumes he

**Fence viewer Oscar Flanders walks his beat,** the rambling stone walls of Chilmark. In sheep-raising days the fence viewer made sure each farmer repaired his section of wall. Today his job is largely honorary. Viewer Flanders has won re-election every year for nearly half a century.

**Barn-bound herd skirts a pond** at milking time in West Tisbury. Vineyard cows enjoy a longer grazing season than the mainland stock of Massachusetts. An abandoned Coast Guard Station stands across Tisbury Great Pond. A hurricane split the other house in half. South Beach lies beyond.

Bathtub-shaped ferry, the *Islander*, churns the blue of Vineyard Haven Harbor;

owes to Mrs. Poole, a schoolteacher whose eyes are as keen in secondhand bookstores as her husband's are at sea.

Being a lobsterman, Captain Poole operates not by the sun as swordfishermen do, but by tide. I discovered why one day, when he took me with him to haul his pots.

Boston Weather Bureau reported "Fair," and I looked for a pleasant trip. Captain Poole only snorted.

"That's American weather, not Vineyard weather," he said. "Pay it no mind. It'll be dirty out on the sound." Then, "Are you readiiy seasick, young man?"

Truthfully, I shook my head, thinking to ease his mind.

"Too bad," he sighed, "it would have broken the monotony."

Captain Poole's forecast proved right: It was dirty on the sound. As we cleared Men-

PHOTOGRAPH © NATIONAL GEOGRAPHIC SOCIETY

**lifeline of the settlement, it carries visitors, cars, food, and cargo from Cape Cod**

ensha's double jetty and steered westward toward Gay Head, the wind rose and spray drummed on the windscreen. Three miles offshore Captain Poole nodded to himself and shut down the power, leaving us to wallow in the sea's trough.

"Tide's still running," he said. "Holds the buoys under. Soon as she's slack, they'll come up and we'll go to work."

I knew he meant lobster buoys, the heavy wood floats that mark the location of pots, and not navigation buoys. But there were no buoys of any kind in sight.

Five minutes passed, and suddenly a salmon-pink float with "D. P." branded on its side popped up almost beneath the boat. Seconds later another broke the surface to starboard, and soon the sea around us was blossoming with pink buoys like some vast marine flower garden.

**First lady of off-islanders,** actress Katharine Cornell walks the beach near her summer home on Vineyard Sound. "Miss Cornell's trouble," a Vineyarder once remarked, "is that she can't tell the captain of a boat from the lowest deckhand. It's a trouble more people ought to have."

**Voices of the Vineyard,** Mr. and Mrs. Henry Beetle Hough edit copy for the island's beloved *Gazette* in an office at Edgartown. Graduates of their staff write for some of the country's leading newspapers. Mr. Hough, a best-selling novelist, specializes in lore of the island and whalers.

Snaring the nearest float with a boat hook, Captain Poole deftly bent the buoy line onto a whirring winch and hauled the pot from fifteen fathoms down. As the lath-and-net trap broke the surface, I could hear the machine-gun "thwack-thwack-thwack" of lobster tail against wood.

"Fisherman's music," the captain grinned, snatching up a brownish-green and vermilion-splashed lobster behind its claws. Quickly he measured it with a brass gauge to see if it was the legal 3 3/16-inch length from eye socket to end of carapace, then pegged its claws with small wooden wedges so that it would not maim others to follow it. Dropping the lobster in a well of sea water at the stern, he cleaned the trap of starfish and rock crabs, rebaited the chamber with fish scraps, and sank the pot overside. The whole process took less than three minutes.

I still didn't understand how he knew where to wait for the buoys to come up.

"There's no magic to it," Captain Poole explained on our way to the next buoy. "We use 'ranges' to steer by." He pointed to land, where a radio tower and a lighthouse stood almost in line.

"When that tower and lighthouse are lined up, I have one range. Two offshore rocks give me another range. Where the range lines meet — well, the pots are down there."

It turned out a poor day. Fifty traps, about one-third of Captain Poole's total string, produced only two dozen lobsters, worth about $28. Counting costs in gasoline, time, and wear on the pots, it wasn't much margin.

### Biologist Has a Lobster Problem

We turned the catch over to Captain Poole's son, Everett, who is Menemsha's wharfinger, or director of berthing, its harbor master, and the owner of its fish market and marine service station.

"Some days," Captain Poole remarked as we walked back to the shack, "the way I feel about lobsters is downright unprintable."

It downright was.

There is another man on Martha's Vineyard who has a lobster problem. He is John Hughes, the 39-year-old marine biologist of the Massachusetts State Lobster Hatchery across the lagoon from Vineyard Haven. Hughes, guardian to a quarter of a million lobsters a year, also dearly loves to eat them.

"I'm getting a psychological block about them," he told me wistfully, as we chatted beside his huge salt-water breeding tanks. "Every time I sit down to one, my friends accuse me of eating State property.

"I'm probably the only man in the world who gets a certified receipt when he buys a lobster at the fish market. I bury the shells in my backyard at midnight."

Hughes took me on a tour of the hatchery,

**Fishermen's Vulcan,** Edgartown's late blacksmith, Orin Norton tempers a rod amid a fountain of sparks. Swordfish harpoons and broken anchors far outnumbered horseshoes in his shop. Clam rake on the cinder pile awaits a wooden handle.

which has everything from day-old lobster fry, looking like miniature shrimp, to 30-year-old monsters weighing 25 or 30 pounds (page 805).

I learned that lobsters begin shedding their shells soon after hatching—the first time at the age of a week—and repeat the process at longer intervals until they stop growing. But I saw no casts, as abandoned shells are called, in the tanks. I asked Hughes why.

"The lobsters eat them. They're cannibals, you know, and a leftover shell is the next best thing to another lobster."

The hatchery rears its very young lobsters in tanks with rapidly swirling water to keep the inmates so busy swimming they don't gobble one another up. Hughes said that a hundred left in still water will dwindle to a dozen well-fed survivors in a day.

I was interested in what happens to all these potential shore dinners once they can fend for themselves. Hughes explained that some are kept for research, but the majority are released in coastal waters to improve the lobster harvest. I had read that the Massachusetts catch alone runs about three million pounds a year, and I asked what point there was to restocking the ocean occasionally with 250,000 baby lobsters that would have hatched without help.

"It's true they might hatch, all right," Hughes answered, "but would they survive?

"After all, the average ocean-born lobster has only about one chance in a million of reaching maturity. Our hatchery lobsters are protected during the first crucial weeks, when ocean lobsters run the greatest risk. When we release them, their chances are about one in a hundred. That's quite a difference in the odds. Who knows? Perhaps the next lobster you eat will be one of our graduates."

**Angry combers thunder ashore** on South Beach. Mother and daughter view the wake of a July no'theaster. Venturesome surf bathers risk snapped bones or painful sand burns.

A strange job, running a finishing school for lobsters, but the Vineyard has jobs even stranger. Take fence viewers, for example.

Each of Martha's Vineyard's six towns—Tisbury, West Tisbury, Chilmark, Oak Bluffs, Edgartown, and Gay Head—runs its affairs by the town-meeting system and elects its officials annually. One of these—the fence viewer—does just what his title says. He views fences. Or he did.

### Man Without a Job

Oscar B. Flanders is a fence viewer for Chilmark (page 795). I called on him one day to ask what the job was like.

"It's an old office," Oscar began, "one that used to be much bigger when the island raised more sheep than crops. Now it's the other way around; but years ago we had as many as 15,000 sheep at one time.

"In those days, if your neighbor didn't keep up his section of the stone wall between his fields and yours, and if your sheep got out—you called the fence viewer and he took a look.

BY PAINTING BY JAMES P. BLAIR © NATIONAL GEOGRAPHIC SOCIETY

**Peaceful bull's-eye challenges flyers** at the U. S. Navy's aerial bombing range on No Man's Land, an island south of Gay Head. Carrier pilots from as far south as Virginia use the range to sharpen skills in dive-bombing, strafing, and toss-bombing, a method of lofting the bomb as the plane climbs, giving the pilot time to escape the blast.

**Fog Blockades the Fleet in Menemsha Harbor**

Weather forecasts rule the port, closing it down with a warning, emptying it with the promise of clear skies. Yachts moor at one berth, work boats at another, to help fishermen get clear on good mornings.

**Legendary harpooner,** the late Amos Smalley "ironed" a rare white sperm whale in his youth. A Wampanoag Indian, he lived in Gay Head.

If the neighbor was at fault, the fence viewer made him get to work."

Oscar told me he'd been in office 43 years. That seemed a long time, even to view all of Chilmark's rambling stone walls, which border nearly every field and lane in the area. How much time did he actually spend on it?

With typical Vineyard brevity, Oscar replied, "Nary a call in 43 years. You couldn't call it burdensome."

After a bit I left Oscar waiting for that long delayed call and set out for Gay Head.

It was a breath-taking day, one of those times after a summer storm when the Vineyard is rinsed clean with rain, dried in the sun, and buffed bright by the wind. From the hills of Chilmark, I could look far across the island, over rolling moors of broom and wild grape, over rich pasture and black pine forest, to the blue fingers of Tisbury Great Pond. Beyond, I could see South Beach with its ramparts of dunes diking the Atlantic and its everlasting lacework of surf (page 792).

I thought again of Brereton's words on that landing centuries ago, "the beautie and delicacie of this sweet soile." And I wondered who could fail to agree.

With all due respect to Brereton, there is nothing delicate or sweet about Gay Head. It is a bleak and forbidding place, often so shrouded in fog that I think of the town as a hermit, hunched mournfully in a gray blan-

ON DEPOSITORY IMAGE AND SCRATCHBOARD © NATIONAL GEOGRAPHIC SOCIETY

ket with his back to the world and his face to the sea. Yet it is that very face that gives Gay Head color.

This western tip of the island plunges into the sea from a sheer 150-foot headland whose clays are streaked and stained with contrasting yellows, rusts, chocolates, blacks, and whites—the famous cliffs that give Gay Head its name (pages 808 and 809).

### Gay Head: Harpooners' Home Port

The Gay Head people are as warm and comfortable as their land is dreary. Many are Wampanoag Indians, descendants of the Algonquian bands that once occupied the island and befriended Mayhew and his settlers.

Gay Head Indians wear no feathered headdresses or deerskin moccasins. Their costume most often consists of the fisherman's visored cap, wool shirt, and rubber hip boots. For Gay Headers have a seafaring reputation that reaches far beyond Vineyard waters.

So famed were these sturdy, soft-spoken islanders throughout the great whale fishery that shipmasters counted themselves lucky to sign a Gay Header or two aboard. Tashtego, the *Pequod's* number two harpooner in *Moby Dick*, was a Gay Head man. And Vineyarders delight in pointing out that in the same work Herman Melville describes Gay Head as a "village . . . which has long supplied the neighboring island of Nantucket

**Lobsterman Takes a Rangy Two-pounder**

Foul weather seldom stays Menemshaman Captain Donald Poole from tending his 150-pot trap line. Here, balanced against the wallowing boat, he inspects the harvest from a pot off Gay Head. Massachusetts law sets a minimum size for "keepers": $3^{9}/_{16}$ inches from eye socket to end of carapace. Others go back over the side.

Wire hook snares the buoy line, the pulley leads to a hauling winch. Rock crabs, struggling to escape the trap, will go to local markets.

Captain Poole describes his punishing job as "hardly yachting."



with many of her most daring harpooners."

Few remember those great days of three-year voyages, the mixture of dreary monotony and wild excitement, and the pungent, everlasting smell of sperm oil below decks. Amos Smalley was one of them.

Amos, a Gay Header who died last March, was one of the few men ever to harpoon a true white sperm whale. It happened in 1902 on what whalemen called the Western Grounds, an area south of the Azores. Amos was shipped as harpooner aboard the bark *Platina* out of New Bedford, Capt. Thomas McKenzie.

"Only they didn't call us harpooners," the octogenarian told me once in his house off the Gay Head road. He was a short and slender man (page 802), though agile to the day of his death.

"They called us boat steerers," he said, "because when you made fast to the whale, you changed places with the boat officer and took over the steering oar. We got that white whale's life"—Amos used the whaler's term for the great artery between heart and lungs, where good harpooners aimed. "That finished him."

White sperm whales are rare, but the distinction of harpooning one rested lightly upon Amos. When the premiere of the movie *Moby Dick* was held in New Bedford, he and his wife were honored guests. Naturally Amos was pleased, but he could never see what all the commotion was about. He always thought everybody missed the point.

"They kept saying, 'But, Amos, it's the only white whale.'" he told me with an impatient

**Armor-plated menagerie** enthralls young visitors to the Massachusetts State Lobster Hatchery at Oak Bluffs. Biologist John Hughes shows his guests how the female lobster carries eggs on her abdomen. The hatchery rears some 250,000 lobsters each year, using some for research and others for restocking Massachusetts coastal waters.

**Young lobsters** reveal the growth stage at four months and one year. Hatchery diet and lack of sunlight may cause their abnormal blue coloration.

gesture. "But that isn't what counts, and it never did. What matters is, white or black, that whale ran more than 80 barrel of oil!"

Gay Headers are like that.

Six miles south across the water from Amos Smalley's house lies a barren dot of land with the romantic name of No Mans Land (page 801). This is a misnomer, for the satellite island, technically a part of Chilmark, has been almost continually inhabited since Vineyard history began. The name—pronounced "Nomuns" by Vineyarders—is probably an abbreviation of "Tequenoman's Land," Tequenoman having been an Algonquian sachem, or chief.

No Mans once was a codfishing station. Later it became a base for pilots who guided returning whalers into Edgartown or Nantucket. In World War II, the U. S. Navy leased No Mans as a bombing range and eventually bought it.

Vineyarders have mixed feelings about No Mans: pride that it serves in the Nation's defense; indignation that it is closed to the public, meaning Vineyarders.

The Navy generously let me visit No

# Man against fish: a seagoing duel

VINEYARD swordfishermen match their whaling ancestors in skill and endurance. Lookouts braced high in the swaying crosstrees keep watch for the telltale crescent of a swordfish dorsal. On contact, they can maneuver the boat into position by means of rudder and throttle controls at the masthead.

The harpooner works from the teetering pulpit at the tip of the bowsprit (above). With keen eye and quick arm, he must iron a fish before it streaks away beneath the waves. A line to the detachable lily, or harpoon head, secures the fish, which may take hours to bring aboard. Crews occasionally bend the line to a "drug," a dory or air-filled cask, to let the fish tire itself out while they look for another.

**Boated at last,** with the lily still embedded, this monster may weigh 500 pounds.

*Bonita* (left), sailing out of Menemsha, caught the prize. Skipper is Walter W. Manning.

Mans, and even sent a helicopter to pick me up at Martha's Vineyard Airport. The trip gave me a view of the Vineyard that I hadn't had before—and am not sure I want again.

Tilting off the runway, the four-man Piasecki lowered its head and charged across the island, skimming just above the trees. In minutes we were over Gay Head, whose stained clay ramparts suggested a garish Indian blanket flung rakishly over the island's shoulder.

We toured No Mans' 628 barren acres, and Lt. (jg.) Robert Sterling, an information officer, showed me the battered targets.

"The more those targets get torn up, the better I sleep at night," Sterling smiled.

Later we met Chief Enginenman William D. Huggett, then in charge of the 16-man crew that operates the range.

"It's not a bad life," Huggett anticipated my question. "We stand one week's duty on the island and one week off. It gets a little monotonous, but we have good quarters, good food, and a movie now and then.

"The library's pretty thin, though." He picked up a cruelly mauled popular novel. "I've gotten to where I'll read anything at all." He brightened. "Why don't you send us the NATIONAL GEOGRAPHIC?"

"Anything at all, is that it?" I laughed. The smile faded. "Mister," Huggett said, "I was reading GEOGRAPHICS before you were looking at the pictures. Ever try getting a magazine to follow you around in the Navy?"

And that's why each month now the mail boat delivers the GEOGRAPHIC to an island called No Mans.

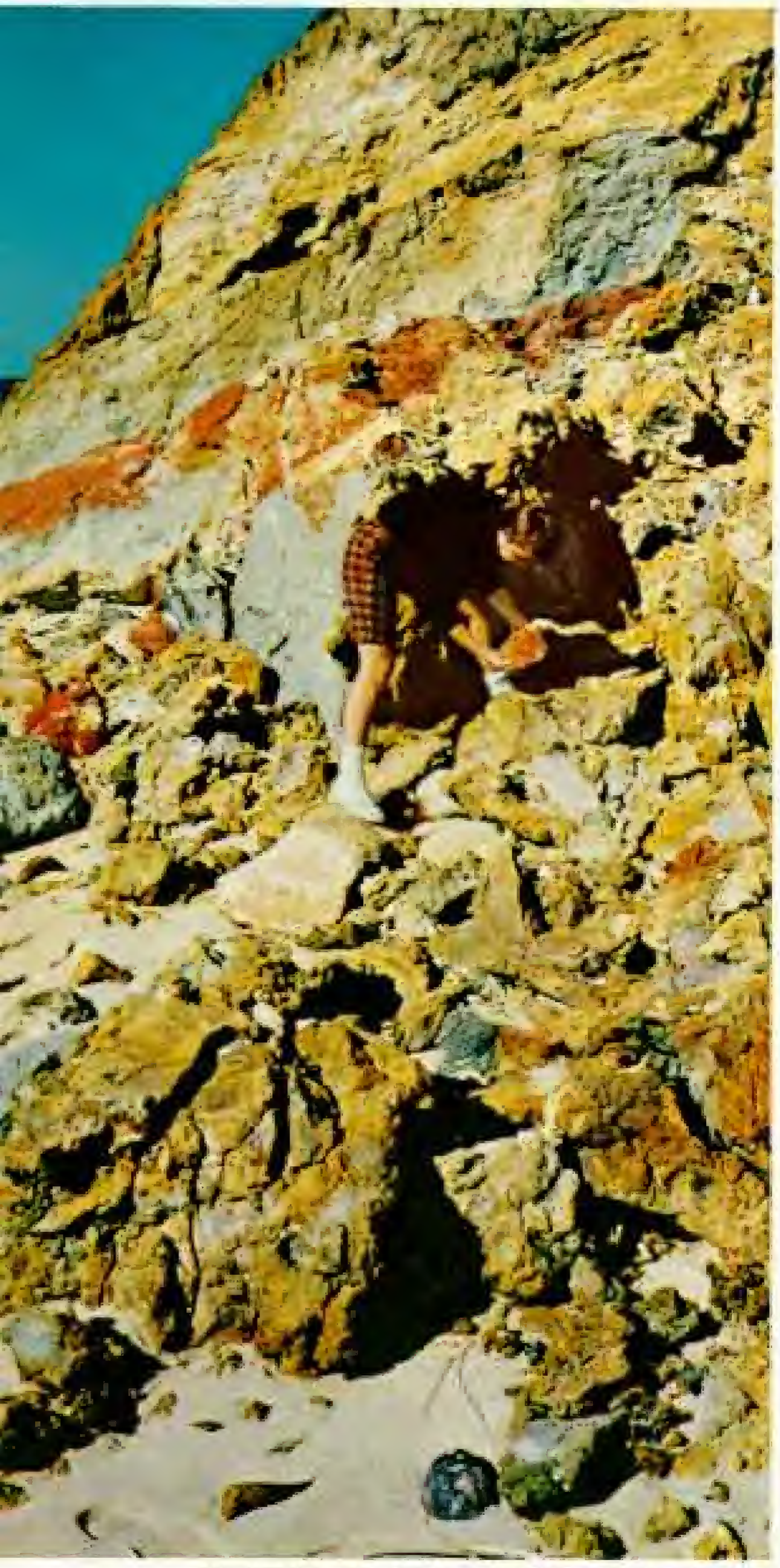
### Voyage Back to America

Back on the Vineyard I made plans for home. At the last I went to see Captain Poole, finding him surrounded by a mountainous pile of seaweed-plastered pots and buoys—a winter's work in repairs and painting.

"Good luck in America," he grinned, shaking my hand. "Have to get over there some time myself and see what the place is like."

Then I was on the steamer, standing by the rail with a group of summer visitors from Nantucket. They were all enthusiasm about a museum there, or maybe it was an inn that had a seafaring flavor. I don't remember.

Just then the sun was setting over Vineyard Sound, and I was looking back toward Menemsha.



**A potter's dream,** the garish clays of Gay Head cliffs lure a beachcomber in search of samples. Vineyard Indians still fashion souvenirs from the clay, and fossil hunters sift the eroded banks for shark teeth and whale bones millions of years old.

**Colorful cataract** in motionless grandeur streams forever down Gay Head's slopes. To Daniel Webster, a visitor, the Gay Head cliffs seemed "an iridescent Niagara." Erosion's steady gnawing threatens Gay Head Light and square lookout tower.

# Thailand

## BOLSTERS ITS FREEDOM

Article and photographs by W. ROBERT MOORE
Chief, Foreign Editorial Staff

THOUGH political ferment troubles much of Southeast Asia today, Thailand in January of this year jubilantly demonstrated its own solidarity. The occasion: the homecoming of Their Majesties King Bhumiphol and Queen Sirikit from their seven months' good-will visit to the United States and Europe.

When I arrived in Bangkok, workmen were putting the finishing touches on a score of floodlit triumphal arches. Electrical crews worked day and night stringing colored lights on government offices, homes, and in parks.

Gold and blue royal banners and the red, white, and blue national colors beflagged the capital. And displayed everywhere were the royal crests and the welcoming *Song Phra Charoen*, the Thai equivalent of "Long Live the King."

### Temple Gongs Signal Monarchs' Return

The day the royal jet plane touched down on home soil, temple gongs boomed throughout the kingdom, and yellow-robed Buddhist priests chanted blessings. More than a million persons crowded the Bangkok airport and the route into the city to cheer Their Majesties. Celebrations continued for four days.

"The people well know that the trip was not a sightseeing tour for your personal enjoyment," said the Prime Minister, Field Marshal Sarit Thanarat, in welcoming the King. "It was a task to bring Thailand into good understanding of the world, to strengthen friendly relations, and to increase the country's prestige. . . ."

No country, indeed, could have had more gracious ambassadors than the young King and his attractive Queen to emphasize Thailand's need today for strong friendship with other free nations.

For his own people the King had a message of unity. "If we are united," he told them, "we are sure that the Thai nation will progress with safety. Let Thailand progress further and further. Let us *chai-yoh* to this." Ministers and the crowds enthusiastically shouted their chai-yohs, the Thai "hurrah."

Thailand *is* progressing. During the years since I lived in Bang-

**Brass-thimbled fingers** arch a graceful gesture of greeting and respect in the traditional fingernail dance of Thailand—a nation whose fairyland past colors its driving strides of progress. Orchids and yellow *champa* blossoms frame this northern village beauty's ebon hair.


kok and taught science in a college there. I have been back many times. Each time I have seen more evidence of change and innovation.

One of the country's changes, of course, has been its name—from Siam to Thailand, an adaptation from Prathet Thai: Free Nation, as the people proudly call their country. Among all the lands of Southeast Asia, only theirs has maintained its independence during the seven centuries of its growth.

Today, with Communism casting a red shadow over much of Asia, the Thai are on guard as never before. They have seen Communist propaganda and infiltration at work in the countries about them—in turbulent Laos, with which they share a 1,083-mile-long border, in Malaya, and in divided Viet Nam (map, page 817).* From southern China, too, have come ominous echoes of a "Free Thai" movement. The Thai want none of it.

"Since our country lies practically on the front line in the struggle between conflicting camps," Dr. Thanat Khoman, the Foreign Minister, told me, "we naturally are preoccupied with our security—with our survival as a free and independent nation. Fortunately, we enjoy a deep and abiding solidarity among the three components of the nation—

**The Author:** W. Robert Moore taught in Bangkok for seven years before joining the NATIONAL GEOGRAPHIC staff in 1931. Since then, his assignments have taken him to nearly every country on every continent, and have included seven visits to Thailand, which he has come to know better than his native State of Michigan.

*See, in the NATIONAL GEOGRAPHIC: "Little Laos, Next Door to Red China," by Elizabeth Peraste, January, 1961, "War and Quiet on the Laos Frontier," May, 1954, and "Strife-torn Indochina," October, 1950, both by W. Robert Moore, and "Indochina Faces the Dragon," by George W. Long, September, 1957.

**Triumphal Arch and Royal Parasols Greet King and Queen on Their Return to Bangkok**

Thailand, where the king's power was absolute three decades ago, has become a constitutional monarchy, but its rulers remain as popular and revered as ever. Last January, when King Bhumiphol and Queen Sirikit returned from a world-girdling good-will tour, more than a million people turned out to welcome them home. Umbrellas shaded them at the airport. Arch above, one of a score, lined their parade route.

**Youthful King** and smiling young Queen greet their subjects. Born in the United States, he is a gifted musician and jazz fan whose tunes have reached Broadway.



BOTH PHOTOGRAPHS BY W. ROBERT MOORE, NATIONAL GEOGRAPHIC STAFF

## "Changeless" Thailand Sees Some Alterations

Concrete buildings rise where wooden shops stood on such thoroughfares as Bangkok's Petchaburi Road. Foreign cars crowd the streets, and three-wheeled taxis replace pedicabs.

Modern Thailand sits amid Communist pressures, determined to maintain its heritage of seven centuries of independence. The country, long known as Siam, calls itself Prathet Thai—Free Nation.

**Gleaming hospitals** provide medical care in the capital; a fourth of today's doctors-in-training are women.

**Lampshade hat** shields a villager who bundles rice seedlings for transplanting.

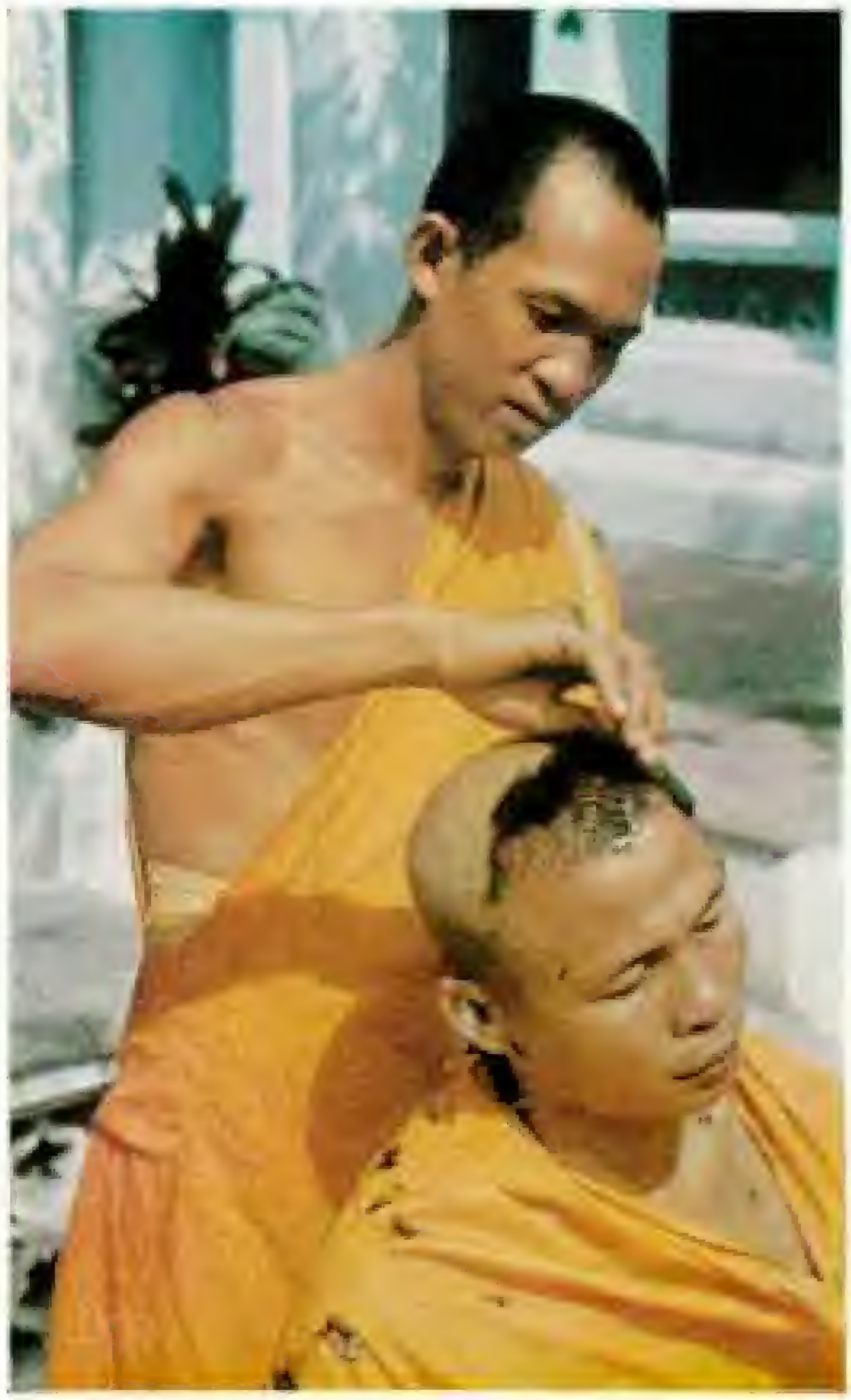
**Pink lotus blooms,** symbol of purity, color the canals.

**Saffron-robed monks** still follow centuries-old precepts that compel fortnightly shaving of head and eyebrows.



BOTH PHOTOGRAPHS (UPPER LEFT) BY W. ROBERT MOORE AND BATHROOM (LOWER) BY PETER BERNSTEIN


(BELOW) HORACE BRISTOL, JR. © N.G.S.



the king, the government, and the people.

"We also have pledged our country's strength with the joint forces of the South-East Asia Treaty Organization. And we will do everything in our power to reinforce it to meet any challenge."

### Nation Boasts High Living Standard

Thailand has no hungry millions. The country grows rice in abundance; it is second only to Burma in export of that cereal. Fish, tropical fruits, and other foods are plentiful. As a result, its 25,500,000 people enjoy the highest living standard in southern Asia.

How do the Thai live? What new leaven is at work in this pleasant Asian kingdom? I started on a refresher tour to find out.

As I stepped from my hotel the first morning in Bangkok, I heard a surprising "Good morning, *acharn* [teacher]; how are you?"

Standing beside a small shiny taxi and grinning broadly was Nai Porn, my former *samloh*, or pedicab, boy. I had adopted him—or he me—during a visit there six years before. Alert, strong legged, Porn had supplied my transportation and become my camera handyman. Fresh from the country, he knew only Thai.

Now he greeted me in English. "May I drive you somewhere, acharn?" He gestured toward the midget British car.

"Yours?" I asked.

The grin on his face broadened. "With my cousin; we drive since the government stopped samlohs here. Good?"

"Very good," I said. "Your English, too."

With Porn's foot alternately heavy on the accelerator or brake—the way most Bangkok motorists drive—we roamed the city to see what was new.

Porn took me to see several new govern-

**Bangkok's Throne Hall Floats Majestically on a Sea of Mud**

When the building began to sink during construction, engineers placed air-filled concrete pontoons under the masonry as floating foundations. Once the throne room of kings, the hall now houses the Thai parliament. Statue facing Rajadamnoen Avenue honors King Chulalongkorn, who, as a young prince, was taught by the English heroine of *Anna and the King of Siam*. Traffic everywhere in Thailand keeps to the left.

ment ministries, the SEATO headquarters, business offices, hotels, and schools.

Then we rode into new suburban districts where formerly rice farmers with water buffaloes and wooden plows had slogged knee-deep in rainy-season ooze. Now hundreds of houses lined paved streets.

The most obvious—and most exasperating—evidence of Bangkok's rapid growth is its traffic congestion. Thousands of new three-wheeled motor taxis fill every gap left by the retired samlohs. Some streets have been widened, but in others Porn and I got caught in Western-style traffic snarls.

Most chaotic ride of all was along New Road, which threads much of the length of the city. Official name for this twisting street is Charoen Krung—Prosperous City. But to Bangkok residents it has been "new road" ever since King Mongkut (the King featured in Margaret Landon's book *Anna and the King of Siam*) converted it from an elephant path into the city's first street nearly a century ago. Along it motor cars, trucks, buses, taxis, and 70-year-old teetering electric trams vie for the right of way.

### Chinese Crowd Bangkok's Streets

Yet not all Bangkok rides. Many people go afoot, and muscle, not motors, moves many of the capital's loads. Everywhere crowds spill onto the streets.

In some sections the Chinese seem to outnumber the Thai because they control so much of the city's commerce. They operate the perambulating noodle kitchens and soft-

CHINA
YUNNAN
KWANGSI
TONKIN
NORTH VIET NAM
BURMA
LAOS
THAILAND
CAMBODIA
SOUTH VIET NAM
KWANTUNG
HAINAN
Gulf of Tonkin
Gulf of Siam
South China Sea
MALAYA
Lungling
Mienning
Chingku
Yuki
Kokiu
Wenshan
Passe
Chingyuan
Liuchou
Lichiang
Kweihsien
Yülin
Hsinyung
Pinyang
Nanning
Chinghsi
Wengtzu
Ha Giang
Lao Cai
Hokou
Laphig
P'uerh
Ssumao
Kang Tung
Phong Saly
Dien Bien Phu
Muang Sing
Muong Sai
Sam Neua
Luang Prabang
Sam Tao
Nong Het
Xieng Khouang
Muong Kassy
Muong Sen
Vang Vieng
Vientiane
Pak Sane
Nape
Mekong
Nong Khai
Udon Thani
Nakhon Phanom
Thakhek
Savannakhet
Mukdahan
Khon Kaen
Sakon Nakhon
Phitsanulok
Lom Sak
Sukhothai
Uttaradit
Phrae
Nan
Lampang
Lamphun
Chiang Mai
Chiang Rai
Pai
Mae Sariang
Ban Mai Sariang
Moulmein
Martaban
Kra Buri
Ranong
Chumphon
Isthmus of Kra
Surat Thani
Nakhon Si Thammarat
Phuket Island
Phuket
Ban Kantang
Songkhla
Pattani
Yala
Narathiwat
Kota Bharu
Alor Star
George Town
PENANG
Kuala Trengganu
Tavoy
Mergui
Victoria Point
Prachuap Khiri Khan
Ban Hua Hin
Chanthaburi
Rat Buri
Phet Buri
Thonburi
BANGKOK (Krung Thep)
Chai Nat
Sawankhalok
Tak
Ping
Nan
Yom
Phichit
Nakhon Sawan
Phimai
Surin
Ubon
Nakhon Ratchasima (Khorat)
Lop Buri
Ayutthaya
Saraburi
Ban Pak Thong Chai
Chao Phraya River
Mae Klong
Angkor
Siem Reap
Battambang
Pursat
Kompong Chhnang
Phnom Penh
Kratie
Kompong Cham
Tonle Sap
Lake
Sihanoukville
Ream
Ha Tien
Long Xuyen
Rach Gia
Can Tho
Bac Lieu
Quan Long
Ca Mau Point
Mouths of the Mekong
Saravane
Bolovens Plateau
Pakse
Attopeu
Konsum
Tay Ninh
Loc Ninh
Cho Lon
SAIGON
My Tho
Go Cong
Phan Thiet
Phan Rang
Da Lat
Nha Trang
Ban Me Thuot
Binh Dinh
Tong Cau
Quang Ngai
Dong Hoi
Quang Tri
Hue
Da Nang (Tourane)
Vinh
Ha Tinh
Yulin
Haikou
Haiphong
Hanoi
Hon Gay
Nam Dinh
Hanh Hoa
Paoshih
Liuchiang
Chanchiang
Ft. Bayard
Pakhoi
Hoppo
Ninguang
Chinhsien
Pinghsiang
Lung Son
Muong Sen
Tonkin Delta
Leichou Peninsula
Hoi Hao
Thun Chin River
R. Kwan Lop Buri
Nam Tok
Chao Phraya River
Tavoy
Mergui
Victoria Point
Kra Buri
Ranong
Isthmus of Kra
Phuket Island
Phuket
Ban Kantang
Songkhla
Pattani
Yala
Narathiwat
Kota Bharu
Alor Star
George Town
PENANG
Kuala Trengganu
Mekong
Thailand's elephant head sprawls across an area three-fourths the size of Texas. Teak forests green the hills of its brow; rubber plantations tip its dangling trunk, and rice watered by the silty Chao Phraya River covers its broad central plain.
STATUTE MILES
Ban, Muong, Nakhon.....town, village
G. W. Beatty and W. J. Kelley
© National Geographic Society

**Bangkok**—also known as Krung Thep, meaning City of Angels—straddles the Chao Phraya. Strings of barges ply this Lord of Rivers, whose canals create an Oriental Venice. Walled rectangle on left bank encloses buildings and temples of the Grand Palace. Thai Navy piers and the towers of Wat Arun edge the right bank.

**Dazzling Signs Create a Palette of Colors: Bangkok's Yawaraj Road**

Glowing placards in English, Chinese, and Thai mark watch and jewelry shops in the capital's Chinese district. Until recently the Thai stuck to farming and government, leaving trade and industry to the Chinese. Half the city's population claims Chinese ancestry.


drink stands, run countless one- and two-story open-front shops, and manage many of the big export and import firms. They are the country's rice millers, its money-changers, its shoemakers, its tailors.

Traditionally the Thai have had little interest in trade, preferring to hold government positions or remain on the farm. But in recent years more have turned to business.

Throughout the city I found the new jostling the old in greater confusion than ever before. Bangkok now has two television stations, radios blare, and motion-picture theaters gaudily advertise the latest wide-screen color spectaculars. Yet these could scarcely compete with the glittering show I saw at the Auditorium of Culture, where the Fine Arts Department stages classic drama and dance scenes drawn from the ancient Indian epic *Ramayana* and from old Thai folk tales.

Today young Thai women patronize smart air-conditioned beauty salons or set their lustrous black hair with home permanents. Grandmothers and country women still wear theirs in a brush, like an overlength crew cut.

New pharmaceutical plants produce the latest drugs. Yet in side-street medicine shops I saw odd assortments of sticky ointments and cure-alls concocted from herbs, dried bats, and powdered snakes.

Saowapha Institute, Thailand's Pasteur Institute, also deals in snakes—a big pit full of deadly cobras and banded kraits. The institute, near sprawling Chulalongkorn Hospital, milks the reptiles of venom to prepare snake-bite antivenins. It also processes smallpox vaccines and gives antirabies treatments.

### For Sightseeing, Take a *Klong*

One feature of Bangkok that has changed little is its network of *klongs*, or canals. In earlier years whenever the city built a new road, it gained a canal, the excavated earth being used to raise the road embankment. Work crews with trucks and snorting bulldozers are filling some of these canals to widen the thoroughfares. The city planners aim to cover most of the others in the main sections of Bangkok within the next few years.

But scores of klongs still lace the city and thread the flat alluvial plain of the broad Chao Phraya River. Many are older than the roads—as old as the city itself. They and the river once were its streets, its arteries of traffic. Many still are. And no visitor has really seen Bangkok's full panorama of activity until he has taken an early-morning launch ride along them.

I had explored them many times, but when friends invited me to go "klonging" I accepted eagerly. At sunrise we crossed the brown


PHOTOGRAPHED BY W. ROBERT MOORE, NATIONAL GEOGRAPHIC STAFF

sweep of the river by launch to the older, west-bank district, known as Thonburi, original site of the capital. Heading into one of its numerous water lanes, we plunged into the midst of a life pattern little changed in the last hundred years.

We cruised past small shops, rice mills, temples, and stilted homes, backed by palms and fruit gardens. Canalside folk washed clothes and themselves in the silted water. Laughing, naked youngsters splashed about like porpoises (page 829).

Small sampans skimmed past us. Many were paddled by lampshade-hatted Thai women, carrying fruit and vegetables to market. Yellow-robed Buddhist priests making their morning rounds for gifts of food rode in others. We passed floating restaurants; their steaming pots on charcoal braziers emitted tempting spicy odors (page 826). Trinket dealers, hawking everything from needles to babies' teething rings, cruised from landing to landing.

Reaching the junction of an arterial canal, we came upon a clot of boats crowding the entire water space—a floating market. Caught

BUNCHES OF A HUNDRED BANANAS, MELVILLE BELL GROSVENOR (LOWER RIGHT, AND

in its amiable confusion, we rubbed gunwales with sampans loaded with tropical fruits: coconuts, rambutans, odorous spiked durians, papayas, and mangoes. Other craft carried vegetables, fish, flowers, rice cakes, and trays of brown palm-sugar patties. Some vendors sold only fresh banana leaves, used as food wrappers.

By far the majority of the water-borne marketers, buyers and sellers alike, were women. Conspicuous exceptions were the Chinese meatmen who, since the Buddhist tenets of the Thai are against taking life, serve as the butchers.

Even in this bustle a new note attracted my attention: A motor launch, serving as school bus, picked up crisply dressed youngsters headed for school.

Along another canal we stopped to see the

*(Continued on page 827)*

L. HAZELL © NATIONAL GEOGRAPHIC SOCIETY

**Male Kites Battle Females Before Bangkok's Grand Palace**

Thailanders flock to watch the aerial combats during breezy March and April. Professional teams—six to ten men for the star-shaped male kites, fewer for the smaller females—maneuver their bamboo-and-paper creations to cut down an opponent or drag it into home territory. Inveterate gamblers, the Thai bet on the outcome. Yellow-garbed monks dot the crowd.

**Lettered kite** advertises its owner's sponsor, a company issuing religious tracts.

**Little Prince Vajiralongkorn** fingers a kite on a Red Cross benefit day.

PAINTINGS BY WILLIAM BELL DEVEREUX AND HERBERT E. WILSON, JR., FROM ROBERT © N.G.S.

**Half human,** half lion, gilded *narasingh* guards an entrance to the Pantheon.

**Shrine of kings,** the Pantheon houses statues of Thai rulers since 1782. Memorial and golden *chedi* stand in the Grand Palace enclosure.

## Sculptured Realm of Giants and Demons: Thailand's Jeweled and Gilded Temples

In Buddhist Thailand the village *wat* serves not only as temple but as recreation center, school, employment agency, source of news, safe depository, and even resthouse. By building or beautifying a wat, faithful Buddhists earn merit in this life and the next. As a result, Thailand teems with magnificent temples, and Thai art and architecture find their richest expression in the wat. Walls and spires sparkle with gold leaf and mosaics, and fantastic sculptures delight the eye.

Demigod *yeaks* (above) stand as sentries at the Royal Temple in Bangkok's Grand Palace (page 822).

**Blue-clad demon** upholds a golden spire outside the Pantheon (opposite). Glass mosaic colors the figure.

**Bare-chested boatman** propels a sampan on a Bangkok canal. Western-style belt holds up his knotted sarong.

Canals lacing the city and the river's alluvial plain serve as traffic arteries, irrigation systems, and water reservoirs for millions.

**Helping hand** pulls a merchant to shore to peddle peppery dishes cooked on his sampan.

**Gunwales touching,** sampans clog a floating market in Bangkok's network of *klongs*, or canals. Some convey shoppers; others hold hucksters with loads of vegetables, bananas, pineapples, green oranges, betel nuts, and duck eggs.

The ubiquitous sampan does duty also as butcher-shop, drink stand, water taxi, and even general store. Growing Bangkok is filling many klongs to make room for wheeled traffic.

Alongside at the royal palace, national boatmen's pride ©

(Continued from page 822)

royal state barges. Long gilt-and-red hulls lay propped above the muddy skidways like stranded sea serpents. Sweeping prows of the larger craft are fancifully carved to represent figures from Hindu mythology: the Hansa (swan), the multiheaded Naga (cobra), and the birdlike Garuda.

During World War II some of the craft were damaged by an Allied bomb aimed at Japanese forces. They have since been repaired and regilded for state ceremonial processions. One of these is the King's visit to the riverside *wats*, or temples, during the Tot Kathin festival in late October or early November.

Arrayed on the river, these craft seem almost to come alive. The King rides in a gilded pavilion set amidships on the great Hansa barge; high officials ride in the others.

Fifty red-clad boatmen man each of the royal craft. Gilded paddles dip the water, then flash upward in the sunlight to the beat of the coxswain's staff setting the rhythm for an ancient chant.

"Some of our people feel that such ceremonies and festivals are outdated—that with our modern changes they should be abandoned," Prince Dhani Nivat, scholarly head of the Privy Council, told me. "But I think it would be unfortunate to lose them. They

**Loaded Barges and Light Hearts Mark Life on a Bangkok Canal**

Awninged craft, their upper strakes almost awash with cargoes of lumber, rice, or salt, ride behind power launches—sometimes as many as 15 in a string

**Laughing youngsters** hitch rides on a barge

**Bougainvillea canopies a porch** where a Thai family bathes in a canal. The same water serves also for toothbrushing, cooking, and waste disposal. Canalside babies learn to swim as soon as they learn to walk, some before they are a year old

remind us of our ancient traditions and the culture from which our country developed, and they serve as a unifying force in our efforts to strengthen our growth."

As glittering as its pageantry are Bangkok's many temples (pages 824-51). Buddhist Thailand has some 10,000 wats, Bangkok alone more than 300. They dot the city like vivid oases of color, their brightly tiled overlapping roofs, leaping towers, and mosaic spires forming its most distinctive architecture.

Everywhere in the city I saw yellow-robed Buddhist monks, for most Thai men spend at least three months in the priesthood (pages 832 and 833). A few years ago the King himself retired briefly to don the humble yellow garb.

I had often photographed the priests in the early morning as they went about the city with begging bowls to receive their daily offerings of food. I mentioned to Prince Chandra, one of my old students, now an expert in ancient Buddhist art, that I should like to record their monastic life.

Chandra knew the monasteries well and volunteered to take me to Wat Po, one of the older temples.

"Best day to go," he said, "is the day before Wan Phra [the Buddhist holy day corresponding to the Christian Sabbath]. The priests will be getting ready for it."

The morning we arrived, we found priests shaving each other's heads, including eyebrows (page 815). Others slashed faded

NEGATIVES BY MELVILLE BELL GROSVENOR (ABOVE AND BELOW) AND BY EATHLYNNE BY ROBERT E. WILSON, JR., NATIONAL GEOGRAPHIC STAFF © N.G.S.

**Chinese peddlers** drive their vegetable boat past the pyramids of Wat Arun beside the Chao Phraya River. A Bangkok landmark, the brick-and-plaster central tower soars 240 feet.

**Steep steps** climb the terraces of Bangkok's Wat Arun, Temple of Dawn. Porcelain-encrusted pavilion at its base, one of four, displays episodes in the life of Buddha—his birth, enlightenment, first converts, and death. Moon god rides a white horse in a niche on the tower at left.

**Fragments of dishes** shape the wat's floral frescoes.



robes in basins filled with fresh yellow dye.

In a room, beside a brooding Buddha, two young monks sat facing each other. One had his palms pressed together before his bowed head. He was speaking in a low monotone.

"He's confessing to his brother monk," Chandra whispered. "They confess to each other their sins and the precepts they have wittingly or unwittingly broken."

The priests' cells are furnished simply—a sleeping mat (a Buddhist rule warns against a monk using a high bed), a mosquito net, and religious tokens, together with begging bowl, teapot, and a few dishes.

"Look at this," Chandra said, leading me into a lush courtyard. Orchids hung from the walls and branches of a large tree; others burst from baskets and pots. "They're the hobby of the priest over there," he said.

In the shade an elderly monk puttered with young seedlings. Unlike many Thai, who spend only brief periods in the priesthood, he had devoted his life to temple service—and to his orchids.

Thailand's temples once afforded the main source of education for the people. Today public education is compulsory, schools are rising throughout the country. Girls and boys have equal opportunities for education.

### New Public Schools Need Teachers

In addition to its lower schools, Bangkok supports five universities. Chulalongkorn, the oldest, has seven faculties. Thammasat calls itself a university of "moral and political sciences." Third is the University of Medical Sciences; the newer Kasetsart University specializes in agriculture and irrigation engineering, and there is the smaller University of Fine Arts.

"One of our pressing problems," an Education Department official told me, "is getting

enough teachers for our growing needs. We have trouble just filling positions, let alone achieving the standard of training we would like. But in time," he added optimistically, "it will come."

"You've already come a long way since I first came to teach here nearly 40 years ago," I replied.

"But we need to do much more," he said.

### Yanhee, Thailand's TVA

Foreign aid programs of the United States and other nations are helping Thailand quicken its tempo—in education, health, agriculture, communications, and general economy.

There's Yanhee, for example. Today Yanhee is one of the biggest names in Thailand, yet you can search most detailed maps and still not find it.

It is only a hill gap through which flows the Ping River, a branch of the Chao Phraya, 260 miles northwest of Bangkok (map, page 817). But a multipurpose dam being built there, with help from the International Bank for Reconstruction and Development, will transform the Ping into a Thailand version of the Tennessee Valley Authority system in the United States.

Long ago I made the trip by slender river boat down the kinking Ping from the northern city of Chiang Mai. We twisted through defiles and threaded brilliantly colored rock gorges. We passed Yanhee without being aware of its name, though certainly aware of the river's force. Within one stretch of only about fifty miles we swirled through more than forty churning rapids.

Yanhee's $184,500,000 project will harness this power. The 503-foot-high Bhumiphol Dam being driven between the hills will create a reservoir holding more than 14 billion cubic yards of water—about one-half the working capacity of the entire TVA system.

Plans call for two generators in operation

**Silken Cord and Chanted Prayers Unite a Couple in a Buddhist Wedding**

Blessings from the priests flow through a string attached to the heads of bride and bridegroom. Sacred water sprinkles the couple, who bow in a reverent gesture during an all-day celebration in Phitsanulok.

PHOTOGRAPH BY MARY ANNE YARRALOW © NATIONAL GEOGRAPHIC SOCIETY

Buddhist Monks Eat a Ritual Meal to Commemorate a Dead Brother

Most Thai males spend at least three months in a monastery. These devotees in a Bangkok temple mourned a fellow monk killed in an accident. After the funeral rites, his relatives served a meal for the priests, who invited the author to share it.

by 1963. The dam is designed to hold a total of eight, with an ultimate output of 560,000 kilowatts. It will supply Bangkok and half the rest of Thailand with power.

Besides quadrupling the country's electrical potential, the dam will control flooding in the Chao Phraya valley and conserve water for rice irrigation. It will permit a second crop in the dry season in wide areas, and will open to irrigation more than 500,000 acres of new rice land.

### Monsoon Turns Rice Fields Green

The map of Thailand—three-fourths the size of Texas—resembles the profile of an elephant's head butting against Burma, with Bangkok at its mouth (map, page 817). Mountains and narrow valleys in the north wrinkle its bulging skull. The wide curve of the Mekong River, forming the eastern border with Laos, outlines its flapping ear. And its lumpy trunk dangles southward two-thirds the length of the Malay Peninsula.

Over the elephant's flat cheek extends the central plain of the Chao Phraya River. As you fly into busy Don Muang airport (which caters to 23 international airlines) or drive in any direction from Bangkok, you see only this flat landscape. During the dry season, which lasts from November to June, it presents a dun picture, enveloped in haze or shimmering heat. But with the onset of the monsoon rains it leaps to life.

Recently a few farmers have begun cooperative plowing of their holdings with tractors before bogging rains come. But mainly cultivation follows an age-old pattern. Farm families with water buffaloes wade the deepening ooze of diked fields—plowing, harrowing, and setting rice seedlings—to convert the land into a vast checkered field, the granary of the country.

Thailand devotes some 70 percent of its cropland to growing rice. Its annual yield, after milling, totals four to five million tons. Of this, more than a million tons is exported, accounting for almost half the country's outside revenue.

New dams and canals are steadily added to older ones threading the plains. Boats riding on them seem to sail across green and gold fields. Villages and thatch-roofed farm homes border the canals, as along highways.

Today agriculture specialists also carry on research in seeds, fertilizers, and pest control to further increase the rice yield. The Thai are also giving attention to more diversified crops, such as corn, castor beans, soybeans, and cassava, and to double cropping where water is available.

**Boys splash** in a canal beside the golden roofs and marble walls of Wat Benjamabophit, a jewel among temples.

**Jutting spires** of Wat Po glisten under Bangkok's tropical sun. Some of the many-tiered steeples contain images of the Buddha; others commemorate important persons.

Economically, eastern Thailand—the elephantine car—has always been the poorest part of the country. Irregular rains and poor soils make rice growing a bad risk. But progress there is under way, part of it symbolized by a handshake.

Near Sara Buri, 60 miles northeast of Bangkok, stands a small stone monument. It bears a pair of clasped bronze hands, and above them a bilingual plaque in Thai script and English: "Tanon Mitrapap—Friendship Highway."

Eastward from this monument stretches a 100-mile-long ribbon of asphalt, built for Thailand with U. S. aid, that mounts to the plateau town of Nakhon Ratchasima.

By the grandiose standard of some Western multilane throughways, the road appears

**Colossal feet** of the Reclining Buddha in Wat Po wear mother-of-pearl soles. Representing him lying on his side at his entry into Nirvana, the statue stretches 160 feet. Young Buddhist priests scan the 108 signs that identify the true Buddha.





**Golden head** of the Reclining Buddha rises 40 feet. Stylized features stem from a description left by his disciples: "Eyes like drawn bows, nose like a parrot's beak, chin like a mango stone."

**Starvation's ribs** show on the Buddha after a prolonged fast. This and other sculptures of the teacher line a gallery at Wat Benjamabophit.

modest. Yet it is one of the best in the country and affords a vital supplement to the railway link to the east.

With Chamnieng Hemarat, another of my former students, and his teen-age son, I took off from Bangkok by Jeep to ride this Friendship Highway and see the eastern region.

At Sara Buri, Chamnieng suggested a short detour before starting on the Friendship Highway: a visit to a pioneer district a few miles north, where farm families were cutting small holdings from the bush.

Bamboo-and-thatch homes dotted the area, small fruit orchards, banana gardens, and vegetable patches bravely splotched new clearings; smoke from burning brush filled the air. Hand grubbing in the jungle is not easy, seldom spectacular; but the hardy farm folk here are carving small spaces they can call their own.

Along Friendship Highway we saw other new homes and new shops that the road already has spawned. And at an agricultural experiment station on the way, we stopped to see a new cattle-breeding project.

"From Texas," the director proudly announced, as he showed us hump-shouldered Brahman bulls and a sizable herd of cows and young calves in the pasture paddocks. "Brahmans are sturdy animals, well suited to

PHOTOGRAPHS BY W. ROBERT MOORE, NATIONAL GEOGRAPHIC STAFF © N.G.S.

**Skeins of silk,** tied and dyed, hang to dry outside a lattice-shaded workshop in the village of Pak Thong Chai. Bound parts of the silk do not absorb the dye. When the threads are shuttled in a hand loom (right), the undyed portions form the light-colored pattern of the cloth.

our hot climate and resistant to disease. We plan on using them for crossbreeding to improve our herds—to develop a good beef cattle for our eastern region."

From American agricultural advisers and Thai experts with whom I talked later, I learned that a concentrated study has been made of grasses, fodders, and water facilities with a view to transforming the eastern plateau into a cattle-raising land.

"Eastern Thailand already is a meat-producing region—water buffaloes," Chamnieng said. We came upon herds of these big-horned beasts wallowing in roadside canals.

"During the war the Japanese occupying forces killed off many of our buffaloes. They didn't even leave enough for our farming needs. Now herds have been built up again; farmers in the eastern region raise thousands. They drive them to Bangkok, spending weeks on the way. Some of the livestock are slaughtered for our own use, and others go to Hong Kong."

Beyond the agricultural experiment station we turned off the highway to see another industry—lumbering. We followed a jungle trail to a forestry camp called Tap Kwang. The name means "deer shelter," and deer thrive in the forests round about. So do tigers and other wild beasts.

### Elephants Haul Forest Timbers

Chamnieng knew the district well. He had often come here to hunt. We spent the night in camp with two of his forester friends, and took off at dawn by Jeep on a truck logging trail.

Abandoning the Jeep at a log-marshaling site, we slithered afoot along a greasy mud path through trees and elephant grass toward the tree-felling area. Abruptly we heard the clank of bells and were confronted by several elephants hauling out logs (page 844).

Two young calf elephants were having a lively time playing about their mothers' legs until one got in the way, and the mother gave it a reproving rap with her trunk that sent it skittering.

**Rainbow hues** of Thailand's handmade silks surround Supajee Tembunkiart, daughter of an official of the Thai Embassy in Washington, D. C. Bowl is the work of Thai silversmiths.

Silk weaving in Thailand was a vanishing craft until Jim Thompson, an American, encouraged its revival after World War II.

Made on home looms turning out a few yards a day, the fabric gains appeal from striking patterns, iridescent effects, and knubbly textures.

At the log-marshaling pile, the elephants deposited the timbers in orderly rows; workmen hoisted the logs by chain tackle onto trucks.

"We can haul only in the dry season," a trucker said. "During the rains jungle trails turn into bogs."

These eastern forests abound in a variety of timbers. One is the hard *mai dang* (literally "red wood," because of its coloring). Teak, Thailand's best known wood, comes from forests in the north. Formerly most timbering was done by European firms, now Thai companies operate several concessions.

Twisting up the mountainous edge of the plateau, we came to Nakhon Ratchasima, a onetime walled town still commonly known by its historic name, Khorat. I scarcely recognized the city from years before. It has outgrown its walls, so that its former main gateway now stands in the center of the town.

The city is distribution center for the eastern district, and railway workshops here service its two railway lines. One stretches eastward to Ubon. The other, recently extended, reaches north to Nong Khai, across the Mekong River from Vientiane, capital of landlocked Laos.

Though Nakhon Ratchasima has largely obliterated its past, not so Phimai, only 30 miles away. Here sprawl walls and the ruins of a large carved-stone temple built centuries ago by the Khmers, the early Cambodians who built the mighty temples of Angkor.*

Besides erecting elaborate temples, the Khmers were famed for their water conser-

*The author described "Angkor, Jewel of the Jungle" in the April, 1960, NATIONAL GEOGRAPHIC.

vation. In several towns we saw villagers using pools and reservoirs the Khmers built.

"Our big task here today is the same one the Khmers faced 800 years ago: to provide an adequate water supply," a United States Operations Mission (Point 4) official told me.

"Since 1951 we've helped build more than 100 tanks and reservoirs. Some serve for rice irrigation, others for domestic supply."

### Villagers Drink American Water

Thirsty, I asked a villager where I might get a drink.

"The well," he said, pointing to a cluster of people with water buckets not far away.

I knew the risk of drinking from the usual village well. "I meant a bottled soft drink," I quickly amended.

He gestured toward a small village shop, but added, "The well is good—the best water, mister. It's American *nam*."

It was, I discovered, one of scores of wells American teams have drilled in the region. The water was champagne cool and crystal clear. It was lifted by a familiar old-fashioned hand pump. In places, however, the well drillers have struck brackish water stemming from underlying strata of salt.

Near Surin, east of Nakhon Ratchasima, we saw trucks piled with bales of jute, an expanding new enterprise of the region. And we detoured again to reach the silk-weaving village of Pak Thong Chai. This town raises its own silkworms, dyes its silks in a distinctive tie-and-dye manner, and weaves them to produce a fabric of interesting broken patterns (page 838).

When I got back to Bangkok, I called on my friend Jim Thompson of Thai Silk Company to see more silk weaving. Jim first reached Thailand at the end of World War II; he liked the Thai and decided to stay. To him falls much of the credit for reviving—and booming—hand-woven native silks.

When Jim first became interested in Thai silk, there were few weavers in Bangkok. He journeyed to eastern Thailand and to Chiang Mai in the north to contact the small village producers.

"We've quite a sizable weaving colony in

**Cut by knifing canals,** ricefields carpet the plains near Bangkok. Farmers' homes dot bamboo-lined banks. The nation's road system grows slowly; watery klongs serve as highways.

**Mud-splashed farmers** harrow a rice seedbed near Rat Buri. Thailand's main crop and export, rice feeds its people, and even cats and dogs. Rice chaff stokes mill furnaces.

Bangkok," Jim said. "Most of the weavers are Thai Moslems. I'll take you to see them."

They lived almost directly across the canal from Jim's home. In sheds and homes I saw raw silk steaming in oil-tin kettles to remove the gummy substance the silkworm leaves on the filaments. Spinners reeled shimmering skeins on simple handmade wheels.

Dyers tended bubbling kettles, rinsed freshly dyed silks in the canal, and hung rainbow skeins in back yards to dry. While I watched clacking hand looms, Jim selected color combinations for new fabric patterns.

Today Thai hand-woven silks have become widely known. Audiences saw their shimmering richness in costumes worn in the stage play and motion picture *The King and I*.

As fascinating to me as Jim's success with silk is his accomplishment in housebuilding. A trained architect, he purchased five wooden dwellings of traditional Thai architecture, dismantled them, and has grafted them together into a spacious home.

"My only concessions to modern convenience are the baths and the air conditioning for my study," Jim pointed out.

He has furnished the rooms with Thai tables and cabinets, hung the walls with Oriental paintings, and gathered a superb collection of early Thai and Khmer bronzes and stone sculpture—a remarkable museum-home.

"I expect I shall turn it over to the Thai when I no longer need it," he commented.

### Thai Airplanes "Walk the Air"

To see what changes have taken place in north Thailand, I booked a seat with Thai Airways, which provides efficient air services throughout the country. The airline's Thai name is Dern Aghat Thai: Walk Air Thai. I walked the air to Chiang Mai.

A few minutes after take-off, we passed within sight of ancient Ayutthaya, a site I had often visited. From the air I could see its ruined temples and broken spires.

A small town now, Ayutthaya clings close to branched waterways, upon which ride rows of floating houses and family shops. But from 1350 until 1767, when it was razed by the invading Burmese, it was capital of the country. Gold relics, jewels, and Buddhist figures excavated here during the last few years by the Thai Archeological Division emphasize its former splendor.

Farther north, we passed over Phitsanulok, much of it newly rebuilt after a disastrous fire. From here a new road, similar to Friendship Highway, has been thrust through hills and jungle to provide still another route into northeastern Thailand.

We touched down at Phrae, on the edge of the northern hills, then cruised above steep wooded mountains and narrow rice valleys to Lampang and Chiang Mai.

Chiang Mai sits in the center of a pleasant hill-girt plain, dominated by 5,528-foot Doi Suthep. With 50,000 people it is Thailand's second-largest city, but so small in comparison to Bangkok that it seems almost rural. Oxcarts lumbering along its streets lend a bucolic air.

### Old Town Leaps Into Jet Age

The town once was a capital in its own right—the seat of Lao lords. Crumbling brick walls hem its older portion, and moldering temples recall its former princely position.

The city has long since burst its seams, and it now looks forward, not back.

"We're jumping into the jet age," said Wichitr Jayavarn, editor of the local Kon Muang Press, who met me. "Our new airstrip, put in with the help of USOM, is long enough for jet planes. Next time you come from America, you may be able to land here on a short cut between Calcutta and Hong Kong."

Inside the city, Wichitr pointed out a new group of buildings under construction. "A medical school," he explained, "so we'll no longer need to send students to Bangkok."

One of the most exciting stories I came upon in Chiang Mai was of Thailand's battle against malaria. During the years I lived in the country, the disease was a health hazard throughout the north—and in many other regions as well.

"When we started our malaria program in 1949," Dr. Vimol Notanamia, Regional Malariologist, told me, "the annual mortality rate in our northern region was 800 in 100,000 persons. Now it is fewer than 25.

"Today our national program covers 15,700,000 people and touches practically all the malaria areas in the country. By 1968 we expect to have the disease eradicated.

"We're pretty proud of our work," he said, explaining that it had been done by taking DDT by elephant, oxcart, pack carrier, and boat into even the remotest areas. "Besides training our own teams," he added, "we've had students from Laos and Indonesia

**Modern Industries and Age-old Handicrafts Mesh in Thailand's Progressing Economy**

Overwhelmingly agricultural, Thailand pushes establishment of factories and new methods. Shiny tractors at an experiment station near Bangkok help teach modern farming techniques to rice growers.

**Snowy crepe rubber** hangs to dry in a government plant near Songkhla.

**Oily paint waterproofs parasols** in a shop where craftsmen follow the traditional practices. Most Thai products are still made by hand.

here for antimalarial study."

Despite Chiang Mai's quickened pace, I found some activities little changed. Many families still work at home handicrafts—making beaten-silver bowls, lacquer ware, woven silks, and oil-paper parasols (page 843).

While sitting at dinner one evening, I heard the familiar boom of temple drums. I hailed a samloh and headed for the sound.

At a wat in the heart of town, a *tam boun*, or festival, was getting under way. In the courtyard stood an array of great cannonlike drums. On them drummers beat resounding notes, punctuating the rhythms carried by smaller drums and wailing flutes.

A stage had been set up, but for a modern play, not the traditional folk dances. United States Information Service and British Information Service films added to the entertainment. Inside the temple people knelt, said prayers, and added one- and five-baht bills to bamboo altar trees, the money to be used for temple repairs. (A baht is about 5 cents.)

Next day, on my way to the near-by town of Lamphun, I came upon another tam boun. Here I found dancers—two groups of slender graceful girls in bright silks with flowers garlanding their black hair. One group consisted of teen-agers, the other of even younger children.

They took turns dancing, their lithe bodies and sinuous arms weaving magic patterns of motion. On their fingers they wore long curving gilt clips, like elon-

**Mother elephant,** her calf tagging at her side, rolls a log in Thailand's eastern forests. Her bark-padded saddle and chest strap take the strain of chains used to drag felled trees to a sawmill's trucks.

Wood from these logs finds use in construction and as fuel.

gated nails, to emphasize their flexible hand gestures (page 810).

Today the contrast between the peoples of northern and southern Thailand is becoming less marked. But the dances, the Lao language I heard spoken particularly by the older folk, and the taller stature of the northern people all reflect the historical difference between the Lao and the Thai, though both belong to the same stock. Their ancestral home was southern China; the Lao, however, are later migrants than the Thai.

### Hill Tribes Migrate to the South

Southward migration into Southeast Asia is almost as old as the human race. Kublai Khan's armies, sweeping through southern China all the way to Burma in the 13th century, caused the biggest Thai migration.

Various peoples have followed—the Miao, Yao, Tin, Lissu, Muhso, Kaw (A'Kha), and other hill tribes who have shifted southward from one mountaintop to another. This migration is still going on; in fact, its movement has increased since the war.

Years ago I climbed the northern mountains to visit some of these primitive hill folk. I stayed in their rude villages and awakened some mornings to find their pigs rubbing under my camp cot. The tribesmen grew corn and opium poppies in small clearings cut in the forested mountaintops. Now the Thai are trying to get them to grow coffee instead.

"But people in the province," my friend Wichitr remarked, "protest that the ruthless forest slashing by the hill people is creating our water shortage."

Whether from forest cutting or only because of a quirk in the seasons, the Chiang Mai region was experiencing an acute lack of water. The plains around the city lay dry,

**Cooked shrimp sun-dry on bamboo mats** before a Chinese temple in the village of Maha Chai. Workers flip corners of the mat to shake shrimp into piles, then spread them with rakes. The seafood spices Thai dishes, generally based on rice.

**Seashore and inner tube** spell fun the world over. These youngsters frolic at a resort on the Gulf of Siam, southeast of Bangkok. Fishing craft sun their sails.

quivering in the heat. In years past I had seen these irrigated fields green with rice and soybeans in dry-season planting. Now the canals were dry, and the Ping River bared many sand bars. It was hard to believe that thousands of logs annually ride down the Ping and other streams to Bangkok.

Water, however, filled part of Chiang Mai's old city moat. About it, as indeed everywhere along Thailand's canals, rivers, and seacoast, I saw people fishing. Fish provides the country's main protein food.

### No Mermaids! Only Fish and Shrimp

Back in Bangkok a newspaper item set me seeking a fish story at Maha Chai, a village on the Tha Chin River near the gulf. Once before, another news story had lured me there; then a fisherman supposedly had netted an odd creature which he called a mermaid!

The mermaid had proved a hoax: the fish-sauce and shrimping trade I sought out this time proved genuine.

Maha Chai both looks and smells like the fishing village it is. A narrow band of houses, dominated by massive pole racks for drying nets, extends along either side of the river. Small sail and motor fishing craft cruise from here, going out to the river mouth and into the shallow gulf.

"We're getting only a few fish now," said one of the fishermen. "Most of the boats are netting shrimp. Would you like to go out?"

Riding through the river mouth, we passed scores of fish traps—long openmouthed V's of stakes thrust into the shallows. At the point of each trap lay a small sailboat, its owner tending a long sleevelike net attached to the trap opening.

From time to time the fisherman lifted the net end, opened it over his boat, and shook out the entrapped fish.

Out in the gulf a fleet of motor craft swept back and forth or cruised in wide circles as if playing an odd game of tag. Poles extended from either side of the boats, like outriggers minus their pontoons. To them were attached the lines of long trawl nets.

Frequently a boat halted, drew in its nets, and emptied them of shrimp.

Returning with the shrimpers to Maha Chai late in the day, we watched them unload their catches. The shrimp were washed and immediately dumped into cooking pots.

Resteamed next morning, they were then spread on bamboo mats to dry in the sun. Shrimp covered garden racks, walks, even the courtyard of a Chinese temple (page 847).

In sheds, workers ground up the fish catches and packed the pulpy flesh into jars or vats to convert it to fish paste. From this purple paste comes the salty fish sauce the Thai use to flavor their foods.

At the seaside resort of Hua Hin and at many other towns along the southern peninsula, I saw more fishing activity. Hundreds of fish traps strew the shallow gulf like partially submerged fences. Speedier motor boats, however, now are rapidly replacing the sailing craft that formerly winged these waters. Increased use of refrigeration, too, is slowly outmoding the older method of curing catches in the sun.

### Rubber and Tin Enrich the South

Traveling down country, I saw men climbing the tall sugar palms that stud the countryside. They tap the flower spikes for their sap, trap it in lengths of bamboo, and boil it down to brown sugar.

Throughout southern Thailand another kind of tree tapping is bigger business: rubber. Here spread plantations covering some 800,000 acres, from which come annually about 185,000 tons of raw rubber. Though the country exploits only a fraction of its full potential, rubber stands next to rice as the most important export item (page 843).

Tin, the third ranking export, also comes from the south. Along the southern valleys and on the west coast island of Phuket, I watched dredges and hydraulic jets tearing at the earth to uncover from 16,000 to 22,000 tons of tin concentrate each year. Expansion has lagged in recent years, in part through the lack of exploration for new deposits to replace depleted mines, but two seagoing dredges have begun operating in the waters around Phuket, tapping a hitherto unexploited source of the mineral.

"Don't miss our oddest product of the south—the birds' nests from which the Chinese make their famous soup," a friend told me before I left Bangkok. "Best place to see the nest gatherers is around the cliffs of the islands in the big inland lake near Songkhla."

Here and elsewhere along the peninsula, Chinese contractors seasonally send collectors cruising beneath the limestone cliffs and scrambling among caves to gather the nests built by hordes of darting swifts (*Collocalia*). The shell-like nests consist of a gelatinous substance which the birds produce as a salivary secretion.

### For Bird's-nest Soup—First Get the Nest

"The Chinese consider the soup good for the system," a bird-nest collector explained. "They say it lowers your blood pressure."

I was concerned more about the swifts' own blood pressure. The nest raiders must drive the birds almost to distraction. The collectors remove the newly built nests before the eggs are laid. The birds build a second, only to have that taken also.

"We leave the third nest," the collector said, "else we wouldn't have many birds the next year. Afterward we collect the used nests. They are not very good; they're dark and often are mixed with bits of feathers and moss. But people who can't afford first-grade ones buy them. The best white nests may cost as much as 1,000 bahts a kilogram [approximately $25 a pound]."

Impressed more by the persistence of the birds than by the taste of the soup we sampled in a local restaurant, I headed back to Bangkok.

On the plane I talked with a long-time acquaintance, a banker on his way to the capital for a loan conference. From swifts, our conversation turned to the determination of Thailand to strengthen itself and move ahead with the times.

"In our idiom, you know," my friend reminded me, "we say that a 'clock walks' [*naliga dern*], while you say it runs. Our airplanes also walk. Our country may be walking, yet as you've already seen, it is going forward. . . ."

Walk, run, fly—by whatever verb one wishes to express it, Thailand is indeed forging ahead. But happily Oriental, it still has time for fun, festival, and fair.

**Shy dancer with a gentle smile** wears the *sabai chieng*, a flowing wrap-around that leaves one shoulder bare. Western dress prevails in Thailand; only in villages and on special occasions do men don the puffy-legged *panung*, women the traditional garb.

# Rose Aphids

## CAMERAS PROBE THE BIZARRE WORLD OF A GARDEN PEST

Text and photographs by TREAT DAVIDSON

THROUGH 40 YEARS of gardening I harbored a rosegrower's hatred for aphids. When the minute sap suckers appeared on my bushes, I rushed for a spray to destroy them. Now I go for my camera.

My interest sprang from chance. I had ordered special camera equipment for photographing insects in action. When it arrived, in late November, snow covered the ground about my home in Warren, Pennsylvania, and virtually all insects had disappeared. Only a few aphids remained on the withered rose leaves. They looked frozen, but after a few hours indoors they began moving about, seemingly none the worse for several frosty nights. My test pictures revealed pear-shaped creatures of extraordinary coloring—green, red, pink, orange, and yellow. Some displayed a delicate blend

**Smaller than a pinhead,** a young aphid crawls past a shiny black egg deposited on the rose stem.

**Voracious garden pests** speckle a dew-beaded "Crimson Glory." Needlelike beaks suck plant juices.

of hues. When spring came, I took my cameras into the garden and focused within inches of the insects as they swarmed over buds, blooms, and leaves. Rose aphids, I discovered, were ideal subjects for color photography. My curiosity was sparked to learn more about these clumsy, defenseless bugs.

The life cycle of *Macrosiphum rosae* must be among the most amazing in the animal kingdom. Spring's first blush hatches shiny black eggs deposited on rosebushes the previous

Transparent, cellophanelike

**Baby aphid emerges** from its mother; rose stem becomes a maternity ward. Photographer Davidson's rapid-fire sequence, enlarged 16½ times natural size, captures an aphid's first seconds of life. Like children outgrowing their clothes, aphids molt several times before reaching maturity. Then, reproducing without fertilization, the female may spawn a dozen young every day.

fall. From each egg crawls a wingless female aphid, destined to remain on the plant where she was born. By parthenogenesis, or virgin birth, each female soon bears live young. The young grow up and spawn more young—and so on into astronomical numbers. All are females; some are winged, others wingless. Those that can fly move on to neighboring rosebushes.

This prolific reproduction goes on all through summer. Then, in autumn, a mysterious change occurs. Shortly before cold weather wipes out the aphid colonies, the remaining females give birth to both males and females. These mate; the females lay eggs, and the cycle begins anew the following spring.

If unchecked, aphids would blanket the earth. Nature has wisely provided a counterbalance: Multitudes of enemies gorge on them. In my garden alone I have seen ladybird beetles, lacewings, flower flies, and parasitic wasps decimate huge aphid colonies (pages 856-7).

Should these foes fail to purge a garden, man can lend a hand with spray and dust. For the aphid, beauty of color notwithstanding, is undeniably a pest.

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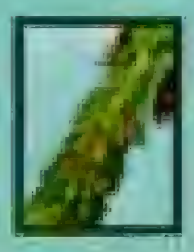
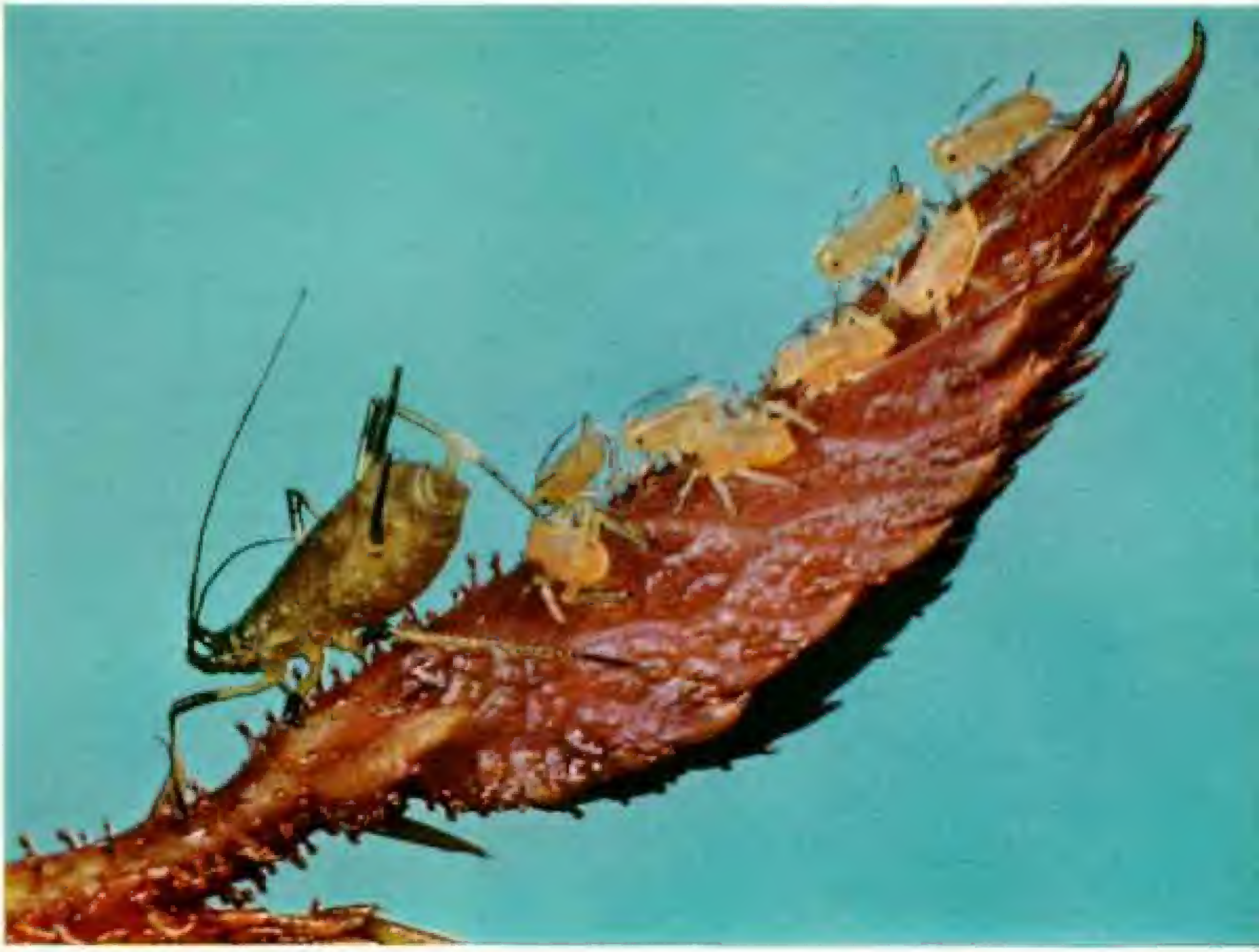
wings held aloft, a female wades among her flightless, earthbound sisters

**Crowded as passengers** on a rush-hour bus, sap-sucking aphids smother a rose stem. A greenish mass to the naked eye (inset, life-size), the marauding horde under magnification reveals a sprinkling of color. Soft-bodied plant lice, as aphids are often called, infest food and flower crops, including apples, corn, citrus fruits, potatoes, chrysanthemums, and tulips. They blight buds, curl leaves, dimple fruit, spread deadly plant diseases, and stimulate the growth of fungi.





### Mother Aphid Parades Her Newborn Brood Down a Tender Rose Leaf

Eight offspring, all wingless females, have begun feeding. In a week or two they will mature and in turn bear their own first broods.

**Death knell sounds** for an aphid clamped in the grip of an orange-colored flower-fly larva. Cast-off skin of an aphid still clings to the rosebud.

**At rest on a rose petal,** a winged aphid displays its spidery legs. Fore wings hide smaller hind wings. Antennae jutting from the head contain sense organs. Body excretes a honeydew that coats rose leaves and stems, a glistening liquor on which bees, wasps, and ants feed (page 857).

**Ants and aphids** share a curious relationship Moving the insects from pasture to pasture as men move their cows, many ants dine on the nutritious honeydew the aphids excrete. Ants often carry their charges in their mouths from one plant stem to another, and stroke their abdomens to "milk" the sweet extract from them.

## Everywhere the Aphid Crawls, an Enemy Waits to Devour It

Stalking with the stealth of a tiger, the ladybird beetle larva at left, using sharp, curved mandibles, pounces on a rose aphid and eats it.

Valued ally of rosegrowers, the ladybird larva ranks as a major aphid enemy, consuming many times its weight in a day

**Adult beetle** (below) acquires a reddish-orange shell and becomes the "fly-away-home" ladybug popularized in a children's rhyme It continues to feed on aphids.

**Parasitic wasps** destroy aphids in different fashion (lower left). In an action so rapid it can scarcely be seen even with a magnifying glass, the tiny wasp lands atop an aphid and injects an egg with her needlelike ovipositor. In two or three days the wasp larva hatches and consumes its host, leaving only a dry husk.



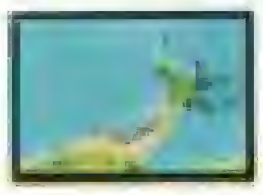


**Golden-eyed lacewing** (below) lays eggs at the ends of hairlike stalks (right), possibly to prevent her cannibal offspring from eating one another as they hatch. In the larval stage the lacewing captures, punctures, and sucks the life juice from aphids. Known as an aphid lion, the larva possesses a gluttonous appetite for the rose pests.

Aphid (right) creeps past a lacewing egg and hatching larva. Waxy substance issuing from aphid's dorsal tubes forms yellow spots.

# Murder in a garden

THIS COMMONPLACE CRIME often escapes the naked eye, so tiny are the antagonists (inset, life-size). Magnification of a



life-and-death struggle between flower-fly larva and aphid shows the larva holding aloft its hapless victim and draining its life juices (right). Though it lacks eyes and legs, the wormlike flower-fly larva ravages aphid colonies. Maturing into a winged adult, it feeds on nectar and aphid honeydew. Because of its springtime habit of hanging suspended, wings vibrating, above aphid-infested plants, the predator is also called the hover fly. The female lays her eggs among the aphids.

**Flower-fly larva,** having killed an aphid twice its size, drags the corpse down a rose stem. Young of many flower-fly species, varying in size and color, prey on aphids.

**Winged adult** and half-grown aphids feed among black eggs and the bleached skins of insects that have recently molted. Eggs will ensure another year of survival for this colony, despite the slaughter among its ranks throughout the summer.

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# THE FBI: PUBLIC FRIEND

MANY AMERICANS have never met or knowingly seen a special agent of the FBI. Yet day and night, throughout the Nation, 6,000 of these quiet, efficient G-men move among us, tracking down spies, kidnapers, robbers, and other enemies of our national and personal security.

Any hour of any day might find an FBI agent paddling a pirogue on a Louisiana bayou or trailing a suspect through the New



**Like searchlights,** tracer bullets streak the night as agents fire revolvers at man-sized targets on the FBI Academy range, Quantico, Virginia. Each man holds his flashlight away from the body to misdirect return fire.

# NUMBER ONE

By JACOB HAY

*Illustrations by National Geographic photographer ROBERT F. SISSON*

York subway. Or, on an undercover job, an agent might be mixing sodas in a neighborhood drugstore.

From its Washington headquarters, the Federal Bureau of Investigation directs a network of 55 widely scattered field offices and hundreds of resident agencies. As Director J. Edgar Hoover pointed out to me recently, this deployment of strength enables the Bureau to place an agent at the scene of a Federal crime anywhere in the Nation within an average of one hour or less.

By special request of President Kennedy, Mr. Hoover now serves as Director under his sixth Chief Executive and 15th Attorney General. When I first listened to his staccato speech and sensed the penetrating power of his eyes, I was glad I had nothing more than an occasional parking ticket on my record.

"I hear you run a taut ship," I said, and



### Director and Staff, at a Conference Table, Wage Ceaseless War Against Criminals

Little more than half a century ago a handful of men began the work of the Federal Bureau of Investigation. Today the Bureau ranks as one of the world's most powerful law-enforcement agencies, acting against crimes ranging from interstate shipment of unsafe refrigerators to plots to overthrow the U. S. Government.

Plexiglas map of the United States dotted with the Bureau's field offices frames Director J. Edgar Hoover (right) and his chief lieutenants. Associate Director Clyde A. Tolson stands at left. Seated around the table from the left are Assistants to the Director John P. Mohr and Donald J. Parsons; Division Assistant Directors Cartha D. DeLoach, Crime Records; Ivan W. Conrad, Laboratory; Alex Rosen, General Investigative; Alan H. Belmont, Domestic Intelligence; John J. McGuire, Jr., Files and Communications, recently retired and replaced by William S. Tavel; Nicholas P. Callahan, Administrative; John F. Malone, Training and Inspection; and C. Lester Trotter, Identification. Not shown is Assistant Director Courtney A. Evans, head of the newly organized Special Investigative Division, which investigates notorious criminals and conducts inquiries regarding prospective Government employees.

Mr. Hoover grinned. Now 66, he seems ten years younger.

"Let's continue the Navy analogy," he said, "and say that the FBI has a first-class crew, from my long-time friend, Associate Director Clyde Tolson, down to the newest clerical employee. I doubt that it could be equaled anywhere in the Government."

In his 38th year as Director, Mr. Hoover prides himself not only upon his Bureau's efficiency but upon the "profit" it shows annually. During fiscal 1960 the FBI received $114,600,000 in operating funds. Fines, savings, and recoveries of stolen property and contraband in cases investigated by the FBI amounted to $142,822,244, or $1.25 returned for every dollar invested by the taxpayer.

#### Bulletproof Door Guards Communications

With Special Agent Charles E. Moore as my guide, I set out to look behind the scenes of the FBI. We started with visits to several field offices and ended with a tour of the command post in the Nation's Capital.

Our first stop was Baltimore, where the ASAC, or Assistant Special Agent in Charge, showed me through his office. Robert J. Lally helps direct a force of more than a hundred agents scattered strategically throughout Maryland and Delaware.

Behind a bulletproof door, Lally showed me his radio room, equipped to transmit voice and code. The Baltimore FBI network coordinates with the Maryland and Delaware police radio systems. High-speed teletype circuits carry a heavy volume of messages between FBI headquarters and the field offices.

Another heavy door guarded the arms room, with its array of spotlessly maintained weapons.

"Try this on," Lally said, tossing me a garment that resembled an Army field jacket.

"You are now bulletproof, more or less," he said, grinning at my astonishment. "No, it's not steel; it's plastic. You can wear it

MOSAIC MURAL BY NATIONAL GEOGRAPHIC PHOTOGRAPHER ROBERT F. SISSON AND JOHN E. FLETCHER, JR.

under a suit and not look too conspicuous."

Although they operate alike, each FBI field office must be flexible enough to adapt itself to a community's special crime problems. In addition to the types of crime peculiar to a seaport city, Baltimore has its share of bank robberies.

"One of the reasons is just sheer friendliness," Lally said. "Banks used to be cold, impersonal places with high counters, grilles, and plenty of bulletproof glass to protect the tellers. Now they're friendly. The counters are low and wide open.

"What's the result? The amateurs have gotten into the act. It looks so easy, and too often it *is* so easy. Bank robbery used to be a job for professionals, and with a pro you've got a chance, because you can recognize his m.o. [*modus operandi*]. But nowadays . . ." Lally shrugged sadly.

In consequence, FBI agents offer banks special classes in robber-frustration. Agents show bank employees how holdups are staged by bandits. Then in a question-and-answer period they test the skill of employees in spotting characteristics that might lead to identification. As a means of gauging how tall a robber is, for instance, the FBI advises tellers to estimate height against that of the counter or cage window.

Leaving Baltimore's narrow streets for the open spaces of the West, I found Special Agent Floyd W. Brown facing vastly different

*(Continued on page 867)*

# FBI Academy


NATIONAL GEOGRAPHIC PHOTOGRAPHERS ROBERT F. SISSON AND JOHN E. FLETCHER

PISTOL AND PEN greet the newly appointed agent arriving at the FBI Academy. For 13 weeks he is rarely without one or the other. From classroom lectures, films, and discussions he learns Federal law and courtroom procedures; how to investigate a crime and write a report. Homework keeps him busy at night.

Out on the firing range, the agent learns to shoot his .38-caliber revolver with either hand (opposite, upper left).

On "Main Street" (above), with its dummy stores, cafe, hotel, and garage, the G-man faces surprise targets that pop out of windows and doors. Since each target requires quick decisions as well as quick shooting, the trainee learns when to hold his fire.

Laying firearms aside, the new agent works out on the mat, perfecting hand-to-hand defense (left).

**Pattern of a fingerprint,** many times enlarged, gives agents a scientific key to crime detection. Each man's prints differ from all others, and may be classified according to eight basic patterns, involving arches, loops, and whorls.

TRAINING DEMONSTRATION SPOTLIGHTS ARRANGED FOR

**Roadblock Bristles With Shotguns as Agents Re-create a Capture**

Arizona State highway patrolmen, deputy sheriffs of Maricopa County, and G-men combine forces to cut off escape routes. Flares on a mountain road

(Continued from page 863)

problems. From Flagstaff, Arizona, Brown enforces the Federal law in the wild moonscapes of the nearby Navajo and Hopi Indian reservations. Often he must ride horseback to the scene where he conducts inquiries through an interpreter.

"You run into some odd situations out here," Brown observed as he drove us to Tuba City on one of his regular calls on the Navajo tribal police. "Like the time a Hopi was charged with draft dodging. We had no problem finding him—he was the son of a snake doctor. And he had a good reason to avoid military service.

"Seems his forebears had instilled in him the tradition that he should not bear arms against other men.

NATIONAL GEOGRAPHIC PHOTOGRAPHER ROBERT F. SISSON © N.G.S.

near the Phoenix field office warn approaching motorists against driving into possible gunfire.

**Crime has no office hours.** FBI offices often work day and night to document a case. Twenty volumes of evidence may be sifted to convict a single bogus-check passer.

TRAINING DEMONSTRATION SPECIALLY ARRANGED FOR THE NATIONAL GEOGRAPHIC. © N.G.S.

**Blackboard map and aerial photograph** help Los Angeles agents plan surveillance of a suspected extortionist. Two men will eye the suspect's home from an apartment close by; others will trail him by car. When their man picks up the $20,000 demanded of the victim, FBI agents will close in to arrest him.

"Well, this young brave figured that if he reported for military duty the tradition would be violated. He would be responsible to the tribe and would lose his right to become a snake doctor, a high honor in the Hopi tribe.

"Anyhow, an FBI investigation ultimately proved that the Indian youth was truly a pacifist, and the local draft board exempted him from military service as a conscientious objector."

### Smuggling Causes Problems

In San Juan, Puerto Rico, SAC John Speakes has the challenging task of watching over the security of Uncle Sam's Caribbean citizens.

"One of our biggest problems," said Speakes, "is the illegal transportation of lottery tickets. The numbers lottery is legal in Puerto Rico, but not in the States, where there's a big demand among Puerto Rican immigrants. There's also a tidy profit for the smuggler, since a 25-cent ticket brings 50 cents or more on the mainland."

New York City, with its polyglot millions and the Nation's largest port of entry, has the biggest field office of all.

"Here," declared SAC Harvey G. Foster, "we've got everything. There is probably no form of crime we don't encounter."

So extensive is the New York City operation that not one but four assistant special agents in charge direct more than 1,000 FBI investigators.

"In New York, the bizarre is accepted as the usual," explained ASAC Alton M. Bryant. "Strangers aren't recognized as strangers, and the public has a live-and-let-live attitude. By which I mean that you and I could go out and start sawing our way into a truck in broad daylight. Chances are nobody would say a word; people would figure it was none of their business, and that we had a perfectly legitimate reason for doing it.

"You remember that cartoon about a man being dragged down a manhole by an octopus?" Bryant went on. "And the New York crowd walked on by, as if the thing were an everyday affair? That's what we're up against, a blasé city."

On our way back to Washington, Charlie Moore told me how the patterns of crime in the United States have changed in the three decades since outlaws like John Dillinger, "Pretty Boy" Floyd, and "Baby Face" Nelson terrorized whole regions.

Although gangs with their crude violence have not disappeared, today's criminal tends more and more to be a cunning individual on his own, bent upon the bold strike and the lightning getaway.

Among other factors, the ever-increasing speed of transportation works to the modern criminal's advantage. Today a man can rob, kidnap, or commit murder and be a continent or an ocean away before his crime has been discovered. A recent example: A pouch of payroll checks was stolen in Hollywood, California; less than 24 hours later, some of the checks were cashed in eastern seaboard cities.

### FBI's Strongest Weapon: Science

Fortunately for the citizenry's peace of mind, the FBI lives by the rule that for every offensive weapon there is a defense. This military truism was stated in more matter-of-fact terms by Special Agent Moore.

"As fast as criminals think up a new trick," said Charlie, "the FBI thinks up a dozen ways to outsmart them. Our ace in the hole is science—chemistry, biology, physics, electronics, and all the rest. The criminal thinks of a gun as the instrument that will bring about his downfall. He seldom realizes that a microscope just as often spells the end of his career."

"Speaking of science," I said, "when the layman thinks of law enforcement, he most likely thinks of fingerprints. How about starting my tour of headquarters with the Identification Division?"

From the FBI nerve center in the Department of Justice Building (page 871), we drove to a multiwinged structure in southwest Washington where the division keeps nearly 159 million sets of fingerprints—often more than one set to a person, as in the case of a man apprehended many times by the police and fingerprinted each time. More than 37½ million sets belong to criminals, and of these, some 88,000 bear "stop" notices, meaning that their owners are wanted by the FBI or some other law-enforcement agency.

Assistant Director C. Lester Trotter explained that a stop notice was a tiny red tab placed on a man's card.

"These are the greatest little criminal catchers we have," Trotter said. "We get about 1,500 fugitive identifications a month through these stops when prints are taken in connection with arrests or job applications.

"Putting the population of the United States at 180 million," Trotter continued, "we can say that our files contain the fingerprints of about 42 percent of this total—76 million persons. The system is set up so that we can locate any individual's prints in a jiffy."

"All right," I challenged, "find mine."

"Gladly," he replied. "Come and meet Orley Leeson, one of our classification experts."

Trotter deliberately concealed my identity when he introduced me to Leeson.

"Mr. Leeson," said Trotter, "meet Mr. X." To me he said, "Now look at your watch."

I did. It was 3:10 p.m.

Leeson took my fingers and rolled and pressed them onto a standard FBI form. The process took about a minute. He knew nothing about me, not even my name. Applying a lens to the prints, he swiftly classified them according to the Bureau's precise formula.

Then he led me briskly down a flight of stairs and into one of the huge file rooms, his eyes flicking over the numerical cards identifying each bank of cabinets. Suddenly he stopped and opened a file drawer, riffled through the hundreds of sets of fingerprints inside, and, with a pleased grin, withdrew one.

"Glad to meet you, Mr. Hay," said Leeson.

He handed me a card bearing my fingerprints—the card I had signed before entering the Army in 1941. The time was 3:14. To extract my 20-year-old card from among the millions had taken just four minutes.

### Hairs—From Aardvark to Zebu

Charlie and I returned to headquarters to see the Bureau's most spectacular operation—the FBI Laboratory, which in criminal cases offers its many services and expert testimony free to any State or local police agency in the United States.

Here the 400,000 tourists who visit the FBI each year can watch firearms experts match bullets to gun barrels, serologists identify bloodstains, and other specialists toil doggedly toward solution of crimes by peering through microscopes. Under microscopic study, bits of bone, hair, fiber, and myriad other items of evidence daily point the finger of guilt at criminals or lift the stigma of suspicion from innocent persons.

"Give these people a single hair or a speck of blood," said Charlie, "and they can tell you whether it came from a human being or an animal. And if it came from an animal, they can tell you what kind of animal."

Charlie stopped at a cabinet and opened a drawer packed with glass slides arranged alphabetically. He rummaged among the W's and handed me a slide. It held a filament of hair and was labeled "Wallaby."

"Here's another one," he said. "Wombat. They're all here, from aardvark to zebu."

The laboratory often assists other Government agencies in answering difficult questions, even in noncriminal cases. Recently, the Archivist of the United States submitted five documents relating to the Philippine Insurrection of 1899 and asked the FBI to determine whether signatures appearing on them had been written in human blood. National Archives forwarded the inquiry at the request of a historian who sought to prove that the rebel leader, Emilio Aguinaldo, required such testaments of his followers.

Despite the age of the documents, laboratory experts proved the presence of blood in two signatures. Additional tests showed that the blood was of human origin.

In one laboratory room I noticed a rack hung with panels of brightly colored metal. This was the National Automotive Paint File, containing samples of finishes used on all American cars and some foreign makes.

### Laboratory Solves Maryland Tragedy

Sometimes investigators send in a fleck of paint no bigger than the head of a pin. Perhaps it has been found on a hit-and-run victim. Such minute evidence, analyzed with the aid of complex instruments, can tell experts that the car involved was, say, a 1958 tropic-blue Plymouth, thus narrowing the search and leading eventually to an arrest or the clearing of a suspect.

Police of Montgomery County, Maryland, came to the laboratory for help in a particularly shocking hit-and-run case. A young mother had been pushing her 11-month-old son in a stroller along a quiet street in Bethesda, a suburb of Washington. Householders heard a splintering crash and rushed outside — to see a car speeding away and the mother and child lying dead.

The police brought to the laboratory twisted pieces of the stroller and a bumper they had removed from a suspected automobile. Laboratory experts found that the stroller bore three coats of paint. Adhering to the bumper was a three-layered chip of paint about the size of a fingernail.

Not only did the paint chip match the stroller's finish in chemical composition; it fitted exactly into its original position on the stroller. After a jury heard laboratory examiners testify to these findings, it answered the defendant's not-guilty plea with a verdict of guilty. The driver went to prison.

### FBI Proves Woman Innocent

In many cases the laboratory's techniques and complex instruments help clear persons who have been wrongly accused of crimes.

"We get far more satisfaction out of proving innocence than we do out of establishing guilt," said Donald J. Parsons, Assistant to the Director of the FBI.

He told of a Virginia woman who was accused of murdering her husband. Police found the man dead in his bedroom, shot through the heart. In the adjoining room officers found an automatic pistol with a cartridge case jammed in the chamber.

The man had shot himself accidentally, the wife said. Police maintained, however, that this was not possible under the circumstances. She was thereupon arrested and charged with murder.

Two days later investigators noticed a bright indentation in a hot-air grille in the floor between bedroom and dining room. Could the mark have been made by the gun? Grille, pistol, bullet, and cartridge case were sent to the FBI.

Laboratory experts matched the fatal bullet to the gun barrel. The mark on the grille proved similar to that produced when the metal was struck with the pistol's rear sight and knurled hammer. Paint on the weapon matched that on the grille. The victim, it appeared, had thrown the gun against the grille, causing it to fire. Result: The shooting was ruled accidental, the woman innocent.

**FBI Keeps Watch Over the Nation From Its Washington Headquarters**

In this columned building on Pennsylvania Avenue, specialists analyze evidence to trap violators of Federal laws. Orders go out to thousands of agents in 55 field offices. A popular tourist attraction, the Bureau draws some 400,000 visitors each year.

**Typists daily process** some 21,500 new sets of fingerprints at the FBI Identification Division. Its growing files now hold 159 million sets—the world's largest collection—received from civil, military, and law-enforcement sources.

**Name card and fingerprints** serve as a cross index to a man's identity. His prints are classified and filed according to his finger-tip patterns. If stacked, the cards stored here would rise 90 times higher than the Empire State Building.

The laboratory provides an eye-opening demonstration of the deviousness of the criminal mind. Over the years it has amassed a vast reference collection of the work of the country's bad-check artists, extortionists, and confidence men. Charlie opened a file drawer and extracted a thick folder.

"Our master check passer, *cum laude*," he observed. "Frederick Douglas George, a dapper, glib little con man who could take all the banks in town in half an hour."

George's technique was simplicity itself. Appearing at a bank during a rush hour, he would deposit a sheaf of checks, using names selected from his private stock of 1,800 aliases. The checks were worthless, but on their face they added up to an imposing sum. Then, perhaps with a jocose quip or two, he would present a counter check to be cashed by the hurried teller. He always asked for much less than the bogus deposit.

George would pocket the money and move on to the next bank and thence to the nearest airport. By the time the fraud was uncovered, he would be thousands of miles away.

During 1952 and 1953 George deposited about $1,000,000—or so the luckless tellers believed at the time. In return for his worthless paper, he walked away with a cool $100,000. FBI agents finally caught him, and he died behind bars.

With the FBI Laboratory and the Identification Division, the Files and Communications Division forms the hard core of the FBI's criminal information center. It contains some five million case files and approximately 48 million index cards. John P. Mohr, Assistant to the Director, explained that the cards "are the keys that open the files to the right pages."

### Atomic Scientist Turns Traitor

In one of the files rests the record of a case of espionage that presented the Soviets with the key to the atom bomb. The spy was Klaus Fuchs, atomic scientist.

FBI and British intelligence authorities reconstructed one of the most disastrous epics of betrayal in the annals of espionage. Piece by tedious piece they put together the story of the refugee German physicist who repaid Britain's hospitality and the trust of the United States in the coin of treason.

Mild-mannered and withdrawn, Fuchs was an unlikely traitor. While in the United States with a British atomic commission, he worked in New York and Los Alamos, New Mexico. Through him the Russians learned how the atomic bomb was constructed and how it was detonated.

Accused, Fuchs confessed, was tried and sentenced in 1950 to 14 years' imprisonment.

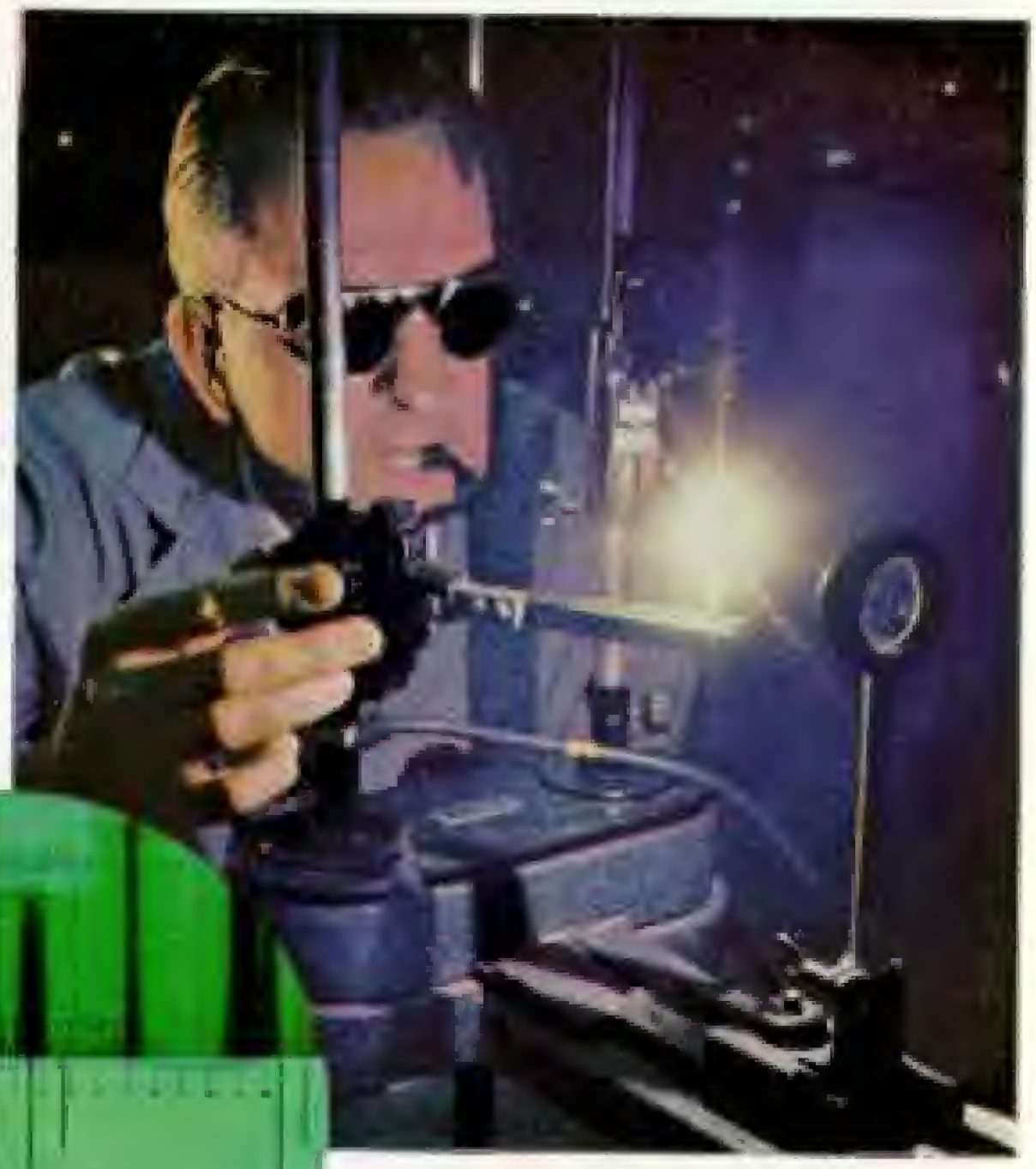
**Fitted together like pieces of a puzzle,** an airplane's fragments suggested an explosion in the cargo compartment. Agents began looking for signs of a bomb.


## Tense Jurors Study Evidence of Sabotage That Cost 44 Lives

A Colorado farmer looking into the sky at 7:04 p.m., November 1, 1955, watched in horror as a commercial airliner exploded in mid-air. What he saw was no accident.

Painstakingly assembling the plane's pieces (top), aircraft engineers determined that one cargo area had been blown to bits. The FBI confirmed the suspicion of deliberate destruction by discovering dynamite residue and the scrap of a battery detonator (above) amid the wreckage.

Jack Gilbert Graham, who had insured his mother's life for $37,500 before putting her on the plane, confessed to smuggling a bomb aboard. FBI evidence introduced at his trial in Denver led to his conviction.




**Spectrographic test** (above) of particles from wreck shows manganese (Mn, left) from a battery.

the maximum penalty for violating Britain's Official Secrets Act. With five years off for good behavior, he was freed in 1959. Today he is believed to be pursuing nuclear research in East Germany. U. S. courts convicted five of Fuchs's fellow conspirators. Julius and Ethel Rosenberg were electrocuted; David Greenglass, Harry Gold, and Morton Sobell went to prison.

The Files and Communications Division plays an important part in FBI investigations of the loyalty of applicants for Government employment. In 1960 alone, more than a quarter million names were checked in connection with loyalty inquiries.

Having heard a great deal of discussion of this phase of FBI work, I sought enlightenment from Assistant Director Cartha D. DeLoach of the Crime Records Division.

"You must understand," DeLoach said, "that the FBI cannot and does not 'clear' anybody. We simply pass along whatever information we have to the Government agency involved. The agency evaluates the information and either does or does not clear the individual concerned.

"This, of course, is in line with the Bureau's primary job, which is fact finding," DeLoach went on. "By law and policy the FBI does not evaluate, prosecute, or judge the cases it is investigating."

I asked: "What about complaints or accusations that may have been inspired by malice or jealousy?"

**Drumfire of flaming tracers** converges on man-shaped targets. Revolvers on hips, G-men squeeze off staccato bursts from their Tommy guns during night practice at the FBI Academy range. Bullet striking a rock ricochets like a skyrocket.

Agents use firearms only in self-defense; they try to force criminals to surrender rather than shoot it out. Since 1934, when agents were authorized to carry guns, only 33 criminals have been killed in the course of thousands of arrests.

"Whenever a person labels a job applicant a Communist, Fascist, or the like," replied DeLoach, "the FBI asks *why* he believes this, *how* he knows. Should the accuser have no supporting facts, the FBI clearly notes this in its report. The Bureau merely gathers all the available facts so that the interested Government agency may make a decision based upon the preponderance of evidence, which is in fact the way man judges man in a democracy."

From Assistant Director Nicholas P. Callahan, Chief of the Administrative Division, I learned that the selection and training of special agents is a process designed to weed out the faint of heart and discourage all but the most dedicated.

Callahan slid an official information sheet across his desk. An applicant for appointment as special agent, it stated, must be a male citizen between 25 and 41, a graduate of a State-accredited resident law school or a four-year resident accounting school with at least three years' practical accounting experience, and willing to serve anywhere in the U. S. or its possessions.

"All applicants," the document advised sternly, "must be able to perform strenuous physical exertion and, further, must have no physical defects which would interfere with their use of firearms or with their participation in raids, dangerous assignments, or defensive tactics."

An applicant who meets these qualifications and passes the required tests must also survive a rugged investigation of his background. If, after all this, he remains in the running, he is accepted by the FBI.

"Once he's appointed, he goes to the Training and Inspection Division," Callahan said. "They make a special agent out of him."

### New Agents Train for 13 Weeks

The pride of Assistant Director John F. Malone's Training and Inspection Division is its Academy on the grounds of the U. S. Marine Corps Schools at Quantico, Virginia. Newly appointed agents divide their 13-week training program between the Academy and Bureau headquarters in Washington (pages 864-5).

At Quantico, Special Agent in Charge Henry L. Sloan, a tall Texan, invited me to assist in a demonstration of FBI methods for a visiting group of police recruits from Fairfax County, Virginia. He handed me a training revolver, with the firing pin removed, and we faced one another a few inches apart.

Obeying instructions, I said, "Hands up!"

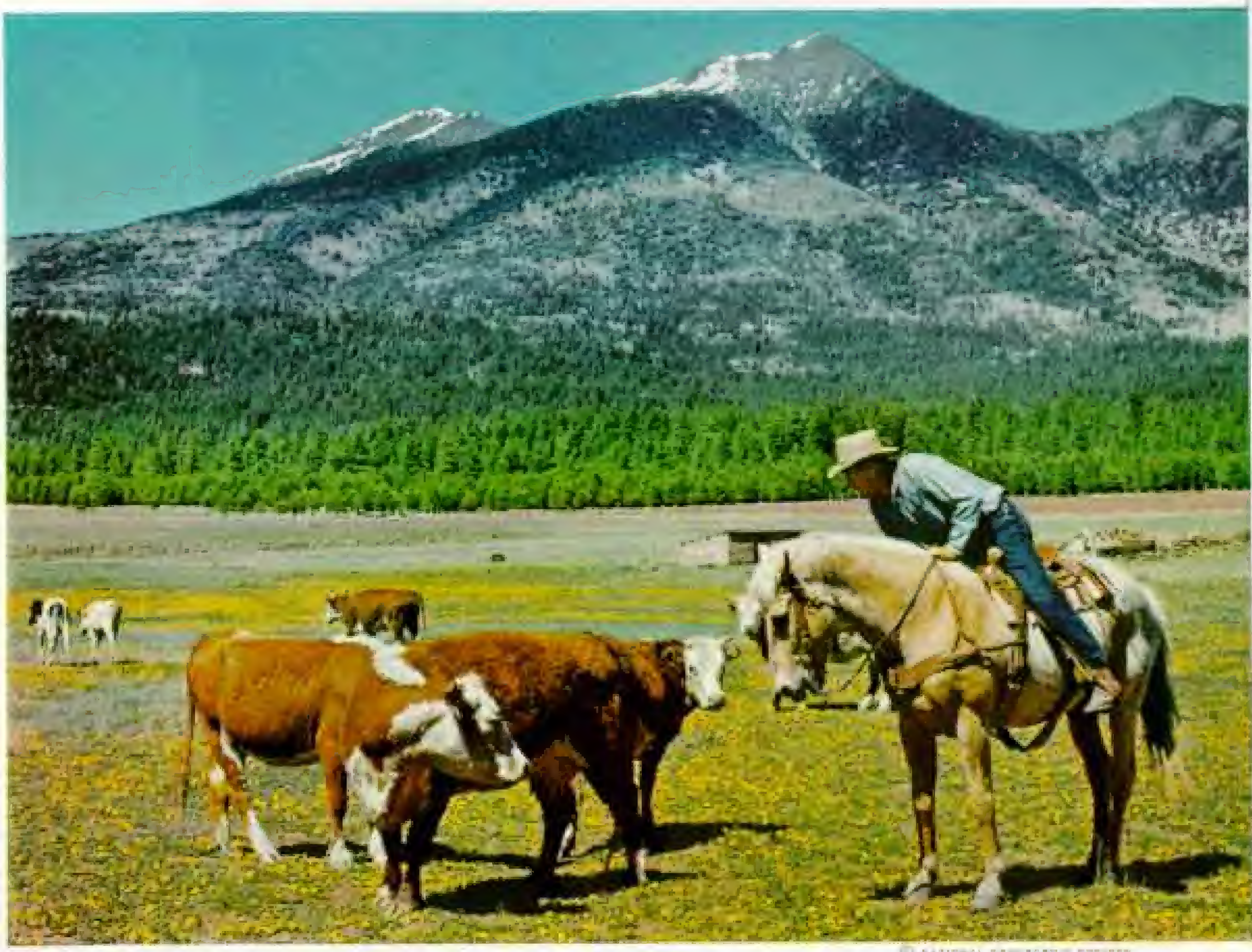
Suddenly I was aware of a blur of movement and a stinging sensation on my right wrist. When I recovered, Sloan held the gun pointed at me. Repeating the swift maneuver in slow motion, he showed how he had knocked my

**Under cover of night,** an FBI agent (left) in San Juan, Puerto Rico, meets a trusted informant. The Bureau's field offices extend to the island commonwealth, whose people have been citizens of the United States since 1917.

**Whispers of conspirators** may escape the ear of the San Juan G-man in Puerto Rico, but a Minox camera can record their faces.

**Automobiles stolen** in the United States and abandoned in Canada bring cooperation between Canadian Mounties and FBI agents. G-men have traced purloined cars as far as the Persian Gulf.

**Afloat on a Louisiana bayou,** an agent may question a trapper about an applicant for employment in a security-conscious Federal agency.



Riding the Arizona range, a G-man checks cattle brands for evidence of interstate rustling

right hand aside with his right, simultaneously seizing the weapon with his left.

Elsewhere at Quantico I saw new special agents tossing one another about as they practiced the FBI's special brand of hand-to-hand defensive tactics, a blend of judo, jujitsu, and another Japanese technique, karate, which features quick crippling blows with hands, elbows, knees, and feet.

### Crack Shots Shun Use of Guns

On the FBI Academy's target ranges, agents staged dazzling exhibitions of marksmanship with revolvers, shotguns, and Thompson submachine guns.

"The FBI prefers not to be forced into using firearms," Special Agent George Zeiss, the range master, told the police recruits. "In locating some 200,000 fugitives since 1934, when the FBI was authorized to carry guns at all times, agents have been compelled to kill only 33 people. Every law-enforcement officer should become proficient with small arms, but use them only when necessary."

The Academy's trainees also practice raiding techniques, learn to set up roadblocks, and absorb other lore of the lawman.

Although the FBI emphasizes brains rather than brawn, the service attracts many athletes. The roster of special agents includes former stars of college and professional football and baseball, boxers, wrestlers, and even a world's champion badminton player.

Two agents have athletic backgrounds that mesh nicely with the FBI's reluctance to fire upon a running fugitive. Here the Bureau recognizes the risk of mistaken identity, the danger of injuring innocent bystanders, and the dishonor of shooting a man in the back. The situation calls for pursuit on foot. Special Agents Donald R. Lash and Frederick L. Wilt, former collegiate and Olympic track stars, are regarded as exceptionally well qualified.

The Investigative Division, headed by Assistant Director Alex Rosen, supervises

BY ARTHUR W. KALLIS, BUREAU PHOTOGRAPHERS THOMAS J. DEVONSHIRE (ABOVE), ROBERT F. GRIMM AND JOHN F. FLETCHER ☐ N.G.S.

# One Bullet Shatters Two Targets

SPARKS FLYING, a tracer bullet strikes the cutting edge of an ax blade (above). Splitting at lower left, a non-tracer bullet becomes two projectiles at center and crashes into clay-pigeon targets hung on either side of the ax (right). The Bureau staged the exercise to demonstrate FBI marksmanship.

from Washington the men who track down the criminals of today. It is this unit that earned for FBI agents the nickname "G-men."

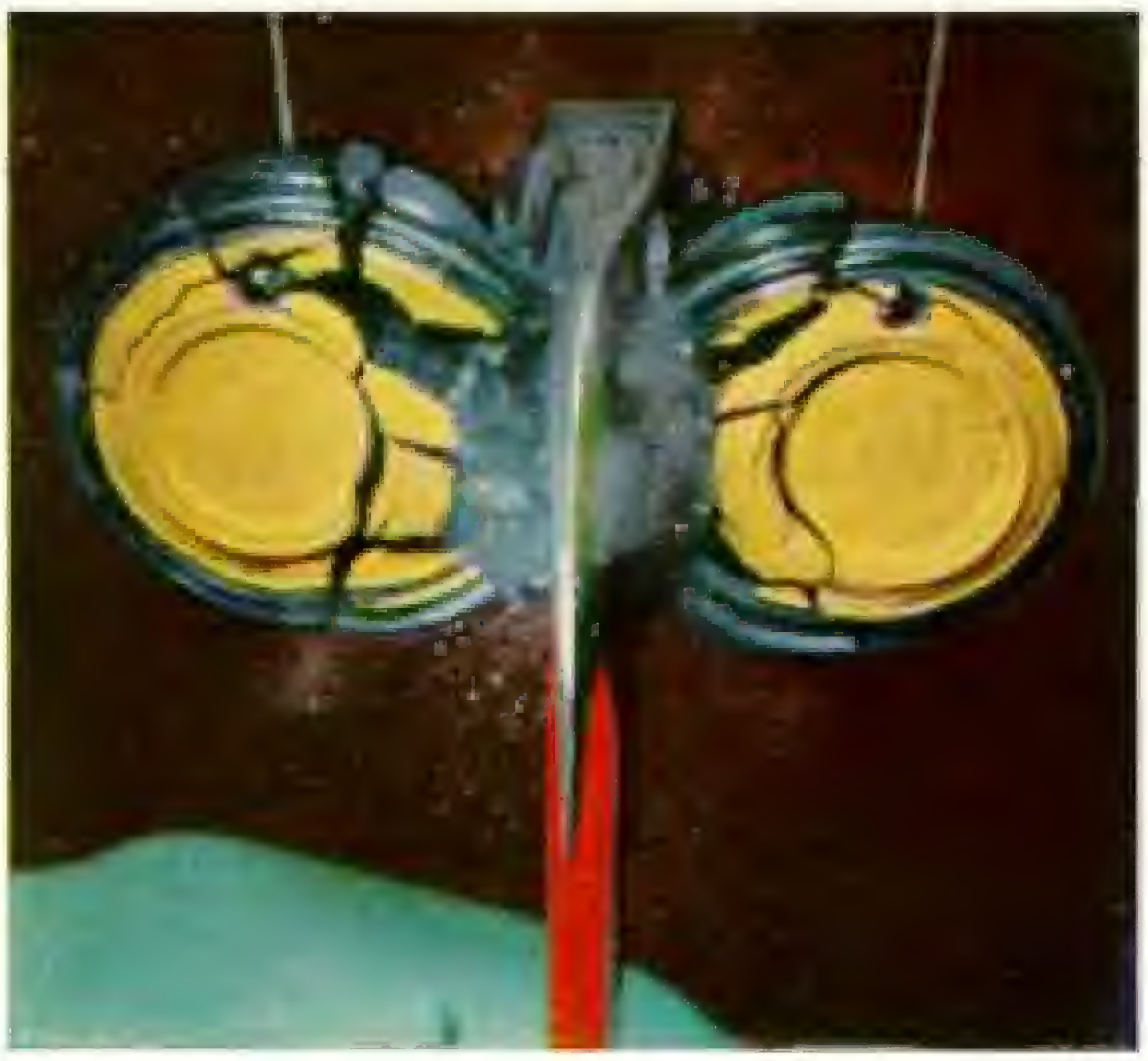
This term for Government men was born when George ("Machine Gun") Kelly found himself surrounded by FBI agents who sought to arrest him for a kidnaping. From his hide-out in Memphis, Tennessee, Kelly saw that he was clearly outgunned.

"Don't shoot, G-Men!" Kelly bawled.

The sobriquet became popular during a strange era when a bemused public seemed to look upon gangsters as fun-loving chaps engaged in pranks that would become exciting movies starring James Cagney or Edward G. Robinson.

A more realistic attitude developed with a wave of kidnapings, especially after one of the Nation's most sensational crimes—the abduction of the infant Charles A. Lindbergh, Jr., in March, 1932. A note demanded $50,000 ransom, which the famous parents paid. In

Fascinated visitors to Washington headquarters watch an agent's skill with a pistol



May the child's body was found a few miles from the Lindbergh home near Hopewell, New Jersey. He had been killed shortly after he was stolen from his crib.

The crime unleashed a manhunt with few equals. The FBI, although it had no jurisdiction, worked in close cooperation with the police of New Jersey and New York. Congress enacted the Lindbergh law, making death the maximum penalty for transporting a kidnaped person across any State line.

By the time Bruno Richard Hauptmann was executed in 1936 for the Lindbergh kidnap-murder, the public largely had abandoned its view that crime was glamorous and romantic.

But the legend had died hard. In July, 1934, gangster John Dillinger made the mistake of drawing his revolver on FBI agents and police as he left a Chicago movie theater with the "Woman in Red," who had told the FBI where to find him. Bullets from FBI guns put a period to the career of Dillinger, "Public Enemy No. 1" and leader of a gang that swept across the Midwest murdering, holding up banks, robbing police arsenals, and engineering jail breaks.

Ironically, FBI agents then lacked the power to arrest him for any of those offenses, which violated only State laws. They wanted him for the relatively mild misdeed of violating the Federal law prohibiting transportation of a stolen automobile across a State line. Dillinger had broken that law when, after staging his famous wooden-gun escape from the county jail at Crown Point, Indiana, he seized a car and fled into Illinois.

After Dillinger, in quick succession, "Pretty Boy" Floyd, "Baby Face" Nelson,

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**Smiles of Navajo youngsters** brighten the rounds of an investigator from Phoenix. The FBI inquires into major crimes committed on most Indian reservations. Young Indian friends with lipstick "war paint" have this genial agent surrounded.

and other murderers toppled from public favor as the FBI answered bullet with bullet and emerged triumphant. When kidnaper Alvin Karpis announced that he had decided to kill Mr. Hoover, the Director issued an order: "Notify me when Karpis is located. I'll arrest him." Soon thereafter, in New Orleans, Mr. Hoover did just that. Karpis was sent to Alcatraz for life.

### Alert Citizens Aid the FBI

The Domestic Intelligence Division, headed by Assistant Director Alan H. Belmont, has the awesome responsibility of guarding the internal security of the United States against espionage, treason, and subversion.

Understandably, Belmont's division moves in deep secrecy, saying little or nothing about its current operations. While it faces problems challenging all the ingenuity of modern man, it sometimes uses techniques dating back to the Trojan horse.

There was, for example, the "improper Bostonian" who was a pillar of the Communist Party in Massachusetts. Although outwardly a respected businessman, he was known in party circles as an expert in subversive propaganda and organization. His party associates considered him a dedicated worker destined for great things.

Boston's Communists were staggered when this same Herbert A. Philbrick appeared as a Government witness in the trial of the party's national board, which, the prosecution charged, "did conspire . . . to organize . . . and advocate the overthrow and destruction of the Government of the United States by force and violence. . . ."

Philbrick had been for nine years a confidential informant of the FBI, and his operation provided a classic demonstration of the technique known as infiltration. All 11 defendants were convicted and sent to prison.

For all the FBI's scientific skill and advanced techniques, nothing has been found to take the place of informants. Of the 154 "Top Ten" fugitives located in the past decade, 53 have been arrested as the direct result of information provided by citizens.

During my travels I had often noticed bulletin boards bearing flyers with photographs and descriptions of the Top Ten—the ten most-wanted criminals. One hard face in particular impressed me; it was that of Edwin Sanford Garrison, fugitive from an Alabama prison, who had been convicted of burglary, grand larceny, robbery, and murder. Under his picture were these words: "He should be considered armed and dangerous."

"I'd hate to meet him in a dark alley," I remarked to Charlie Moore.

"Can't say I blame you," said Charlie.

and he added that Garrison was a remarkable criminal.

"He's a mathematical wizard," Charlie continued. "I understand you can read him a whole column of five-digit numbers from a telephone directory and he will give you the correct total instantly. Wherever he is, we figure he's making a living by preparing income tax returns, auditing books, or some such job."

In St. Louis, Missouri, one day, Charlie and I stopped to chat with Calvin Howard, special agent in charge of that city's big field office. On his desk a "Wanted" poster caught my eye.

"There's that face again," I remarked. "It keeps haunting me."

"Which one?" Howard asked. I pointed out Edwin Sanford Garrison.

"Oh, yes," said Howard. "Garrison, the human Univac, the brainiest man ever to make the Top Ten. We bagged the old boy yesterday."

### Rounding Up a Top Ten Criminal

Over lunch and later in his office, Howard reconstructed for me the capture of Garrison. The whole operation was a minor classic of investigative work, accomplished quietly and without bloodletting, which is the way the FBI likes to do its job.

This latest and probably final chapter in Garrison's career opened when FBI headquarters received a tip on his whereabouts. On a Wednesday evening in September, 1960, just as Howard sat down to dinner at home, his telephone rang. It was the FBI field office, relaying the report that Garrison was working as a bookkeeper at a riverside resort somewhere near St. Louis.

"I'll have to go back to the office," Howard told his wife, and hurried through dinner.

He did not say why he was going or when he would be back; and his wife did not ask. Nor was anything said about the possibility that he would not be back at all.

Howard tucked a Smith & Wesson .38 into a holster on his right hip, kissed his wife goodbye, and drove downtown.

At his office, Howard mapped strategy with his top assistants. The outlook was discouraging. Hundreds of riverside resorts, which offer fishing and other recreation, line the Mississippi banks near St. Louis. It might be necessary to check each one.

One more piece of information was available: a license number from an automobile belonging to a friend of Garrison.

At 12:30 a.m. Howard adjourned his meeting. In the morning a force of 30 agents began canvassing the resorts. Other agents quickly learned the identity of Garrison's friend; he was a small-time confidence man we will call Stanley. Stanley was soon located and placed under 24-hour surveillance.

At 1 a.m. Friday, Stanley was "put to bed" by the agents who, in their own term, were "surveilling" him. Up and about by 7, Stanley drove to a new apartment-house development, picked up a man, and drove unhurriedly to an area dotted with riverside resorts.

The important break was provided by the apartment-house manager. He looked at Garrison's photograph and thought he recognized him as a tenant. Incidentally, he mentioned that he had seen the suspect with a woman who wore a white uniform.

A detail of agents quickly learned that the woman in white was the owner of a riverside resort. Here was another clue bolstering the agents' belief that they were on the right trail, since the original report had said their quarry was working in such a resort. This information was radioed to the agents following Stanley and his passenger, still driving aimlessly about the countryside.

### Care and Skill Prevent Bloodshed

Using a blackboard sketch of the apartment house, Howard now briefed a detail assigned to capture Garrison. Mindful of the man's bloodstained record, he armed his agents with submachine guns, shotguns, and the powerful Magnum revolvers the FBI reserves for those expected to resist arrest.

With Special Agent Howard in command, this group moved discreetly to the apartments to await Garrison's return.

Finally, Stanley drove up, let Garrison out of the car, and departed. Rather than risk a gun battle in which innocent people might be harmed, the agents allowed Garrison to climb to his third-floor apartment, his progress watched through the glass walls of the stair well. Now the stairs were guarded and the corridor leading to Garrison's apartment commanded by Magnums.

All it took was a knock on the door.

"Aren't you glad it's over, Garry?" Howard asked. Obviously Garrison was; wordlessly he was led away.

"A pretty time affair, wasn't it?" Cal

## Rendezvous! A True-life Spy Drama From FBI Files

After a gay dinner party in East Berlin, a Soviet intelligence officer made a proposition to one of the guests, a colonel soon to be retired from the United States Army. Would the American sell information to the Communists when he returned home? The Army officer appeared to agree. A meeting with a Soviet agent in New York was arranged and a code phrase for recognition selected. Called in on the case, the FBI disguised one of its agents as the officer and sent him to make contact with the Soviet's man, Maksim G. Martynov, of the United Nations Military Staff Committee. An FBI movie camera recorded the meeting in New York on November 15, 1954.

At another meeting, on January 15, 1955, the FBI closed in. Martynov claimed diplomatic immunity. The State Department declared him persona non grata, compelling him to leave the country.

1) Waiting, the Russian checks his watch . . .

2) as the FBI agent arrives by taxi.

3) Martynov picks his man out of the crowd . . .

4) but fails to speak when he passes by.

5) Russian turns away as if disinterested . . .

6) then sneaks another look at the agent.

7) Again the agent parades before Martynov . . .

8) who gives him a last hard look.

9) Martynov approaches the agent . . .

10) and speaks the code words of recognition.

11) Smiling, Martynov shakes hands with the supposed Army officer. Later he paid him $250 as an enticement to commit treason. The drama goes unnoticed by shoppers and mothers airing babies.

Howard said to me. "You may wonder why we armed ourselves so heavily. Remember that warning on the 'Wanted' flyer: 'Should be considered armed and dangerous'? We had no way of knowing that Garrison wasn't going to burst out of the apartment with a gun blazing.

"Actually, after we sized up the situation, we carried only Magnums; the shotguns and Thompsons were left in their cases One other thing: We evacuated all tenants from Garrison's floor before we moved in."

Like all the other agents I had met, Howard seemed completely dedicated. I asked him what there was about the FBI that inspired such esprit de corps.

"I couldn't define it exactly," he said. "Maybe it's just the feeling of belonging to a good outfit, doing a job with other guys who feel the same way you do. Something like the Marines, say."

I had heard this simile before, and none seems more apt.

In its early years, the Bureau of Investigation—established in 1908—fell far short of its present standards. During the Coolidge administration, Attorney General Harlan Fiske Stone named J. Edgar Hoover, a young lawyer on his staff, to reorganize the Bureau.

"I'll take the job, Mr. Stone," Mr. Hoover told his chief, "on certain conditions."

"What are they?" Mr. Stone asked.

"The Bureau," Mr. Hoover replied, "must be divorced from politics and not be a catch-all for political hacks. Promotion will be made on ability, and the Bureau will be responsible only to the Attorney General."

"I wouldn't give it to you under any other conditions," Mr. Stone said crisply. "That's all. Good day."

### Director Inspires Rigid Discipline

Mr. Hoover has placed his personal stamp upon the FBI to a degree equaled in few organizations. His men live by a rigid code of discipline and personal conduct. One seldom sees an overweight agent: the slightest sign of paunch brings a curt warning to get more exercise—or else.

Even clothes must meet FBI standards. On duty, an agent must wear a conservative suit, never slacks or sports jacket; ties will be quiet; hats will be worn.

This rule goes by the board, of course, when agents find it necessary to don disguises on undercover jobs. A New York agent, in beard and sweat shirt, prowled the beatnik dens of Greenwich Village in search of an Army deserter. He was glad, he said, when he got his man and rejoined the Earth People.

Despite their stern regimen, few agents ever leave the FBI for private business, although many have been offered positions at double or triple their Government earnings. Salaries have increased recently, and they know their boss believes in better pay. Mr. Hoover never misses an opportunity to denounce a system under which law-enforcement officers, in some cities, earn less than stenographers.

### 19 Agents Have Died in Line of Duty

Calling on the Director for a final chat, I waited in an anteroom which had been converted into a small museum of crime-fighting mementos. On a wall hung a bronze plaque listing the 19 FBI special agents who have been killed in line of duty since 1925.

Mr. Hoover emerged from his office shaking hands with a group of youths in khaki.

"Those were Eagle Scouts," the Director explained. "Nothing about this job gives me more pleasure than the opportunity to meet and work with young people."

"What do you see happening to the FBI in the years ahead?" I asked Mr. Hoover.

"I may be the only bureaucrat in Washington who doesn't want to see his outfit expanded," he replied without hesitation. "I'd like to see us go forward in the future just about as we are now.

"The problem is," he continued, "that there are times when some particularly vicious crime will stir up a public outcry—a demand that the FBI be given jurisdiction over such and such a type of crime. In most of these cases, it's the sort of crime that should be handled on the local level. If that is so, I argue against bringing the FBI into the picture. Sometimes I win; sometimes I lose.

"As to the future," he concluded, "we have a number of factors to guide us. First and foremost there is the law, which tells us specifically what we can and cannot do. There is the Justice Department, which tells us where our jurisdiction lies. There is the Congress, which passes the laws and grants us the funds to operate. And there is the press, which stands ready to warn us if we get off base or fail to measure up to the standards expected of us.

"With these guideposts, I don't believe we can ever go too far wrong."

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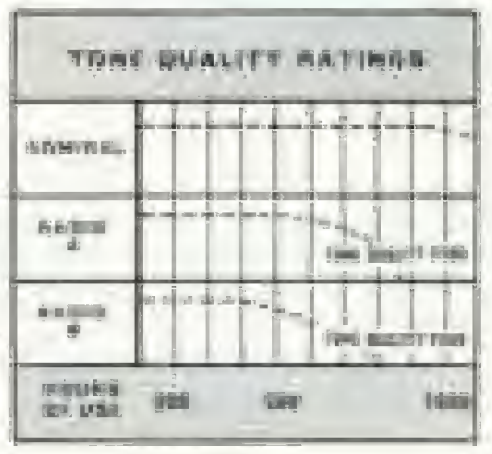


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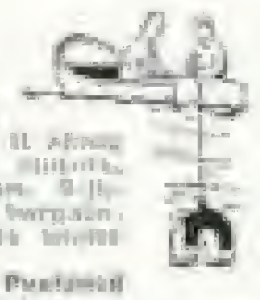

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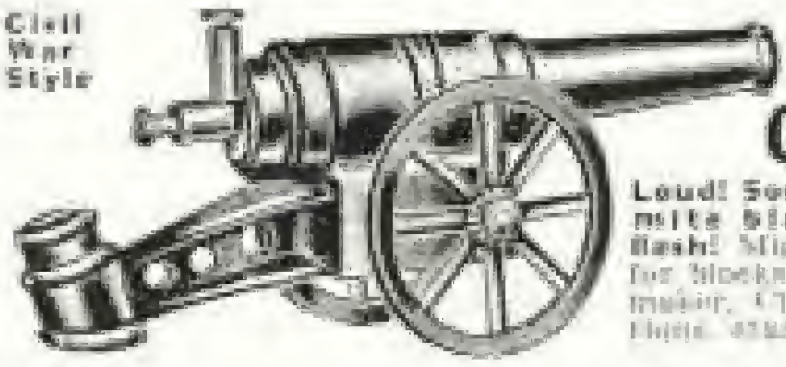

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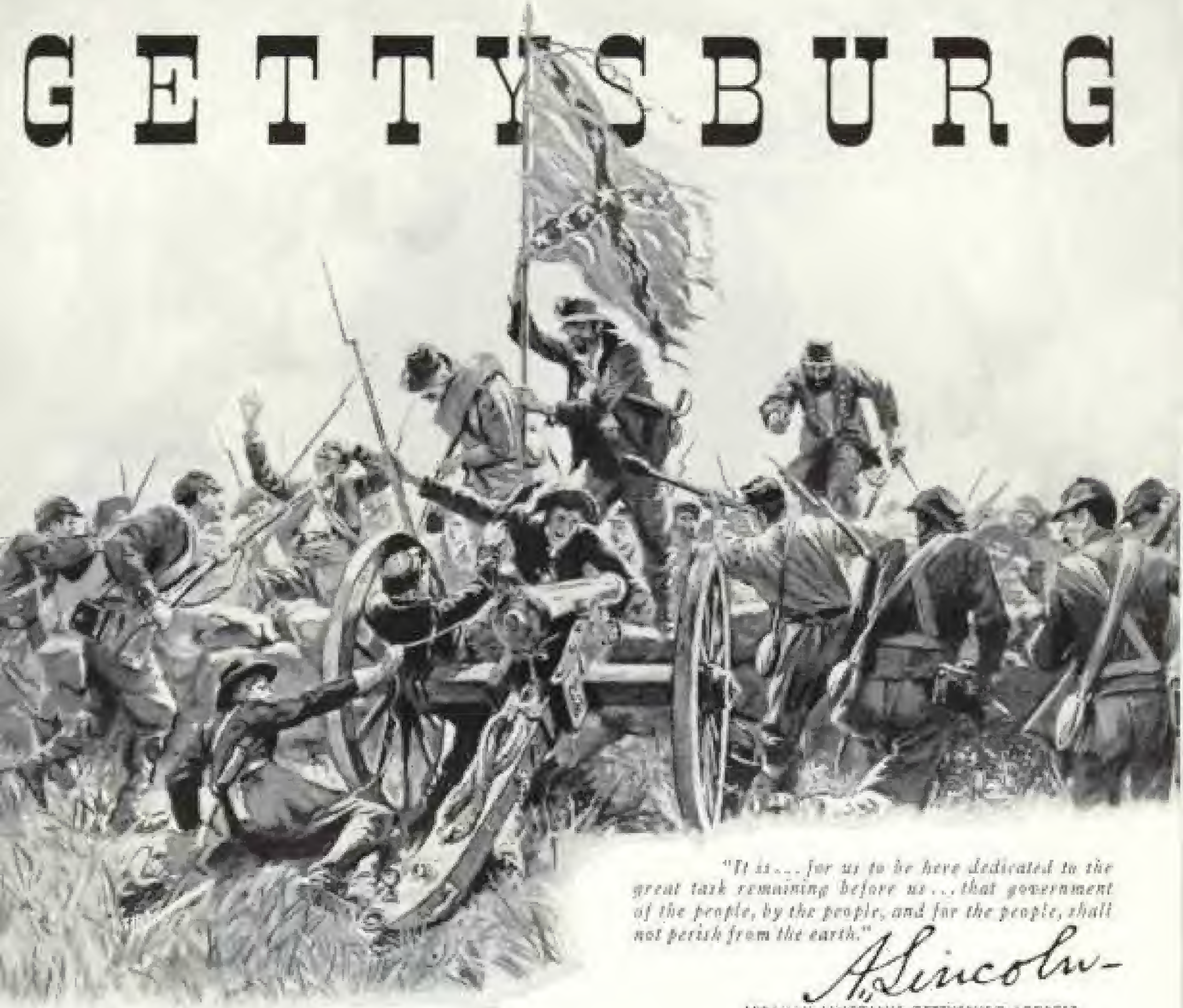

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