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VOL. 125, NO. 5 MAY, 1964

# NATIONAL GEOGRAPHIC

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

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**COVER:** First Lady sets the globe spinning in the Society's new home, dedicated by the President (pages 674-5).


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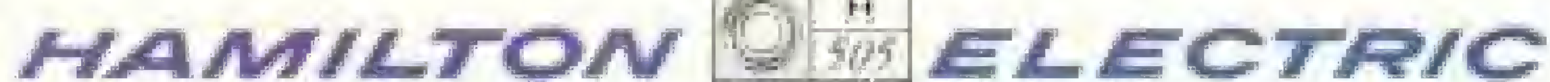

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Following a brilliant term as Secretary of the Smithsonian Institution (1953-1964), this distinguished scientist and former President of Tufts University has accepted an invitation to become the Society's Vice President for Research and Exploration.

As chairman of its Research Committee for the past four years—a position he will continue to hold—Dr. Carmichael has an unsurpassed understanding of the Society's greatly expanded program. Current projects range from exploration of the sea's deep frontier to a photographic study of the brighter planets being made by Lowell Observatory, Flagstaff, Arizona, with the Society's aid.

Directing attention to the moon, Lowell astronomers recently made this unusual color photograph, on which Dr. Carmichael calipers 27-mile-wide Aristarchus Crater. There, late in 1963, Lowell stargazers sighted strange glowing red spots, possibly confirming Soviet reports of gases emanating from the moon's surface, as if from volcanic activity.

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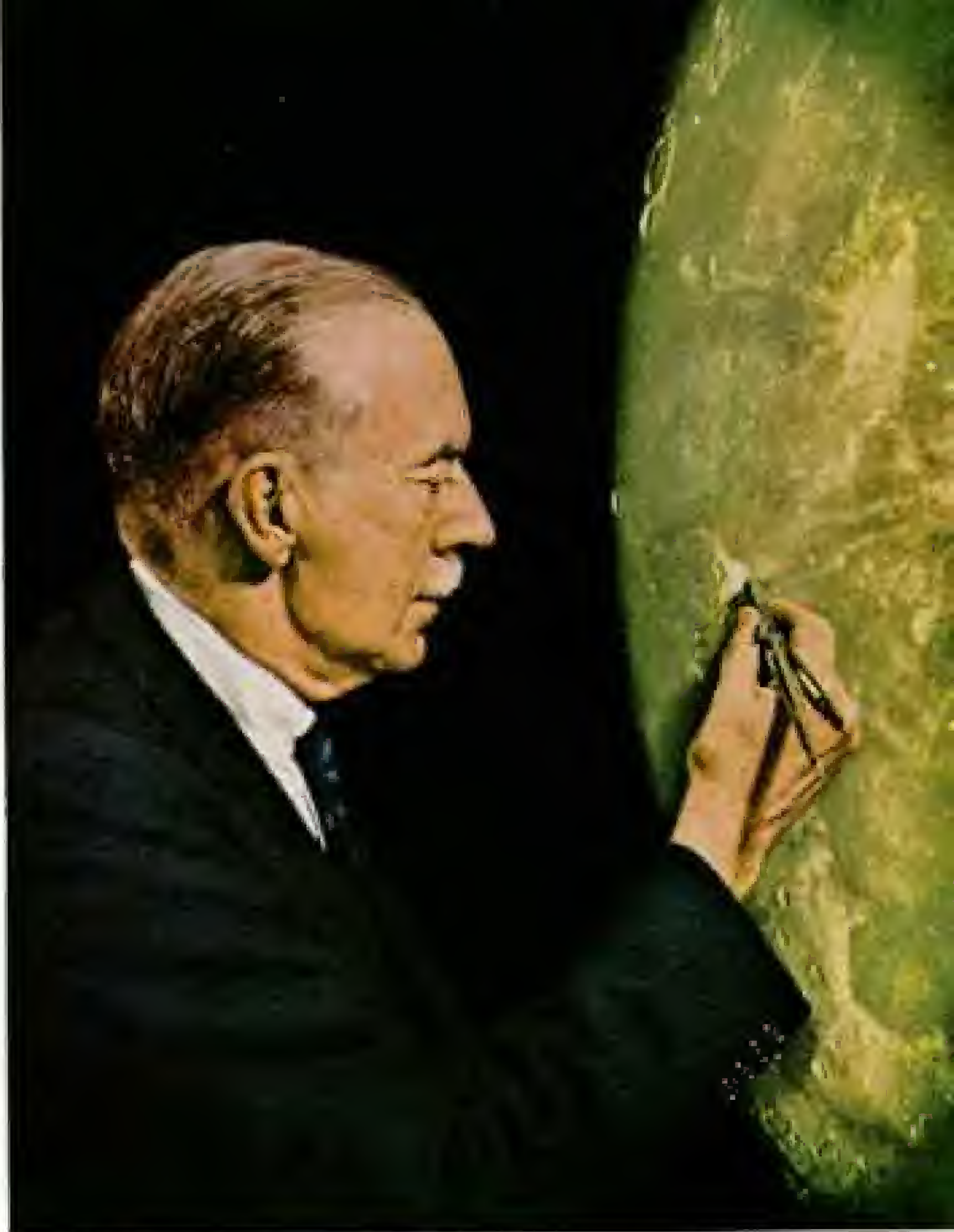

LEONARD CARMICHAEL, Ph.D., Sc.D., LL.D., Litt.D., L.H.D., D.C.L.

# Noted scientist, former Smithsonian head, becomes the Society's Vice President for Research and Exploration

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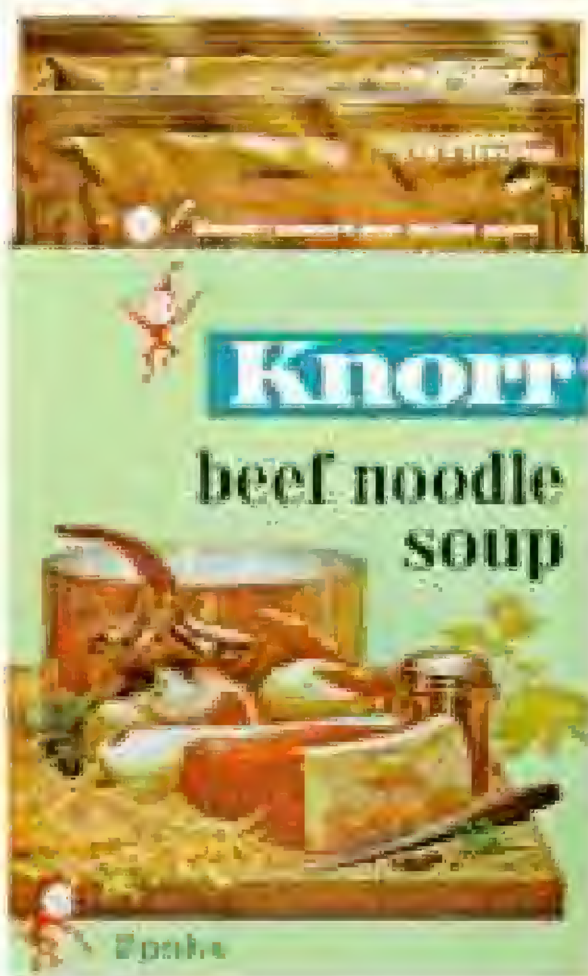


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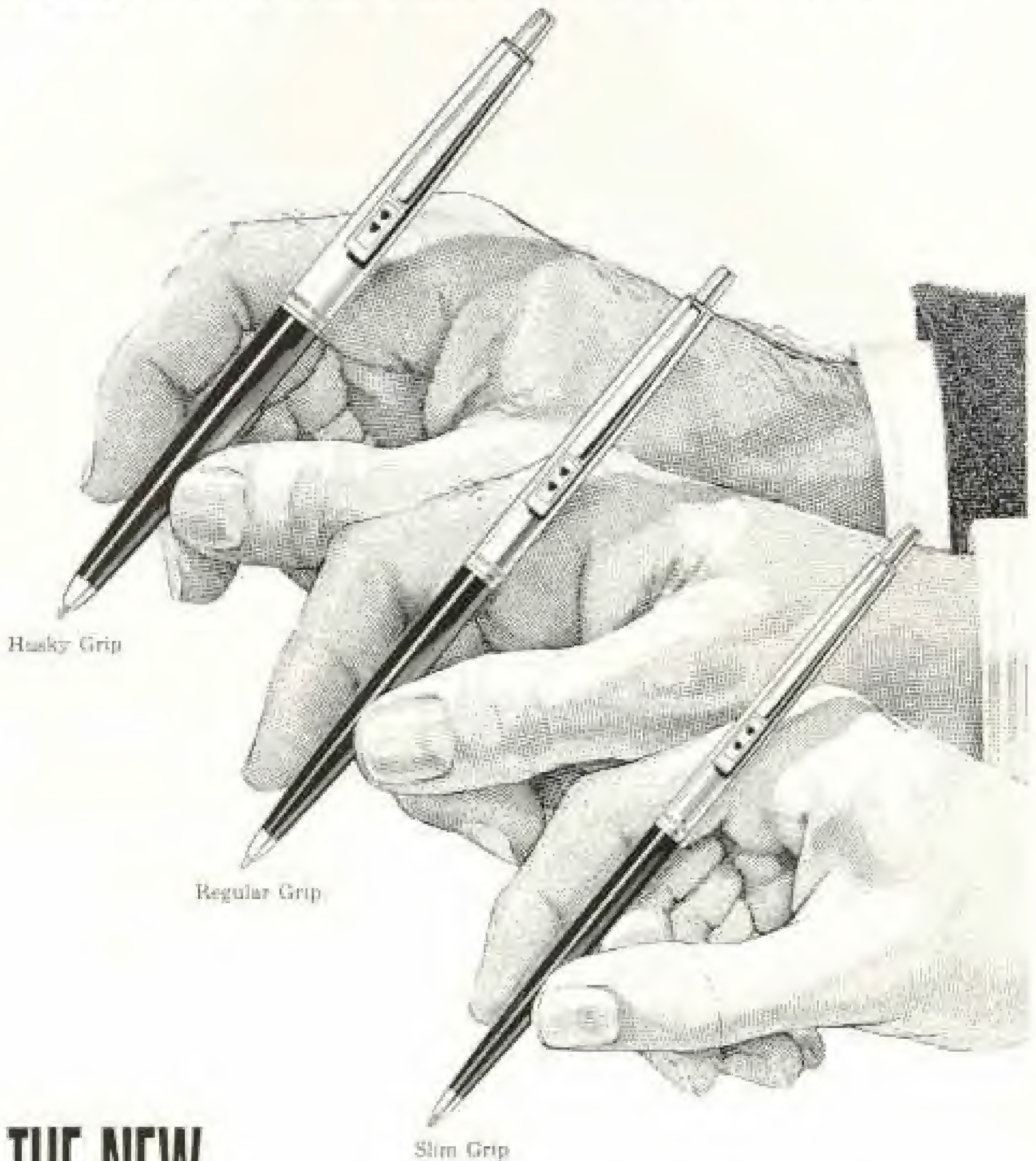


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**ALLIS-CHALMERS**

Box 511, Milwaukee, Wisconsin 53201

## YOUR CADILLAC DEALER INVITES YOU TO BE HIS GUEST

The driver's seat of a 1964 Cadillac is reserved for your approval—*and it's more tempting than ever before!* Settle back against select fabrics and soft, perforated leathers that breathe comfort and luxury. Bring the new powerful engine to life with a turn of the key. Nudge the accelerator. Feel the smooth flow of power of the improved Hydra-Matic—or, on some models, the new Turbo Hydra-Matic. Just wait till you see all the new features Cadillac is offering this year—like Twilight Sentinel* and Comfort Control*. Most important of all—*just wait till you drive it!*

*Two great new extra-cost options.

Cadillac Motor Car Division • General Motors Corporation

# ATTENTION ESCAPISTS!!!

Now's the time. Take a powder. Skip the country. Run away.

We'll help!

We don't think anybody has ever assembled a collection of tours like this before. Europe. The Mediterranean. The Middle East.

All different ways of traveling. (And all price ranges, too.)

For example, if you're planning to blow the whole wad, Alitalia has a fantastic program for you. Fly first class. Visit a dozen capitals. Stay only at hotels like the Georg V, The Excelsior, the Savoy. Travel around in a private limousine. (We'll throw in a chauffeur and valet, too.) Oh, it goes on indefinitely. Champagne, caviar. Alitalia can squeeze a prince's Continental education into a 3 week vacation for you. The cost: only about $9000.

On the other hand, if you're budget minded, Alitalia has a series of 38 tour programs that cut off the frills and just leave the important points of travel. (Some of them have been designed so economically, you'd think our Tour Director was spending his own money.)

Most of Alitalia's touring passengers fall somewhere in the middle of these extremes though. Lapping up a good bit of luxury but managing to keep an eye on the pounds, francs and lire.

So if you don't mind not dining out at Alfredo's or Maxim's every evening or not rubbing shoulders with a couple of Archdukes every day on Estoril's lavish beach, you can still have a great escape.

**15 Day Sunny Holiday to Spain and Portugal—From $584.60.** (And this year, everybody who's anybody is going to be there . . . to see and be seen.) 2 weeks in romantic Portugal and Spain. Jet to Lisbon, "The City of Kings". Loll around at lavish Estoril, then on to Seville, Cordova, Granada (the Alhambra), Segovia, Toledo, Madrid, "The Valley of the Fallen", back to Lisbon and home. Choice of 2 itineraries and extensions.

**21 Day Europe On-The-Town Holiday—From $793.30.** Live the "High Life" all over the Continent. Your choice of On-The-Town tours planned to give you plenty of day time for sightseeing and shopping in between the lively nights. Tours include: London—The Palladium; Paris—The Lido, Venice—La Serenata; Rome—Da Meo Patacca; Lucerne—Stadtkeller, Monte Carlo on the Riviera, and perhaps Botin's in Madrid and the Casino at Estoril outside of Lisbon. (How many towns can one person paint red anyway?)

**15 Day Sunny Holiday to Italy—From $699.50.** (With a surprise ending, too.) To Milan by Super DC-8 Jet. Rest a day and then you're off to Venice, Florence, Assisi, and Rome. What more could you ask? Then choose where you go for an extra week. To Sicily? To Naples and golden sunny Capri? Or, make it London and Paris if you like.

TOUR DIRECTOR: ALITALIA AIRLINES
666 Fifth Avenue, N. Y. 19, N. Y. Dept.
Please send me full information on the following Alitalia Tour Programs.
☐ Sunny Holiday to Spain and Portugal
☐ Israel and Holy Land Cruise
☐ Sunny Holiday to Europe ☐ Africa
☐ Sunny Holiday to Italy ☐ Europe On-The-Town

Name____________________
Address____________________
City__________ Zone_____ State_____
My Telephone No.____________________
My Travel Agent Is____________________

**Sunny Holiday to Europe—From $477 for 15 days.** Your choice of 21 exciting tours from 11 to 31 days. Going everywhere. Seeing everything and costing as little as $12 a day. What's your ideal European holiday? England? Scandinavia? The Low Countries? France? Germany? Italy? Any one or all can be yours in the Alitalia Holiday to Europe that meets your own travel, time and financial requirements.

**19 Day Cruise to Israel and the Holy Land—From $821.40.** Unique is the word for this one. You jet (Alitalia Super DC-8s) to Rome. (Spend a day or so there, if you like.) Then, off and aboard the M. V. Bilu, a remarkable ship with only first class accommodations. (Bar, entertainment too.) You'll choose from among 4 different tours to give you precisely the mixture of ancient Middle East and Mediterranean you want. Limassol, Beirut, Baalbek, Damascus, Jerusalem, Bethlehem, Jericho, Nazareth, Tiberias, Tel Aviv, Haifa, Cairo, the Pyramids . . . Fascinating!

All prices based on 21 Day Round Trip Jet Economy Fares From New York effective April 1st, 1964, and subject to Government approval.

Here's a totally new concept–instant, table-top movies. Without setting up a screen. Without darkening the room. On a big (5¼" x 6¾"), bright viewscreen. How convenient to watch home movies just as you'd watch TV. See Keystone self-threading "Private Eye" projectors with High-Light slow motion at your photo dealer.

But projectors aren't all we make. Get a load of our new Load-A-Matic cameras. Squeeze the trigger and film winds onto take-up spool automatically.

It's the fastest-loading camera in home movies!

LIFE NEVER STANDS STILL WITH

**KEYSTONE**

KEYSTONE CAMERA CO., INC. BOSTON, MASS.

Available in Canada

## The Fair is where to go this year. Pontiac is how.

All roads lead to the New York World's Fair this year, and the smoothest way to get from here to there is by Pontiac. Our Wide-Track ride is why. It unkinks a curve so suavely, you're not quite sure who deserves the credit—us or you. It irons a washboard road so flat, you'll wonder when they paved it and why you never noticed before. Besides Wide-Track, Pontiacs come with Trophy V-8 power (the kind that answers when you call) and Pontiac style (the kind that turns heads as you pass). Agreed, then, Pontiac's how to go. The World's Fair is where, okay? Now see your Pontiac dealer and say when.

'64 WIDE-TRACK PONTIAC

**Mrs. Baker will see her grandchildren tomorrow**

There's hardly an achievement of medical science that's more heartening than what you see here—an elderly patient who has been literally given a new lease on life.

Thanks to excellent medical, surgical and hospital care—and new drugs that are a vital part of that care—many diseases of later life can be effectively controlled for years.

In fact, so much can be done to help elderly people who need surgery—or who are victims of arthritis, diabetes, and certain disorders of the heart, blood vessels, and kidneys—that chronic illness, pain, and disability are no longer accepted as inevitable results of aging.

The real goal of medical science is not only to add more years to your life, but also more life to your years. The goal of Parke-Davis is equally well defined—to develop new and better medicines for people of all ages.

Copyright 1964—Parke, Davis & Company, Detroit 32, Michigan

PARKE-DAVIS

BETTER MEDICINES FOR A BETTER WORLD

# This year BOAC offers you a special 15-day, 400th anniversary tour of the Shakespeare country, England, Scotland, and Wales, everything included for only $549.

# You ought to go.

If this Shakespeare issue hasn't convinced you that this is going to be the best of all good years to see England, we certainly can't do it here. But if it has, here's an offer that should get you right into your Travel Agent's office. For just $549* we can offer you perhaps the most interesting vacation of your life. You start by spending a day in London. Then we take you to the medieval college city of Cambridge. You spend the night in the steep, cobbled city of Lincoln, high above the Fens. From there, on to Edinborgh, where you spend another full day. Then, off for a steamer trip through the Scottish Lochs. The next day, down to Wordsworth's Lake District. You stay there a day. Then to the walled city of Chester, and down into strange-tongued Wales. Finally, 12 leisurely days after you started, we take you on perhaps the best part of your trip: a day in the Shakespeare country. You go to Shakespeare's birthplace, Anne Hathaway's cottage, Kenilworth and Warwick Castles. And you spend the evening watching a performance at the Royal Shakespeare Theatre. The next day we take you to Oxford, then back to London. You travel by luxury Pullman coach; hotels, most meals, tips, sight-seeing, land and air fares are included. Departures are from New York every week through September 10th. Which week are you going?

*Based on midweek 21-day Economy fare. Not applicable during certain peak summer periods. Price also based on double occupancy in hotels.

ALL OVER THE WORLD

**B·O·A·C**

TAKES GOOD CARE OF YOU

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Tell me more about your Special 400th anniversary Shakespeare Country Tours.

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ADDRESS ______________________

CITY ______________ ZONE ____ STATE ____

**BRITISH OVERSEAS AIRWAYS CORPORATION**

# NOV. 7, 1963...

# ROYAL-GLOBE IS THERE!

Every American astronaut who has rocketed into space has worn a BFG full-pressure space suit "tailored" at an Ohio plant. On a high-speed track in Texas, drivers are proving the performance of safe, tougher tires. Every day, in the U.S.A. and Canada—B. F. Goodrich develops, manufactures, tests and improves its products. And wherever you find B. F. Goodrich—Royal-Globe is there!

Year after year, B. F. Goodrich makes and sells more than $¾-billion worth of rubber and plastics and textiles. Almost all of the equipment in more than 40 BFG plants and development centers is insured in a special policy with Royal-Globe.

Royal-Globe is one of the strongest and most respected insurance organizations in the world, with a record of service going back to 1845. In the United States alone, Royal-Globe today has 175 field offices and 18,000 agents fully qualified to write policies against all types of risk. *For intelligent protection, you would do well to see the independent agent who represents Royal-Globe, or your broker. Be sure that the Royal-Globe Red Shield appears on every policy you buy!*

**ROYAL-GLOBE INSURANCE COMPANIES**

*Casualty • Fire • Marine • Surety*    *150 William Street, New York 38, New York*

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SCOUT is the registered trademark for a vehicle manufactured exclusively by International Harvester Company

# We'll bring a brand new Scout right to your door

We have something so unusual to show you, we don't want to wait for you to come to us to see it.

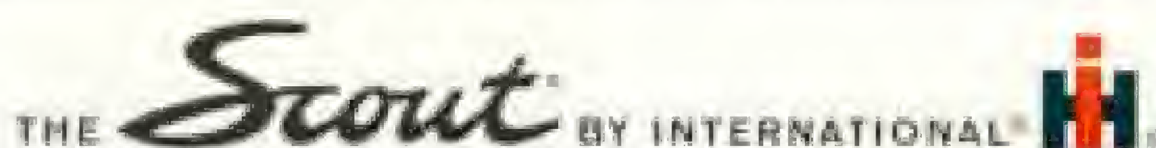
So, when we get that coupon from you, our SCOUT dealer will come out to your house with a fresh new SCOUT for you to test drive.

Our man is carefully instructed not to high-pressure you or give you a great long sales talk. He'll answer your questions, show you anything you want to know about a SCOUT . . . and then he'll hand you the keys for any kind of driving test you want to make.

If you wind up buying a SCOUT, fine. If you don't, at least you'll know you've driven the most exciting, ready-for-anything vehicle that's ever parked in your driveway.

We won't know where to come if you don't send the coupon. So send it.

# ...just tell us where you live.




International Harvester Company
Dept. NG, P. O. Box 7333,
Chicago 1, Illinois

Fair enough. I'll test your Scout. Tell the dealer.

☐ Have him phone first. This is my number ________

Name ________

Address ________

City ________ Zone ________ State ________

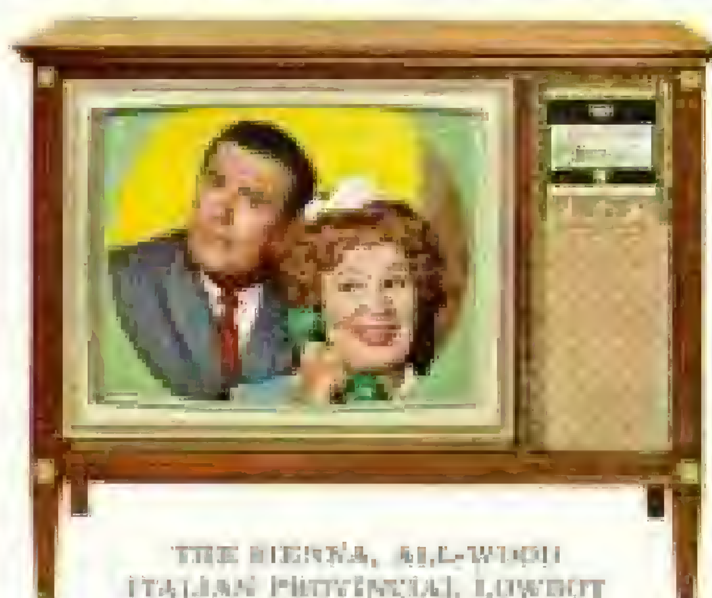
PLAN TO SEE THE RCA COLOR TV CENTER AT THE WORLD'S FAIR

SEE "HAZEL," STARRING SHIRLEY BOOTH, CO-STARRING DON DEFORE, ON RCA VICTOR "LIVING COLOR" TV

# Now – a new and brighter Color TV– brighter than ever before! Unsurpassed Natural Color from RCA Victor!

The Performance-Proved Color TV for '64 is New Vista® by RCA Victor. It gives you clearer, sharper pictures than ever before in *unsurpassed natural color*. Has famous "Golden Throat" FM sound. New Vista Color TV for '64 is definitely the finest color television ever designed by RCA—pioneer and developer of color television.

See the wide choice of styles and models, starting at a new low price of $449.95—manufacturer's nationally advertised price, optional with dealer, for the Burbank, not shown. Prices, specifications subject to change. Remember—more people own RCA Victor than any other television—black and white or color! *See Walt Disney's "Wonderful World of Color," Sundays, NBC-TV Network.*



THE SIENNA, ALL-WOOD ITALIAN PROVINCIAL LOWBOY

The Most Trusted Name in Television

Tmk(s)®

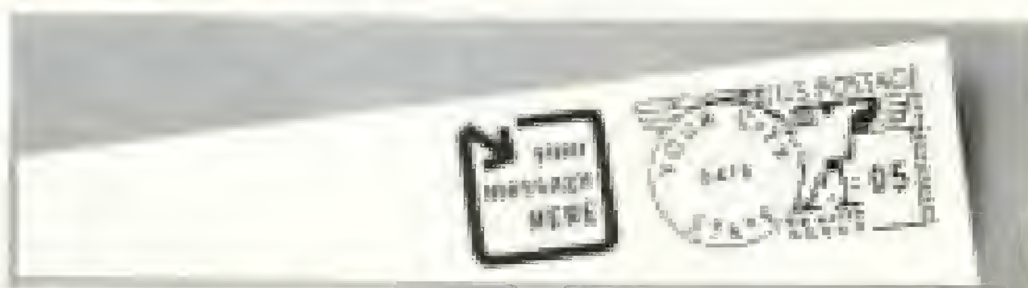
*Allen J. Indzonka,*
*Attorney*
*(address on request)*

# Why Allen Indzonka uses a postage meter to mail 15 letters a day–

"There are only two people in this office, including me; and I'm out quite a bit. I like to dispense with detail as much as possible–that's why we got the postage meter. We buy postage only twice a year. We never run out. We always have the stamp we want. We got rid of a sponge cup and stamp sticking. Aren't those reasons enough?"

You may be a small business, but you can have the convenience, efficiency and neatness of metered mail. Pitney-Bowes DM–the low-cost, desk model postage meter machine is just right for you. More than a hundred thousand small businesses use the DM. More than one-third of DM users average less than $1 a day in postage!

**The DM prints postage** as you need it, directly on the envelope or on gummed tape for parcel post. Any amount for any kind of mail. You always have the right stamp. You don't have to keep a locked stamp box. Or make a trip to the postoffice when stamps run short. You no longer need to separate and stick little adhesive stamps or stock pre-stamped envelopes. With every meter stamp, you can print your own small ad, if you want one.




**The meter is set** by the postoffice for as much postage as you want to buy, a little or a lot. It protects postage from loss, damage, misuse; gives accurate automatic postage accounting on two registers.

There are twelve other models for the larger mailers. Ask any of the 190 PB offices for a demonstration of the right one for you.

**FREE:** *Booklet, "8 Questions to Ask Yourself About Your Use of the U. S. Mails," plus handy postal rate chart including new parcel post rates. Send coupon.*

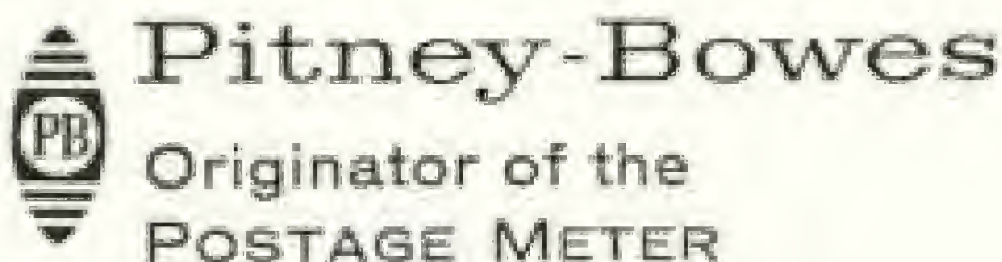
PITNEY-BOWES, INC.
3639 Pacific St., Stamford, Conn.

*Please send free booklet and postal rate chart.*

*Name* ____________________

*Address* ____________________

*City* ____________ *State* ________



# WORK HORSE (Wheel Horse of Course)

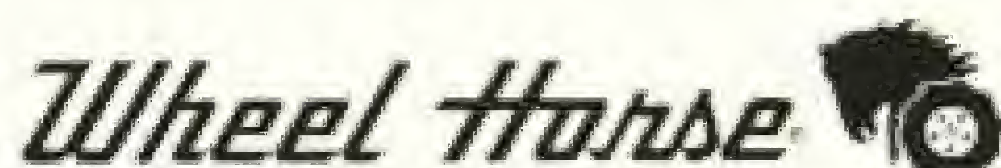
Push, pull, tow, mow, remove snow. Wheel Horse does it all. It's the pace setter in lawn and garden tractors. With the power and stamina of a work horse, the quick response of a race horse. From electric starting action to big-wheel, wide-tread traction, here's 8 hp. efficiency for every job.

Look for the famous Wheel Horse "red"—symbol of 4-season service for years to come.

Over 20 optional quick-attaching Wheel Horse tools take on a hundred tasks with all the time-saving ease you want.

Test ride a horse . . . Wheel Horse of course . . . at your nearest Wheel Horse dealer. He's listed in the Yellow Pages.

Write Wheel Horse Products, Inc., for free, full color literature on the complete line. Address . . .



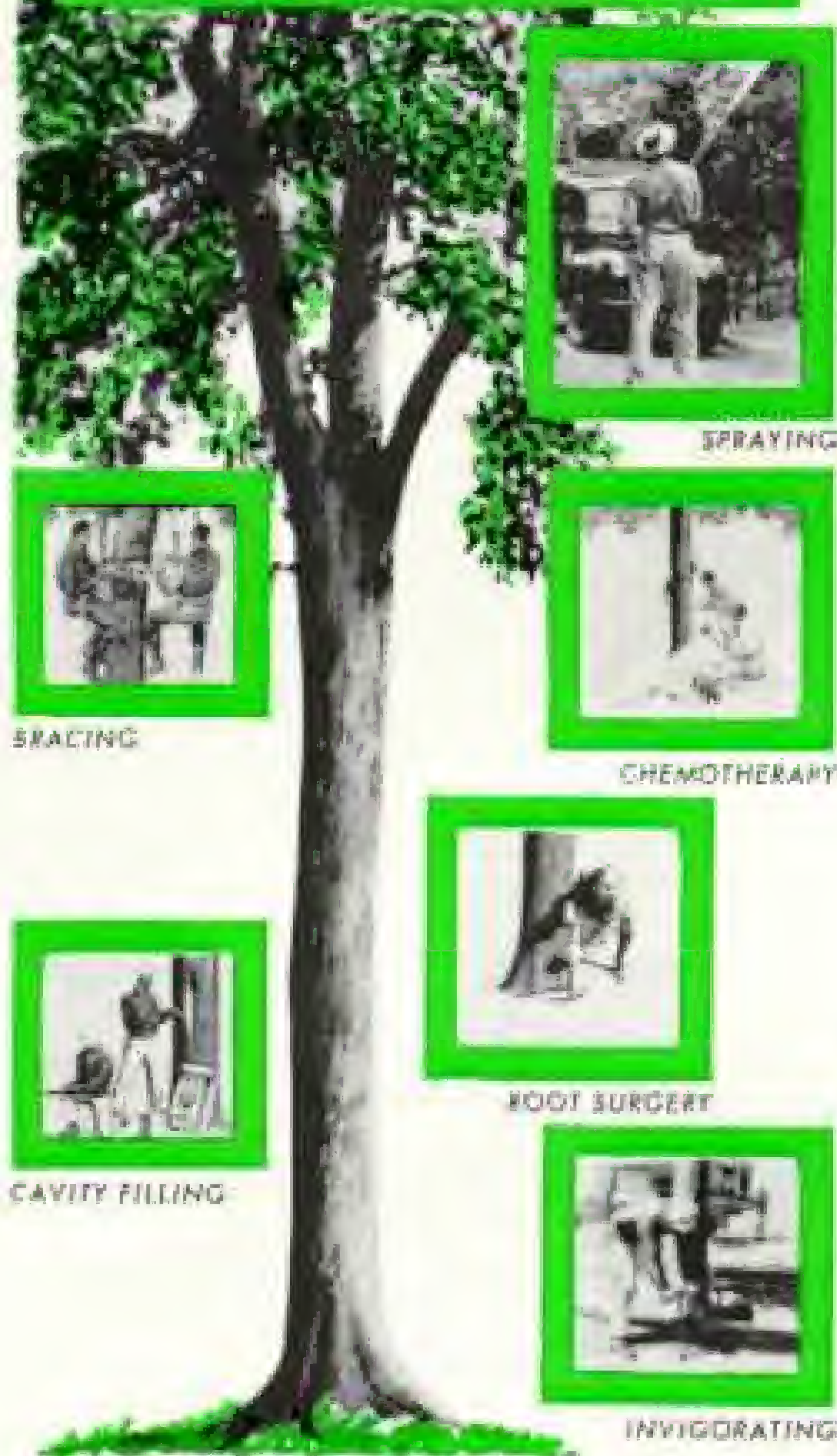

529 W. Ireland Road, South Bend 14, Ind.

Buick Motor Division

**Only one thing keeps a Buick LeSabre from being an expensive car. The price.**

True, there are other cars in LeSabre's price class. But from there on, they aren't in the same class at all. Consider LeSabre's response. And comfort. And ride. You'd expect them to cost much more. They don't. Now a few small niceties: a flatter floor for lucky people who sit in the middle, finned aluminum front brakes, big 15-inch wheels. (Are you thinking such things might strain your budget? Don't.) Now consider Buick styling—the subtle splash of elegance that would cost a bundle, elsewhere. If you could find it. And the one way in which LeSabre is like some less expensive cars: its prodigies are performed on admirably small amounts of gas. (Our point? LeSabre is a bargain, any way you slice it.) Now. See your Buick Dealer about that price. Be prepared for two surprises: the price and the car.

**Above all, it's a Buick!**




Scientific tree care recognizes no seasonal limits. There are always forces working against a tree's health—insects, chemicals, undernourishment, droughts, diseases, sleet, wind and lightning are continually taking their toll. Only regular tree care based on scientific research and practical training brings satisfactory results. Call a qualified Bartlett representative today and have him give you a definite program for the care of your trees.

**Home Office, 2770 Summer Street, Stamford, Conn.**
Research Laboratories and Experimental Grounds, North Stamford, Conn.
Local Offices from Maine to Florida and west to Illinois and Alabama.

# "Lucky Guy"

## He's got a Springfield RIDING MOWER

Lucky? You bet! Those well-engineered Springfields, proven by thousands of users like you, take the hard work out of yard work and make it fun. The same goes for Springfield Tillers, and Tractors. Check to see if you're extra lucky, on your dealer's Springfield Sweepstakes chart. 100 Springfield Riding Mowers and Tillers given away free!*

QUICK MFG., INC. the House of Power • Springfield, Ohio
*Void where prohibited by law.

# Is Europe really expensive? That depends.

On you.

For instance, you can have dinner in Paris for $25, or pay as little as $5—and order the same entrée.

You can buy a theatre ticket in London for $3.50, or pay as little as 35¢—and see the same show.

You can rent a room in Rome for $17 a day, or pay as little as $3.75—and enjoy the same view.

Pan Am Jet fares to Europe have their highs and lows, too. But *all* of them are now lower than they've ever been.

First-class fares are down as much as 21 per cent. And Pan Am's low-cost 14 to 21 day ticket is now available practically year 'round.

With the exception of a few peak travel periods, you can plan a 14 to 21 day trip any time this summer. (See a Pan Am Travel Agent or call Pan Am for details.) Sample fare: New York to Paris, $342 round trip.

One thing no other airline can give you at *any* price: the sure feeling that comes from flying the World's Most Experienced Airline. It's worth all the money in the world.

**You're better off with Pan Am—world's most experienced airline**

First on the Atlantic | First in Latin America
First on the Pacific | First 'Round the World

# New ground rules for compact tractors

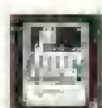
# BOLENS ESTATE KEEPER

Throw away the book on what you can (and can't) do with outdoor power equipment. Bolens new Estate Keeper rewrites the rules on compact tractor maneuverability.

Using split-frame design, the Estate Keeper folds like a hinge to turn corners. It does the twist as it mows your lawn, yet keeps all four wheels on the ground, regardless of terrain, because it flexes vertically and horizontally.

Seated up front ahead of engine noise and exhaust fumes, you have an unlimited view as you cut with the front-mounted mower (reel or rotary) right up to trees, shrubs, and borders. No hand trimming needed. Fast-Switch Attachment System features direct drive PTO . . . delivers positive power . . . with no belts. Available with snow caster or blade . . . plus many trailing attachments. Nothing like it on the market . . . try it, you'll agree! *For more information, send coupon.*

NEW LAWN KEEPER, a riding mower with Estate Keeper maneuverability



**BOLENS**

BOLENS DIVISION, FMC CORP., DEPT. HE-62-78
Port Washington, Wisconsin

Name ______________________

Address ______________________

City ______________ State ______________

28-6402

## We thought we had it foolproof

(Until Cousin George put his finger in front of the lens)

Some time ago we set out to put Bell & Howell quality into a fine automatic 35mm camera that would be as close to foolproof as possible.

Out came the slick new Bell & Howell/Canon Canonet* 1*. . . so completely automatic, so utterly simple, you can take color slides or snapshots of professional quality right off the bat.

The electric eye is why. All you do is make one setting, aim and shoot. If the eye sees the light isn't right, the shutter locks and you don't waste your picture. Even better, the slick little Canonet 1* tells you what to do to set things straight. You cannot take an improperly exposed picture... unless you stick your finger in front of the lens. And you'll probably only do that once.

How's that for foolproof?

Under $130, including flash and carrying case.

**Bell & Howell brings out the expert in you** (automatically!)

Chevelle Malibu Super Sport Coupe (all this and bucket seats, too!)

## WE DIDN'T JUST MAKE CHEVELLE BEAUTIFUL AND HOPE FOR THE BEST

*You might want Chevelle just because you like its looks. But if you think all we had in mind was a good-looking car smaller than Chevrolet and bigger than Chevy II, read on.*

One of the most beautiful things about Chevelle is the way it fits between parking meters (with five feet left over), yet still has a Fisher Body-ful of room inside.

Think those curved side windows are only for looks? They slant in for easy entry, and don't need bulky space-wasting doors to roll down into.

Chevelle's long wide hood looks nice, too. But it's that way because of what goes under it—things like a wide choice of Six and V8 engines, not to mention extra-cost air conditioning and anything else you'd like us to put there.

Chevelle's rear deck is just a smart cover-up for a 27.3-cu.-ft. trunk. (In case you haven't cubed a foot lately, it can hold 4 overnight bags, 2 two-suiters, 2 pullmans, 1 wardrobe and 1 train case, with a set of golf clubs thrown in for good measure.)

We've been very practical about the whole thing. If you think like we do, you're practically driving one already. . . . Chevrolet Division of General Motors, Detroit, Michigan.

Chevrolet • Chevelle • Chevy II • Corvair • Corvette

THE GREAT HIGHWAY PERFORMERS

# CHEVELLE! BY CHEVROLET

# *Your choice of fun on the water!*

Riviera, foreground, 17 ft. lapstrake fiberglass runabout. Skylark, background, embodies a unique new sailboat design.

Riviera is one of seven tough, trim Starcraft fiberglass runabouts. (Lengths range from 14 to 17 ft.). All seven offer you a smooth, dry, quiet ride on soft, inviting cushioned seating — while your eyes thrill to classic, timeless styling; smart modern colors; and luxurious trim. Skylark is a breeze-powered beauty in fiberglass—14 ft. of grace and beauty with characteristics of the catamaran and inland scow. In a class by itself! For more information, write for your free 1964 Starcraft Catalog. *Starcraft Boat Company, Dept. NG-5, Goshen, Indiana.*

**STARCRAFT**

AMERICA'S MOST POPULAR BOATS



# That stock you've been thinking about

The one you've been wondering whether or not you ought to buy. You keep following its price in the paper. You keep hearing good things about it. But you wonder. Is it for you? Should you buy it?

One way to help you make up your mind might be to ask us what we know about it. That won't cost you anything—whether you're a customer or not.

So, why not write the name of that stock down right here and mail it back to us.

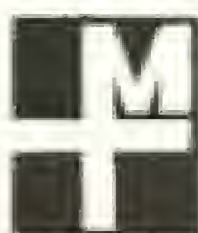
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

We'll be happy to send you whatever information our Research Department has available on that stock. And if you'd like information on another stock or two, by all means ask. Just put your name and address here.

NAME ______________________________

ADDRESS ______________________ CITY & STATE ______________________

YOUR PHONE NO. ______________________ NG-37

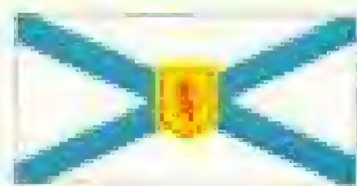


**MERRILL LYNCH,**
**PIERCE, FENNER & SMITH INC**

MEMBERS NEW YORK STOCK EXCHANGE AND OTHER PRINCIPAL STOCK AND COMMODITY EXCHANGES
70 PINE STREET, NEW YORK 5, NEW YORK

# Welcome to Nova Scotia

Bring your clubs and play the famous Cape Breton Highlands course or any of the other twenty-two courses.



One of the highlights of the Nova Scotia golf calendar is the Kilted Tournament at the Antigonish Golf and Country Club, held during the annual Highland Games, July 17-18. A pre-requisite for all golfers is the wearing of the kilt. (If you don't have one, you can borrow one for the occasion.)

Since the game originated in Scotland, it is only natural that Nova Scotians are so enthusiastic about their golf. Most of the twenty-three courses skirt the sea; clean, salt air and rugged seascapes are par for the course in Nova Scotia. Visitors are welcome.

Nova Scotia is the most compact sportland on the North American continent. There are fish aplenty in swift-running rivers and quiet pools, deep-sea family fishing excursions, surf-bathing, tennis, trail-riding, sailing, or just loafing in the sun. All are part of your relaxed, unharried vacation in Nova Scotia. Come this summer.

FREE VACATION LITERATURE

Write NOVA SCOTIA TRAVEL BUREAU

NAME

CITY STATE

ZIP CODE

## THE TREASURED GIFT

Fashioned in the tradition of precious jewelry, designs by Krementz have lasting, classic beauty.

Superbly made with a heavy OVERLAY of 14 KT. GOLD, this finer jewelry has all of the richness and much of the wearing quality of solid gold.

You will always feel special pride in giving it — for Mother's Day . . . Graduations . . . Birthdays . . . Weddings — or to yourself.

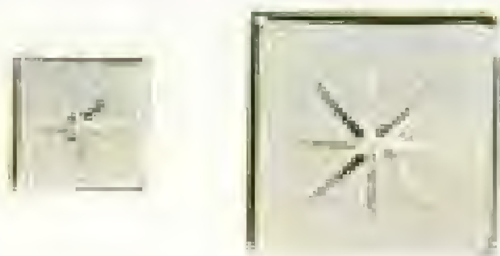
Above left: Florentine hearts with forget-me-nots
Earrings $19.50 Necklace $11.50 Brooch $13.50
Lily, with cultured pearls: Earrings $22.50 Brooch $20
Large leaf motif: Brooch $11.50

Right: Hand carved ivory rose
Earrings $13 Necklace $9.50 Bracelet $30
Pink rose motif: Bracelet $17.50
Flowing wheat spray: Earrings $15 Brooch $15

Center: Butterfly Brooch $12.50 Pink rose: Brooch $12.50 Earrings $12 (prices plus tax)

Each article in fine leatherette gift case

Available wherever fine jewelry is sold

Cuff Links $6.50 to $22
Tie Holders $4 to $12.50


# Krementz

14 KT. GOLD OVERLAY

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INDEPENDENCE CONSTITUTION ATLANTIC

**AMERICAN EXPORT ISBRANDTSEN LINES**

May, 1964

NATIONAL GEOGRAPHIC

# *The* BRITAIN That SHAKESPEARE Knew

By LOUIS B. WRIGHT, Ph.D.

Director, Folger Shakespeare Library, Washington, D. C.

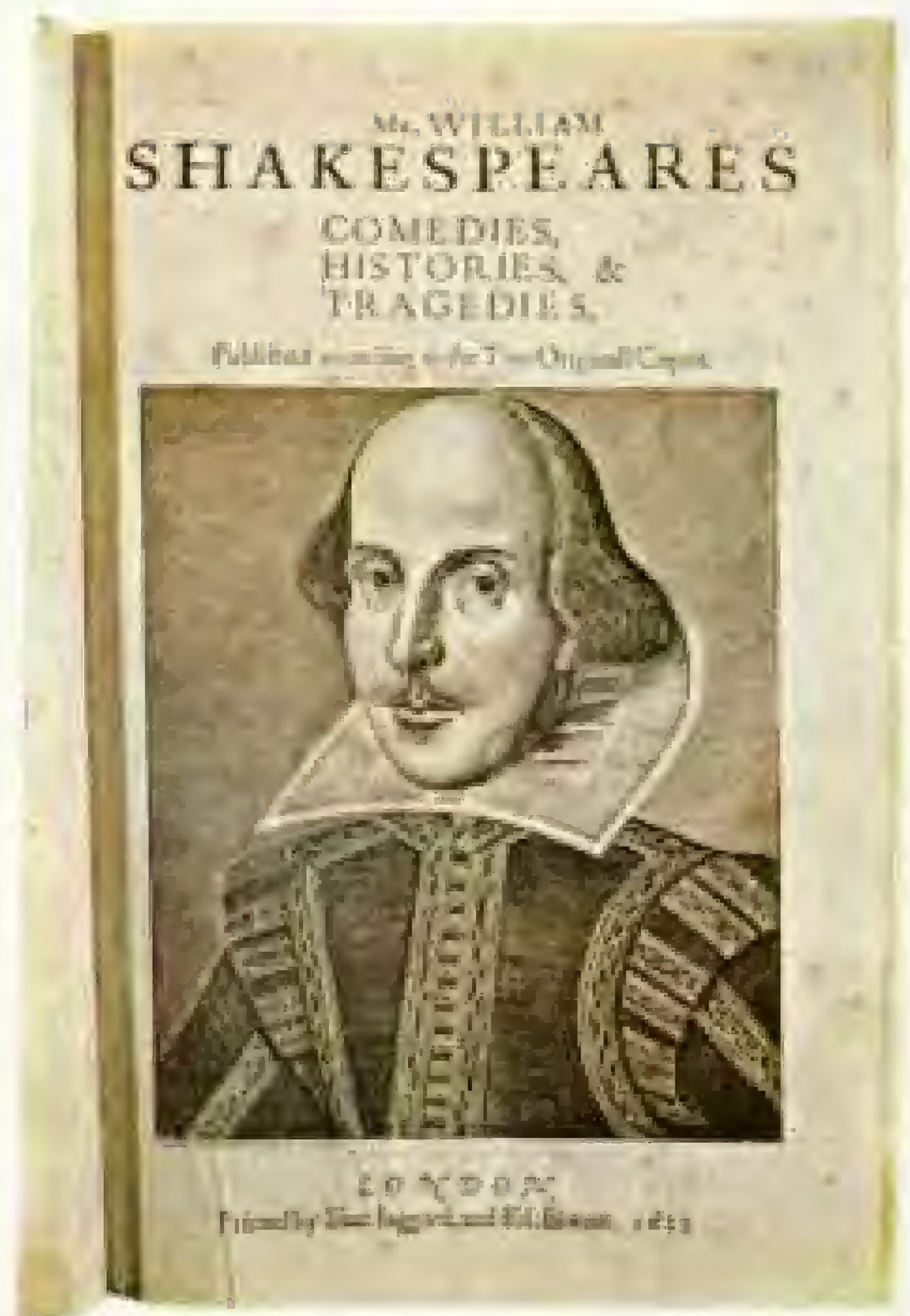
*Illustrations by National Geographic photographer DEAN CONGER*

FOR UNTOLD NUMBERS of Americans and citizens of other countries, Great Britain is a land of romance and history—all because of William Shakespeare. They think of England in the words spoken by John of Gaunt in *Richard II* (Act II, Scene 1):

> *This royal throne of kings, this*
> *scept'red isle,*
> *This earth of majesty, this seat of Mars,*
> *This other Eden, demiparadise, . . .*
> *This blessed plot, this earth,*
> *this realm, this England . . .*

Every day in the year, in good weather and bad, sightseers may be seen peering through the railings of Buckingham Palace, lining up at the Tower of London, or visiting the Horse Guards Parade. Many of the same sightseers, even if they have only a few days in Britain, travel to Stratford-upon-Avon. They want to visit scenes associated with Shakespeare, the one writer whom they all know, the one who influenced many of them to make the pilgrimage to "this scept'red isle . . . this England."

In 1964 the world is more keenly aware of Shakespeare than ever before, for many a country is celebrating the 400th anniversary of the birth of the poet, April 23, 1564. London, Moscow, Johannesburg, Adelaide, New York—great cities and small, in every corner of the planet, are taking special notice of this Englishman



Mr. WILLIAM
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TRAGEDIES.

LONDON

*This Figure, that thou here seest put,*
*It was for gentle Shakespeare cut,*
*Wherein the Grauer had a strife*
*With Nature, to out-doo the life.*

Thus wrote Ben Jonson for this earliest-known Shakespeare portrait, engraved by Martin Droeshout for the First Folio, 1623.

*This castle hath a pleasant seat. The air*
*Nimbly and sweetly recommends itself*
*Unto our gentle senses*

MACBETH (ACT I, SCENE 6)

Pink stone capped in gray slate, Glamis Castle, near Dundee, still recommends itself to the senses. Although the chronicler Holinshed reported that Macbeth had slain Scotland's King Duncan at

"Enverns" (probably Inverness). Glamis preserves a room where, tradition says, the murder took place. Shakespeare gave the bloody scene to Inverness (pages 644-5), but Berkeley (page 652) may have inspired the Shakespearean lines at left. Glamis, seat of the Earl of Strathmore, was the childhood home of Britain's Queen Mother Elizabeth and birthplace of Princess Margaret Rose

admired and remembered by peoples all around the world.

Great Britain, which traditionally observes the centenary years of Shakespeare's birth with noteworthy celebrations, is holding a variety of major Shakespearean festivals throughout the year. They began in London last March, when the Royal Shakespeare Company opened an international season.

TO SEE what evidences of Shakespeare's Britain had survived after four centuries, I planned an exploration of scenes associated with the poet's career or with his plays. For 30 years my study of Shakespeare's age had taken me regularly to England, but I had never made a systematic survey of Shakespearean geography. The impending anniversary seemed an ideal occasion.

My own curiosity, however, stretched beyond formal celebrations and exhibitions. I went in search of subtler things, traces of Shakespeare's Elizabethan age that linger perhaps in some hidden village in his native Warwickshire, among plain country Britons such as filled his comedies, or amid the ruins of a castle that figures in one of his history plays. Some places are household names: Bosworth Field, the Forest of Arden, Birnam Wood that came to Dunsinane—all names to conjure with. They still evoke visions of an England created by Shakespeare's poetry. I wanted to see what the centuries had done to scenes that once stirred the soul of the poet (see special supplement map, **Shakespeare's Britain**, distributed with this issue).

Thus it was that my wife, myself, and Miss Virginia LaMar, my co-editor of "The Folger Library General Reader's Shakespeare," set out in search of the poet's Britain. We went in early autumn, when by the law of averages the sun should favor us, and the gentle English countryside would be gay with flowers.

Our arrival over London did not produce the sunshine that we hoped to find. A black September fog had crept up the Thames Valley, and our jet could not get down. Finally, we flew off to Amsterdam for an excellent Dutch breakfast. By midafternoon a hole had opened in the fog over London Airport.

Our first conclusion about William Shakespeare, therefore, was that he was obviously an optimist; otherwise he could not have put so much sunshine into his poetry. His characteristic imagery emphasizes good weather, and we could not believe that Elizabethan England was vastly different meteorologically from our time. Only when Shakespeare wanted to induce an atmosphere of gloom or impending disaster—as in *Richard III*, *King Lear*, and *Macbeth*—did he call up images of lowering weather and threatening storms.

*I do remember an apothecary,*
*And hereabouts he dwells*

ROMEO AND JULIET (ACT V, SCENE I)

Mortars and pestles and a 16th-century book on herbal remedies fascinate children at Hall's Croft, Stratford home of Shakespeare's daughter and physician son-in-law

**The Author:** When NATIONAL GEOGRAPHIC sought an outstanding authority to write an article marking Shakespeare's 400th birthday, the search ended not in Stratford-upon-Avon, but in Washington, D. C. Just two blocks from the U. S. Capitol stands the Folger Shakespeare Library, administered by the trustees of Amherst College. It contains the world's largest and finest collection of Shakespeareana.

Director of the Folger, Dr. Louis B. Wright, a distinguished scholar and historian, has written or edited more than a score of books, among them the Folger's own editions of Shakespeare's plays. His article draws on dozens of visits to Britain over the past 30 years, and most recently a tour of Shakespearean sites last fall.

*Not marble nor the gilded monuments*
*Of princes shall outlive this pow'rful rime* SONNET 55

Four centuries after his birth, the poet's prophecy rings true, yet countless monuments to his genius endure as well. Here, in bronze, Shakespeare surveys his home town, Stratford-upon-Avon, Warwickshire. After making his fortune in the London theater, he returned in 1610 to "true-hearted friends" in Stratford and there lived for the last six years of his life.

Stratford preserves many sights familiar to its famous son. Pilgrims visit his birthplace (page 625), his school (page 624), his daughter's home (page 623), and his church beside the river (opposite and next two pages). They walk along the Avon or watch his plays in the Royal Shakespeare Theatre, the riverside building at upper right. Even the grain elevator (lower left), which serves Stratford's brewery, reminds the scholar that Shakespeare invested in malt grains. Detergents here whiten Avon waters with foam.

*In Warwickshire I have true-hearted friends*

3 HENRY VI (ACT IV, SCENE 8)

As King Richard III says (Act V, Scene 3):

*The sun will not be seen today;*
*The sky doth frown and lower upon*
*our army.*
*I would these dewy tears*
*were from the ground.*

We arrived, it is true, in the greatest heat wave of the season, despite the fog. The mercury had soared to 70° and had made front-page news. "Shocking day, sir!" the porter commented. And the chambermaid echoed the refrain: "Very 'ot, sir; close, I calls it, very un'ealthy, I says."

TO UNDERSTAND Shakespeare's England, one should start with the poet's native town and county. Warwickshire, according to that Anglophile Henry James, "is the core and centre of the English world; midmost England, unmitigated England." Certainly it is the England that tourists most often see in pictures: a land of green pastures and wooded hills; of gentle streams that, as Shakespeare wrote in *The Two Gentlemen of Verona*, make "sweet music with th' enameled stones"; of orchards, grain fields, and quiet villages with straw-thatched cottages; in short, a prosperous and peaceful countryside where every prospect pleases.



But Warwickshire is not a mere postcard land for visitors. It is a busy county of hard-working farmers and dairymen who contribute much to the food supply of England, as they did in Shakespeare's day.

As in Shakespeare's time, too, Stratford is a market town, noted for its ale. Shakespeare himself was interested in brewing, and he invested in malt grains after his retirement from London to Stratford. An unsubstantiated local legend, recorded by the Reverend John Ward in his diary, says that "Shakespear, Drayton, and Ben Jhonson had a merry meeting, and itt seems drank too hard, for Shakespear died of a feavour there contracted." Whether he died of too much ale will remain unproved, but Autolycus in *The Winter's Tale* sings that "a quart of ale is a dish for a king," and Stratford's good brew has tempted many besides the dramatist.

Stratford in Shakespeare's time was at the head of navigation of the Avon, a tributary of the Severn. Goods shipped from Stratford found their way to the ports of the west of England and to the great world beyond. Cloth from the nearby Cotswold towns, gloves such as were made by Shakespeare's father, malt grains, ale, beef, mutton, raw wool, and fruit were articles of commerce. Shakespeare was a citizen of no mean town.

Yet Shakespeare was essentially a countryman. Stratford was still a small town, and its citizens were all close to the land, its products, and its activities. Each house had a garden. Some had barns. Shakespeare's father on one occasion was fined for keeping a compost pile in the streets, the mark of a thrifty gardener somewhat short of hygienic concern.

***The evil that men do lives***
***after them;***
***The good is oft interred***
***with their bones.***

JULIUS CAESAR (ACT III, SCENE 2)

Shakespeare disproved his own words: the good of his literary legacy ranges far beyond his tomb (left) in Stratford's Holy Trinity Church. Tradition attributes the stone's inscription to the poet (page 626).

**Cross and choir** move past worshipers at Holy Trinity. Parish records list Shakespeare's baptism and burial (1564—1616).

The sights, the sounds, and the smells of the country were all familiar to Shakespeare as a boy. Even after he went up to London he was not divorced from them, for it was possible in his time to walk outside the walls of the city into the open country.

We arrived in Stratford on a golden day of autumn. In bright sunlight, Warwickshire is as vivid as a Pre-Raphaelite painting. Although modern inventions and transportation have altered life in this region since the 16th century, the face of the land would still be recognized by Shakespeare. Sheep still graze on the hillsides; cattle roam the pasture land; and wheat and barley ripen in the sun as they did in the 1560's. But no longer is the grain cut by men and placed in "stooks," as the shocks were called. Now modern combines sweep through the fields, leaving the straw in long windrows (page 626).



Stratford and the surrounding country are particularly gorgeous in late September. The land is bright with color, as the flowers make a last, almost desperate effort to show their beauties before the frost cuts them down. Perdita says in *The Winter's Tale* (IV, 3):

*The year growing ancient,*
*Not yet on summer's death*
*nor on the birth*
*Of trembling winter, the fairest*
*flowers o' the season*
*Are our carnations and streaked*
*gillyvors* [gillyflowers] . . .

Today, however, other flowers are more common: asters, Michaelmas daisies, geraniums, goldenrod, dahlias, roses, and countless other species bloom in every garden, and wild flowers wave along the roads. Beech, elm, and oak here and there show a bronze and yellow tinge amidst the green.

Such autumn days Shakespeare knew and

remembered in the fog of London. In one of his sonnets, number 104, he speaks of "yellow autumn," and in another, number 97, of "The teeming autumn, big with rich increase, Bearing the wanton burden of the prime."

Stratford is one of the world's most heavily visited towns. Each year something like a million visitors pour into it. According to Mr. Levi Fox, Director of the Shakespeare Birthplace Trust, more than half the visitors come from overseas, and, of these foreigners, half are Americans. But scarcely a land in the world today fails to show an interest in the poet of Strat-

*Like a school broke up,*
*Each hurries toward his home and sporting place*

2 HENRY IV (ACT IV, SCENE 2)

School bags flying, pupils pedal past Hall's Croft, in contrast to "The whining schoolboy, with his satchel And shining morning face, creeping like snail Unwillingly to school" (*As You Like It*, Act II, Scene 7).

*To strew thy green with flowers . . .*
*While summer days do last*

PERICLES (ACT IV, SCENE 1)

Amid blooms in the garden of the Royal Shakespeare Theatre, visitors "fleet the time carelessly as they did in the golden world" (*As You Like It*, Act I, Scene 1).

**Trading on fame,** a Stratford tearoom uses the name of Shakespeare's wife, Anne Hathaway, and a picture of her half-timbered cottage to entice tourists to dine.

*Ignorance is*
*the curse of God,*
*Knowledge the wing*
*wherewith we*
*fly to heaven*

2 HENRY VI
(ACT IV, SCENE 7)

Hard at work, boys in the Grammar School at Stratford study as the young Shakespeare once did here.

*O, welcome home! . . . y'are welcome all* CORIOLANUS (ACT II, SCENE I)

Pilgrims in a steady stream come to pay homage at Shakespeare's Stratford birthplace, preserved since 1847 as a national memorial. For a fee, visitors may enter the house.

ford, and one may see men and women from Asia and Africa walking Stratford's streets (see inset on supplement map).

The Stratford authorities have made a strenuous effort to keep their community as nearly like Shakespeare's town as possible, while still accommodating the enormous number of visitors.

The citizens of Stratford, we found, don't always share their guests' devotion to the poet. "No, I cawn't say I care much for Shakespeare," observed a taxi driver who drove us from the station to our hotel. "We 'ear too much about him around 'ere." And a town constable remarked, "If you arsk me, I think it's all a lot of humbug. All of these people comin' 'ere because a man wrote some plays. I'd rawther get a nice program on the telly."

A townsman I met at Holy Trinity Church was even more vehement, though perhaps not without cause. He had seen the crowds packing his church all summer, asking questions, wanting to take pictures of the poet's grave.

"What has Shakespeare done for this church? Just brought crowds 'ere," he asserted. "They bang, bang on the doors when they are shut. We cawn't 'ave a decent service 'ere on Sunday for them a'bangin' on the doors.

"I wish they would move 'im out of 'ere. Just take 'im out, that is, if they can find 'im. All he is, is mud, anyway. Mud, I say, because the river gets up and floods where he is buried down there. Just move 'im out, I say, and let us 'ave some peace."

The worshipers of Shakespeare all come to Holy Trinity to see the documentary evidence

of Shakespeare's reality: the baptismal record and burial record in the parish register, still visible but fading from long exposure to light; the graves of Shakespeare and his family within the chancel; and the bust erected by his friends soon after his death.

The "anti-Stratfordians," the theorists intent upon proving that Shakespeare's plays were written by Sir Francis Bacon, by the Earl of Oxford, or a score of other candidates, sometimes come to the church with a request to open the tomb. What they expect to find there, no one can tell. If the Stratford man is right, all they would find would be mud.



The tomb is protected by a doggerel curse, which legend says was composed by the poet himself (page 620):

*Good frend for Iesus sake forbeare*
*To digg the dust encloased heare!*
*Bleste be ye man yt spares thes stones,*
*And curst be he yt moves my bones.*

Shakespeare had watched the sexton digging graves and unceremoniously throwing out bones, as did the gravediggers in *Hamlet*, and was leaving a warning to prevent sextons in the future from disturbing his own remains. The curse has been respected from that day to this.

Stratford, for all the cynics among its citi-

zens, has long benefited from the public fascination with its most famous citizen. Statues and pictures of Shakespeare may be seen all over Stratford. None of the pictures or images, except the frontispiece of the First Folio, published in 1623 (page 613), and the bust in Trinity Church, has any validity; most so-called portraits represent idealized concepts of the poet. Hardly a public park or place of business escapes some Shakespearean symbol. Curio shops are littered with busts, pictures, and other souvenirs of every sort.

The old and the new in Stratford jostle each other. One or two of the older hotels

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*Some pigeons, Davy, a couple of short-legged hens, a joint of mutton, and any pretty little tiny kickshaws, tell William* [the] *cook*

2 HENRY IV (ACT V, SCENE 1)

Each hole a home, the dovecote at the Wilmcote farm of Mary Arden, Shakespeare's mother, harbored a colony of pigeons. Guide B. J. Hunt explains how birds were raised in Shakespeare's time to bolster winter fare.

*His chin, new reaped, showed like a stubble land at harvest home*

1 HENRY IV (ACT I, SCENE 3)

"Summer's green all girded up in sheaves," Shakespeare wrote in Sonnet 12. These combines, reaping wheat in the Cotswolds, would have astonished him.

occupy buildings of respectable antiquity and commensurate amenities, but across the Clopton Bridge stands an up-to-date inn, the Alveston Manor Hotel, where we stayed in comfort. It occupies a manor dating back to the Middle Ages. The place was a prosperous farm in Shakespeare's time, and the main hotel portion contains paneling that dates from the 16th century.

The propensity of Stratfordians to invent legends that have no validity in fact is illustrated by a sign that suddenly appeared on one hotel's back lawn while we were there. Without the slightest evidence, it declared that *A Midsummer Night's Dream* was first performed under the neighboring cedar tree!

The most famous legend, also unfounded, is the story of Shakespeare's poaching deer from Sir Thomas Lucy at Charlecote, four miles from Stratford. The fact is that Sir Thomas did not then have a deer park, though deer abound there now.

Nonetheless, even if Shakespeare did not poach deer from Sir Thomas Lucy, he gives evidence of a knowledge of hunting. In his plays he likes to draw metaphors and similes from the chase. For instance, in *Julius Caesar* (III, 1), Antony refers to Caesar's murder in terms of a deer hunt:

> *Here wast thou bayed, brave hart;*
> *Here didst thou fall; and here thy hunters stand,*
> *Signed in thy spoil and crimsoned in thy lethe* [blood].

In *As You Like It* there occurs a famous description of "a poor sequestered stag, That from the hunter's aim had ta'en a hurt," and in *Venus and Adonis* Shakespeare compares the love-worn Adonis to "a wild bird being tamed with too much handling, or as the fleet-foot roe that's tired with chasing." Plainly, Shakespeare was an outdoorsman.

The legend that has produced the most relics is the story that New Place, the handsome estate that Shakespeare bought in Stratford when he retired, contained a mulberry tree which the poet had planted with his own hand. Tourists as early as the 18th century became such a nuisance that the owner, the Reverend Francis Gastrell, enraged, finally cut down the sacred mulberry.

The wood of the tree was bought by a local craftsman, Thomas Sharp, who made it up into countless souvenirs that were sold widely. In time the Folger Library alone acquired enough mulberry souvenirs to have used up at least a cord of wood for their manufacture. The carpenter was accused of faking relics of New Place, but he swore by the Twelve Apostles that all were genuine.

ACTUAL RELICS of Shakespeare's life in Stratford are numerous and interesting. The director of the Birthplace Trust, Mr. Fox, has been careful to make no claims that cannot be substantiated with good evidence. The birthplace itself in Henley Street, a double house owned by Shakespeare's father, served both as residence and the family glove shop (page 625). The birthroom has contemporary Elizabethan furniture, though not the original Shakespeare furnishings, which were long ago dispersed.

The same care has been shown in furnishing Anne Hathaway's Cottage, where Shakespeare went courting his wife; Mary Arden's House, home of Shakespeare's mother (page 627); and Hall's Croft, the house and office of Shakespeare's physician son-in-law, Dr. John Hall (pages 617 and 623). All these houses, under Mr. Fox's care, are museums of genuine historical value.

Hall's Croft is one of the most interesting houses in Stratford. It has an herb garden of the sort a physician would have maintained, and it has a doctor's office with some of the equipment that a physician of the day would have had. Hall kept a clinical notebook of his patients beginning in 1616, the year Shakespeare died, but unfortunately the record, still existing, makes no mention of his most famous patient's last illness.

The Grammar School, where

***But when the blast of war blows in our ears,***
***Then imitate the action of the tiger: . . .***
***Then lend the eye a terrible aspect: . . .***
***Now set the teeth and stretch the nostril wide,***
***Hold hard the breath and bend up every spirit***
***To his full height! On, on, you noblest English***

HENRY V (ACT III, SCENE 1)

Eleventh-century warrior Robert FitzHamon, founder of Tewkesbury Abbey, appears as formidable as the poet would have him. FitzHamon's portrait in glass stood witness to the burial of young Prince Edward, King Henry VI's only son, slain by Yorkist enemies at Tewkesbury in 1471.

KODACHROME © N.G.S.

*Youth no less becomes*
*The light and careless livery*
*that it wears*
*Than settled age his sables*
*and his weeds*

HAMLET (ACT IV, SCENE 7)

Freckles and grin: the livery of a Coventry boy

*Earth's increase, foison plenty,*
*Barns and garners never empty,*
*Vines with clust'ring bunches growing,*
*Plants with goodly burden bowing;*
*Spring come to you at the farthest*
*In the very end of harvest!*

THE TEMPEST (ACT IV, SCENE 1)

Chipping Campden man fills each net bag with 25 pounds of Brussels sprouts as he harvests a field

Shakespeare undoubtedly got his education, stands in Church Street. The much-carved desks are still there (page 624), but the initials "W. S." appear on none of them. Beneath the schoolroom, now known as the Big School, is the old Guildhall, where itinerant players gave performances. There Shakespeare saw his first plays, and there he received the inspiration, perhaps, that took him to London to join a dramatic company.

ON 15TH-CENTURY Clopton Bridge, Shakespeare stood and watched the swirling waters of the Avon and the swans swimming below. The Avon flows much as it always did, but with a new ingredient, the detergents used in countless English households; they boil up in a vast mass of foam at the weirs below Trinity Church (page 619). The concentration of detergents is so great that at times the swans have lost the natural oil in their feathers and have become water-logged. Keeping saturated swans afloat has been a new problem for those who want to maintain Stratford's picturesque quality.

The territory near Stratford that Shakespeare undoubtedly knew, such as the Cotswold Hills, is still much like the 16th- and 17th-century countryside, though the farms are bigger and automation now takes care of the reaping. Progress is beginning to percolate into some Cotswold towns, but not sufficiently yet to spoil them. Even on a Saturday most are still peaceful and unaffected.

Chipping Campden, one of my favorites, was quiet and virtually deserted except for a few local citizens. A notice on the Town Hall stated that the parish council on September 30 had on its agenda, among other things, an item "To consider the suggestion that the houses in town be numbered." This would doubtless be a convenience to strangers, but the people are so helpful that all one needs to do is ask, and a volunteer will conduct you to the house you want.

With still enough sunlight for good outdoor pictures, we made a foray through the villages of Lower and Upper Swell until we reached Upper Slaughter; from there we made our way by a winding road to picturesque Lower Slaughter. A workman stopped to watch as we photographed a group of children against a typical Cotswold cottage.

"I'm a tree feller," he replied to my query about the kind of work he did. "Lots of work for me around 'ere."

It turned out that he was a forestry worker, and that lumbering is still an important industry in the region, though one does not get the impression of dense forests. Much of the forest is probably still as heavy as it was in Shakespeare's time, for by then the oak had been heavily cut for ships like Drake's *Golden Hind*, and the charcoal burners had used up much of the rest.

Shakespeare was familiar with the woodlands of this region of Warwickshire and the neighboring counties. He had probably poached deer in some of them and hunted other game. The Forest of Arden north of Stratford gave him a name and the atmosphere for *As You Like It*. He knew the trees by name and he understood woodcraft.

Cedars, common in the parks of Warwickshire, he usually describes as the "lofty cedar," the "majestic cedar," or the "stately cedar" (*Cymbeline*, V, 5). He can refer to "Jove's stout oak" (*The Tempest*, V, 1) or "the splitting wind" that "Makes flexible the knees of knotted oaks" (*Troilus and Cressida*, I, 3). And he reveals an observation from nature in a passage like this from *A Midsummer Night's Dream* (IV, 1):

*So doth the woodbine the sweet*
*honeysuckle*
*Gently entwist; the female ivy so*
*Enrings the barky fingers of the elm.*

Dusk had fallen as we turned back toward Stratford. A faint mist enveloped low-lying spots and the sliver of a crescent moon hung in the eastern sky: "The moon, like to a silver bow New-bent in heaven . . ." as Hippolyta describes it in *A Midsummer Night's Dream*.

*There stands the castle,*
*by yon tuft of trees*

RICHARD II (ACT II, SCENE 3)

Groves of trees still distinguish Berkeley Castle, but the parklike Gloucestershire countryside no longer resembles the poet's "high wild hills and rough uneven ways."

In *Shakespeare's Imagery*, Caroline Spurgeon suggests that he saw Berkeley Castle, as his line in *Richard II* indicates, and used it to describe Macbeth's castle at Inverness, which he never visited.

This 14th-century castle, built around a 12th-century Norman keep, has remained in the Berkeley family some 800 years. But the 20th century intrudes: A nuclear power plant now stands by the Severn River (top).

KODACHROME © NATIONAL GEOGRAPHIC SOCIETY

*Plant love among 's!*
*Throng our large temples*
*with the shows of peace,*
*And not our streets with war!*

CORIOLANUS (ACT III, SCENE 3)

Disregarding rain, father and baby visit bombed-out Coventry Cathedral. A new cathedral rises beside the shell, as in Shakespeare's line: "All the ruins of distressful times Repaired with double riches of content" (*Richard III*, Act IV, Scene 4).

In *Richard II*, Shakespeare described the lists where, the King proclaimed, "At Coventry, upon Saint Lambert's Day, There shall your swords and lances arbitrate The swelling difference of your settled hate."

**Girls visit** King Richard's Well at Bosworth Field near their homes in Nuneaton.

*A horse! a horse!*
*my kingdom for a horse!*

RICHARD III (ACT V, SCENE 4)

Fighting on foot, Richard III faces death from Richmond's men on Bosworth Field.

Across a stubble field someone had lighted a fire that glowed against the dark background of beech and oak trees. Such a scene Shakespeare might have remembered as he wrote of the campfires before the Battle of Agincourt in *Henry V* (Act IV), where

> *The poor condemned English,*
> *Like sacrifices, by their watchful fires*
> *Sit patiently and inly ruminate*
> *The morning's danger....*

Indeed, the sights and scenes of Shakespeare's country are enough to inspire poetry in any soul, and we can be glad that the poet had so many memories from his impressionable youth to draw upon when he was writing in his lodgings in London.

WORCESTER, about 25 miles from Stratford, must have been an arduous journey when Shakespeare went there for his marriage license in 1582. It is now only a 40-minute trip by motorcar. On the way we stopped at Bidford-on-Avon a moment for petrol and observed a courteous notice to motorists: "Please Park Prettily."

Worcester's chief interest today for Shakespeareans is the old Bishop's Palace, where Shakespeare applied to the Bishop of Worcester's agent for special permission to marry Anne Hathaway without the customary saying of the banns three times. Need for this haste became evident six months later, upon the birth of the couple's first child. The license has long since disappeared, but it is recorded in the Bishop's register at St. Helen's Record Office, which also preserves the marriage bond.

In Shakespeare's time, Worcester was famous for gloves. The town is now best known for china and Worcestershire sauce.

From Worcester we went quickly from the 16th century to the mid-20th on one of Britain's new superhighways, the M5, which took us to within a few miles of Tewkesbury. Our immediate destination that day was Tewkesbury Abbey and the battlefield of the "Bloody Meadow," where, in the Wars of the Roses, the Yorkists defeated the Lancastrians in 1471, as portrayed by Shakespeare in the third part of *Henry VI* (V, 4).

The meadow was more peaceful on the day

*Welcome, my lord, to this brave town of York*

3 HENRY VI (ACT II, SCENE 2)

Thus spoke Queen Margaret to the gentle King Henry VI when he entered the city that she and the Lancastrians had captured for him. She pointed toward Micklegate Bar (center), the royal gate through York's 13th-century wall. There she had

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impaled the head of the defeated Duke of York "so York may overlook the town of York."

"Doth not the object cheer your heart, my lord?" asked the Queen of her husband. But compassionate Henry mourned: "Ah! cousin York, would thy best friends did know How it doth grieve me that thy head is here!"

York's head is gone, but the ancient gate still stands, topped by figures of men-at-arms guarding streets now swept by automobile headlights.

of our visit than when King Edward IV exhorted his men:

*Brave followers, yonder stands the thorny wood,*
*Which, by the heavens' assistance and your strength,*
*Must by the roots be hewn up yet ere night.*
*I need not add more fuel to your fire,*
*For well I wot ye blaze to burn them out:*
*Give signal to the fight, and to it, lords.*

Shakespeare devoted four of his history plays—*Richard III* and the three parts of *Henry VI*—to the 30-year-long Wars of the Roses, with their complicated battles, deaths, and successions. Those plays give a vivid picture of the civil broils that wracked England between 1455 and 1485 and that ceased only when Henry VII, a Tudor, deposed Richard III and ended the fighting between York and Lancaster.

Shakespeare visualizes the events leading to the long and bloody wars in *1 Henry VI*, when the Duke of York and the Duke of Somerset, a Lancastrian, confront each other in

the Temple Garden in London and choose the symbols that were to name the conflict for the crown:

York. *Let him that is a trueborn gentleman,*
*And stands upon the honor of his birth,*
*If he suppose that I have pleaded truth,*
*From off this brier pluck a white rose*
*with me.*

Somerset. *Let him that is no coward*
*nor no flatterer,*
*But dare maintain the party of the truth,*
*Pluck a red rose from off this thorn with me.*

*Here the street is narrow.*
*The throng . . . Will crowd a*
*feeble man almost to death*

JULIUS CAESAR (ACT II, SCENE 4)

No throng such as the one that followed Caesar crowds the Shambles in York, but many a visitor strolls the street to sample its medieval flavor. In the past, the word "shambles" meant a place where animals were slaughtered. Butchers still work here, as the man with a carcass evidences. Shakespeare uses the word in *Othello*. When Desdemona asks the Moor, "I hope my noble lord esteems me honest," he answers: "Oh, ay! as summer flies are in the shambles . . ."

Shakespeare's interpretation of the wars was orthodoxly Tudor, which required historians of the day to blacken the Yorkist King Richard III. Yet Englishmen and Americans for centuries have been learning their Wars of the Roses from Shakespeare, and it is obviously better to have a poet for one's historian than a scholar.

At one performance of *Richard III*, I heard a theatergoer remark, "Bloody fellows, weren't they? Talk about television violence teaching juvenile delinquency! Shakespeare gave 'em enough violence to make everybody in his age delinquent!" But Shakespeare's violence was for a moral purpose—to show the horror of rebellion and internecine war.

At the end of *Richard III*, the victorious Henry Tudor epitomizes the Tudor point of view as he invokes heaven to crown his success with lasting peace:

*England hath long been mad and*
*scarred herself;*
*The brother blindly shed the brother's*
*blood;*
*The father rashly slaughtered his own son;*
*The son, compelled, been butcher*
*to the sire:*
*All this divided York and Lancaster,*
*Divided in their dire division,*
*O now let Richmond and Elizabeth,*
*The true succeeders of each royal house,*
*By God's fair ordinance conjoin*
*together! . . .*
*Abate the edge of traitors, gracious Lord,*
*That would reduce these bloody days*
*again*
*And make poor England weep in streams*
*of blood!*

*Now would I give a thousand furlongs of sea for an acre of barren ground—long heath, brown furze, anything*

THE TEMPEST (ACT I, SCENE I)

Long, lovely sweep of the Yorkshire heath, mantled with heather in bloom, delights children, but Shakespeare's characters had to be in dire trouble or up to no good to venture onto moors. When the witches of *Macbeth* confer, one asks: "Where the place?"—only to be answered, "Upon the heath."

Tewkesbury Abbey is an imposing structure with a ceiling adorned with bosses made in the shape of the glorious "sun of York," and 14th-century stained-glass windows showing the figures of historic knights (page 628).

Virginia LaMar and I climbed down a slippery stair into a crypt of the abbey to get a view of bones purported to be those of the Duke of Clarence, now carefully preserved in a glass case suspended above the flood level of the river, which occasionally invades the crypt. "False, fleeting, perjured Clarence" was, in *Richard III*, murdered in the Tower of London by being drowned in a butt of malmsey wine. Today, even in death, poor Clarence has trouble avoiding submersion!

AFTER Tewkesbury, our itinerary for the day pointed toward Monmouth, birthplace of King Henry V—"Harry of Monmouth."

In *Henry V*, the valiant Welsh soldier Fluellen discourses proudly of the King born at Monmouth, on the Welsh border, and compares him to Alexander the Great:

"If you mark Alexander's life well, Harry of Monmouth's life is come after it, indifferent well; for there is figures in all things.... I'll tell you, there is good men porn at Monmouth" (IV, 7).

Westward from Monmouth lies Wales, a country even greener and more wooded than England, a country with many historical connections with the plays that delighted Shakespeare's history-conscious audiences. Henry V was their favorite hero-king, and Shakespeare knew what he was about when he made him the culminating protagonist in his trilogy consisting of the two parts of *Henry IV* and their sequel, *Henry V*.

Henry's birthplace was the ancient castle at Monmouth, now only a ruin. The restored part of the castle is a military barracks, closed to visitors the day we were there, but we managed to see the only part that was standing in Harry of Monmouth's time, a mere shell of the old castle.

Whether Shakespeare himself ever strayed as far from home as Wales and the west of England is a moot point, but in *Richard II*

he has scenes at Harlech and Flint Castles. At Flint, Bolingbroke captured Richard II. The castle is an ancient structure, perhaps partially ruined even in Shakespeare's time. In *Richard II* (III, 3), Bolingbroke, later King Henry IV, orders:

*Go to the rude ribs of that ancient castle;*
*Through brazen trumpet send the breath of parley*
*Into his* [the castle's] *ruined ears....*

Shakespeare must have been more familiar with nearer towns in the west, Shrewsbury certainly, and perhaps Hereford. Falstaff, the great comic figure of *Henry IV*, claimed to have "fought a long hour by Shrewsbury clock," but no clock exists today by which Falstaff might have timed his bogus duel with Hotspur.

Shrewsbury, like Monmouth, was a gateway to Wales. An 18th-century bridge across the Severn is known as the "Welsh Bridge," offering a "reddie waye" to Wales. The Welsh, in turn, found Shrewsbury an even readier way to England; they frequently plundered the region.

"A very old town, this," a Shrewsbury shopkeeper said to us. "The Romans were here before us, and the Welsh before them. The Welsh, they've always been among us."

WITH STRATFORD as a base, we ventured to other areas that Shakespeare knew or mentioned in his plays. On a Sunday we visited Coventry, a town within easy reach of Stratford and the scene of the Lists of Coventry in *Richard II*, where Richard banishes his ultimate successor, the future King Henry IV.

When Henry Bolingbroke, then Duke of Hereford, and Thomas Mowbray, Duke of Norfolk, accuse each other of treason, Richard prevents their fighting it out on the spot and, when he cannot reconcile them, finally orders them to appear at Coventry to decide by combat who is in the right (I, 1):

*We were not born to sue, but to command;*
*Which since we cannot do to make you friends,*
*Be ready, as your lives shall answer it,*
*At Coventry upon St. Lambert's Day.*
*There shall your swords and lances arbitrate*
*The swelling difference of your settled hate:*
*Since we cannot atone you, we shall see*
*Justice design the victor's chivalry.*

Coventry is an ancient city. In Shakespeare's lifetime it was one of the most important cloth centers in England. Its guilds staged some of the most interesting of the mystery plays, those medieval dramas based on the Biblical story from the Creation to the Day of Judgment. Some of these plays were still being performed in Shakespeare's boyhood, and he may have seen them acted in front of the now-ruined cathedral, a victim of blitz attack in the last war (page 634).

Another nearby town that Shakespeare must have known is Kenilworth, the site of the castle where Robert Dudley, Earl of Leicester, entertained Queen Elizabeth on more than one occasion. As a boy of eleven in 1575, Shakespeare may have seen—and perhaps been inspired by—some of the pageantry at Kenilworth when Leicester staged the most elaborate of all his festivities for the Queen.

From Coventry we set out to find Bosworth

Field, where Henry Tudor, Earl of Richmond, wrested the crown from Richard III and ended the Wars of the Roses. The search took us through various back roads in the general direction of Leicester.

The battlefield is now part of a farm near Sutton Cheney, and the farmer is tired of having the friends of Richard III and others traipsing across his fields. We managed to find an unobstructed way across a more friendly farmer's land to "Dickon's Well," where the ill-fated Richard, tradition tells, drank during the battle. A stone cairn covers the "well," actually an algae-filled pool of stagnant water (page 634).

Modern-day friends of King Richard had hung a wreath on the cairn. A card read: "In ever faithful memory of King Richard III and those who fell fighting loyally beside him at the Battle of Bosworth Field, August 22, 1485. From the Richard III Society."

Even Shakespeare's *Richard III*, a biased portrayal, does not deny Richard a courageous spirit, as the King's last words in the play make clear (V, 4):

*Slave, I have set my life upon a cast,*
*And I will stand the hazard of the die.*
*I think there be six Richmonds in*
*the field;*
*Five have I slain today instead of him.*
*A horse! a horse! my kingdom for*
*a horse!*

Not far from Bosworth Field, at Sutton Cheney, farmers gather each night at a pub named the Hercules, where hangs a broken rapier thought to have been used in the battle.

"WHEN IS the weather best in Scotland?" we asked a Scot, when we were planning a journey to scenes that Shakespeare describes in *Macbeth*.

"Weel, it is never verra good," was the answer, "but in September it is best." So on a sunny day late in September, we set out.

The north of England has many scenes of Shakespearean interest. Yorkshire, for example, was a region of Yorkist influence during the Wars of the Roses. Richard III had a stronghold at Middleham Castle (opposite); bloody deeds were done at Sandal Castle and at Pontefract, that

*bloody prison,*
*Fatal and ominous to noble peers!*
*Within the guilty closure of thy walls*
*Richard the Second here was hacked to*
*death.*

RICHARD III (III, 3)

After one Yorkist defeat, the Duke of York's head was impaled over Micklegate Bar in York (pages 636-7). All these episodes Shakespeare mentions, but we could give the scenes only fleeting visits as we traveled north.

Shakespeare probably had no personal knowledge of Scotland, but *Macbeth* focused a vivid light on the Scots for generations to come. Scotland and Scots were much on the minds of Englishmen when Shakespeare wrote the play. Queen Elizabeth was dead, and a Scottish King, James VI, occupied her throne as James I of England.

In 1603 he had come to London with a swarm of hungry Scots in his train, and the number of these new arrivals had caused much comment among Englishmen, who resented the distribution of royal favors to outlanders. Ben Jonson and his collaborators in a play called *Eastward Ho!* satirized the Scots—and were sent to jail to repent.

Shakespeare was shrewder. He wrote a Scottish play that paid an elaborate tribute to King James by showing Banquo's descendants (King James was one) all wearing royal crowns. *Macbeth* must have pleased the King, for it was acted at court more than once.

Few of Shakespeare's countrymen knew Scotland at first hand, especially the wild highland country that was Macbeth's land. But from Holinshed's *Chronicles* the dramatist got the essential facts, and his imagination did the rest. Macbeth is supposed to have had castles at Inverness and in the neighboring region, and at Cawdor there is an extant castle claiming a Macbeth association.

But Cawdor Castle does not date back to Macbeth's time, the 11th century, though it does have a tower that dates from 1454. Macbeth was Thane of Cawdor, and legend now makes Cawdor Castle the scene of King Duncan's murder. The castle graces a peaceful

*The ruin speaks that sometime*
*It was a worthy building*

CYMBELINE (ACT IV, SCENE 2)

Children leap over column bases of Middleham Castle, Yorkshire, built in the 12th century. Here Richard III as a boy learned knightly conduct in the household of the Earl of Warwick, that proud "setter up and plucker down of kings," as Shakespeare wrote in *3 Henry VI*. After Warwick died at the Battle of Barnet in April, 1471, Middleham became Richard's property.

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landscape, despite such ghosts as may linger there, and it is noted for its gardens.

Inverness stands at the head of Loch Ness, and travelers slow up traffic looking for the "monster." The day we were there it was windy and cold, with whitecaps breaking on the black water. No monster showed his head, but it was easy to believe that some creature of the deep would find this place congenial.

ANOTHER SPOT in the Inverness country, which Shakespeare mentions as the site of Duncan's castle, is Forres, an ancient town between Nairn and Elgin. Shakespeare called it "Fores." This was a land noted for its witches, and near Forres is "The Witches' Stone," where witches were burned.

The belief in witches in Shakespeare's time was widespread, particularly among Scots. King James himself wrote a treatise called *Demonology* that treated of witchcraft, and he fancied himself an authority on the subject. Shakespeare's three witches in *Macbeth*, "So withered and so wild in their attire, That look not like the inhabitants o' the earth . . ." could have come from the neighborhood of Forres, or anywhere else in this region. Heaths that look today as they did in Macbeth's—or Shakespeare's—time may still be seen in many areas of the uplands.

Scotland is usually good to me, perhaps in welcome to a Scot whose ancestors left Inverness more than two centuries ago, and this trip was no exception. Though some days were cold and windy, the sun shone more than is usual, and farmers were busy getting in oats while they were dry.

Oats are the agricultural staple of northern Scotland, and Samuel Johnson's definition of oats as a grain eaten by horses in England and by men in Scotland still holds true. Oatcakes are served each morning in the George Hotel in Edinburgh, and oat porridge is a dish that has to be eaten in Scotland to be fully appreciated.

From Perth we went in search of Birnam Wood that came to "high Dunsinane" in *Macbeth*. Back of the Birnam Hotel, in the village of that name, we found two ancient trees, a sycamore and an oak, pointed out as the last original trees of old Birnam Wood (pages 646-7). They look as if they might have been standing in Shakespeare's day, if not in Macbeth's.

The woodlands of Scotland had been so devastated in Shakespeare's time that it was a common observation that in many parts of Scotland Judas could more easily have found salvation than a tree upon which to hang himself. Now reforestation with quick-growing pines is changing the Highlands.

Only a few miles southeast of Birnam, to the right of the motor road from Perth to Coupar Angus in the Sidlaw Hills, is Dunsi-

*Light thickens, and the crow*
*Makes wing to the rooky wood.*
*Good things of day*
*begin to droop and drowse,*
*Whiles night's black agents*
*to their preys do rouse*

MACBETH (ACT III, SCENE 2)

Inverness, Scotland: site of the vanished castle where Shakespeare's Macbeth slew Duncan. In the lines above, Macbeth, now King, at his palace in Forres contemplates the murder of Banquo and the latter's son Fleance, remembering the witches' prophecy that Banquo would father a line of kings.

nane (pronounced locally Dun-sin-nin). At the top of Dunsinane Hill, Macbeth watched fearfully from his castle—long since destroyed—as the soldiers of Macduff, camouflaged with branches from Birnam Wood, marched against him. As Macbeth watches, Shakespeare has him exclaim (V, 5):

*I pull in resolution, and begin*
*To doubt the equivocation of the fiend,*
*That lies like truth. "Fear not,*
*till Birnam Wood*
*Do come to Dunsinane!" and now a*
*wood*
*Comes toward Dunsinane. Arm, arm,*
*and out!*

Shakespeare made the Scottish scene grim and foreboding, in keeping with the tone of his play about the murder of a king. Modern visitors to Scotland get an altogether different impression. Even when the weather does its worst, the kindliness of the Scottish people provides a memorable warmth. For a thousand years, Scotland's greatest export has been her men. If one took the Scots out of the world, it would fall apart.

Edinburgh is one of the world's most civilized cities. In Shakespeare's time it was already a proud city, and so it has remained: proud of its educational and cultural facilities, its national library, national gallery of art, and annual music and drama festival.

Edinburgh has many associations with Shakespeare's age. James VI of Scotland, who became the patron of Shakespeare's company, was born in the great gray fortress, Edinburgh Castle, which sits high above the city, brooding over Scotland's fortunes.

From King James's time until now, Scotsmen have been going to London and transforming the business life of that city. "Does Scotland really want home rule?" I asked a Scot in Edinburgh.

"Noo, not really," he replied. "If we had home rule and our people no longer sat in Westminster, we'd have to give up ruling England."

It is true that Scots occupy places of importance in the political and economic life of England. When King James came to London in 1603, the Scots obtained a foothold they have never given up. They have avenged themselves for Flodden Field, where England overcame her northern neighbor in 1513.

FROM SCOTLAND, which Shakespeare knew only from the ancient chronicles, we returned to a region more familiar to him. We followed him from Stratford to London, a journey which in his time took at least two days. Shakespeare doubtless made his way to the capital through the villages of Hillingdon and Acton to Westminster, then followed the north bank of the Thames until

he came to Holborn and the entrance to the City of London. The City proper, then as now, occupied only a square mile, but already suburbs were spreading beyond the area originally encompassed by the old city walls.*

Where Shakespeare found lodgings, or what he did on arrival, we do not know, but he soon found employment in the theater.

The London of Shakespeare's time was vastly different from the sprawling metropolis we know today. Though even then the largest city in England, it still retained characteristics of a country town. Around it were fields where citizens could walk, hunt, practice archery, and experience other pleasures of the outdoors, a taste that Englishmen have always cultivated.

It is more difficult to find Shakespeare's London than it is to discover his haunts in Stratford, for London has been burned and built over through the centuries until few 16th-century landmarks remain. Nevertheless, many street names suggest locations that he knew, and a few relics still stand to remind one of an older London.

The St. Paul's Cathedral that Shakespeare knew was a Gothic structure that looked more like Westminster Abbey than the present

*See "The City—London's Storied Square Mile," by Allan C. Fisher, Jr., NATIONAL GEOGRAPHIC, June, 1961.

*What wood is this before us?*
*The wood of Birnam*

MACBETH (ACT V, SCENE 4)

Ancient survivors, only two gnarled trees remain of those that figured in the apparition's prophecy: "Macbeth shall never vanquished be until Great Birnam Wood to high Dunsinane Hill Shall come against him." After enemy soldiers cut Birnam branches to conceal themselves and moved against Dunsinane Castle, death indeed claimed Macbeth. But not until he had uttered his famous soliloquy (V, 5):

*Tomorrow, and tomorrow, and tomorrow*
*Creeps in this petty pace from day to day*
*To the last syllable of recorded time;*
*And all our yesterdays have lighted fools*
*The way to dusty death. Out, out, brief candle!*
*Life's but a walking shadow, a poor player,*
*That struts and frets his hour upon the stage*
*And then is heard no more. It is a tale*
*Told by an idiot, full of sound and fury,*
*Signifying nothing.*

pile, erected by Christopher Wren after the destruction of the original in the Great Fire of 1666. About St. Paul's Churchyard, Shakespeare would have found many bookstalls, where he soon learned to linger and read works that gave him suggestions for plays: the chronicles of Edward Hall and Raphael Holinshed, Sir Thomas North's translation of Plutarch's *Lives*, Italian stories in William Painter's collection, and many another volume that caught his eye.

From the St. Paul's district we followed what may have been Shakespeare's footsteps as he looked for playhouses. He must have gone down Cheapside and the Poultry to Bishopsgate and thence to Shoreditch; then down Holywell Lane until he came to what is now Curtain Road. There, on what was part of the old Holywell Priory land, he found the Theatre, erected by James Burbage, father of Richard Burbage, Shakespeare's fellow actor and colleague. In the same district was the Curtain, another early playhouse.

The site of the Theatre is just north of Holywell Lane. A short distance away, the Curtain playhouse site is now occupied by a Regent filling station.

From the Royal Exchange, the focal point of London's business life in Shakespeare's time, we took a short walk down Gresham Street to the Guildhall, another building familiar to Shakespeare. It was in the Guildhall that Dr. Roderigo Lopez, a Portuguese Jewish physician, was tried on a charge of attempting to poison Queen Elizabeth. Some writers have thought that Shakespeare got a hint for his Shylock in *The Merchant of Venice* from the Lopez trial.

Within a stone's throw of the Guildhall is the Church of St. Mary the Virgin in Aldermanbury Street, which has a particular interest for Shakespeareans. Here are buried the editors of the First Folio of Shakespeare's plays, his fellow actors and friends, John Heminge and Henry Condell. In the churchyard stands a monument bearing Shakespeare's bust and the open pages of the Folio

in bronze. The church was badly bombed during the last war and today is a mere shell.

Shakespeare would surely have visited Westminster Abbey, which appears in his plays. To the right of the west entry is the Jerusalem Chamber, where King Henry IV died in a scene vividly depicted by Shakespeare. After learning the name of the room in which he had swooned, King Henry says (IV, 5):

*Laud be to God! Even there my life*
*must end.*
*It hath been prophesied to me many years*
*I should not die but in Jerusalem,*
*Which vainly I supposed the Holy Land.*
*But bear me to that chamber;*
*there I'll lie.*
*In that Jerusalem shall Harry die.*



In the Henry VII Chapel, Shakespeare would have seen the tomb of the king whom he glorified as victor in *Richard III;* and he could also see the chantry and tomb of Henry V, his hero-king, with Henry's shield, helmet, and saddle hanging above.

Of all the buildings that stood in Shakespeare's lifetime, undoubtedly the one that most deeply affected his imagination was the Tower of London. Indeed, its grim dignity and strength still make a deep impression on the visitor. The day of our visit suited the mood of the place: It was gloomy, with clouds and spitting rain. The Yeoman Warder who conducted us about was full of lore.

"You have read your Shakespeare, haven't you, young man?" he said to a small boy in

*Now call we our High Court of Parliament,*
*And let us choose such limbs of noble counsel*
*That the great body of our state may go*
*In equal rank with the best-governed nation*

2 HENRY IV (ACT V, SCENE 2)

Big Ben keeps time above the Houses of Parliament and Westminster Bridge.

**Foggy London Town** abides beside its broad esplanade of water, the Thames.

**Shakespeare's London,** drawn by C. J. Visscher in 1616, figured in many of his plays. Arriving to make his fortune sometime between 1584 and 1592, the poet later lived in Southwark near the Bear Garden **1**, where he saw animals baited, and the Globe **2** (pages 654-6). He wrote of the Bishop of Winchester, who lived in Winchester House **3**, and he knew St. Saviour's Church (Southwark Cathedral) **4**, where his brother Edmund was buried. Doubtless Shakespeare often crossed London Bridge **5**—"falling down" in the nursery rhyme and now replaced—or ferried across the Thames.

our group. "You know all about King Richard's murder of the little Princes? Well, come and I will show you where they say it happened." He led us to the Bloody Tower.

The grimmest spot in the Tower grounds is the small square known as Tower Green, where a brass plate marks the site of the scaffold on which Queen Anne Boleyn, Queen Catherine Howard, Lady Jane Grey, the Earl of Essex, and other notable prisoners were beheaded. Outside on Tower Hill is the site of the block where many others met death.

ON ANOTHER DAY, with a bit of sun to encourage us to seek outdoor scenes, we set out to visit the Middle and Inner Temples. I recalled the roses in the Temple Garden, where Shakespeare has the Dukes of York and Somerset quarrel and then choose the symbols for the Wars of the Roses. I wanted to see whether the templars still had the red roses of Lancaster growing beside the white roses of York.

Yes, they were there, and we stopped to look at the blossoms that play a part in one of the most famous passages in Shakespeare's history plays. At length we found a custodian with a key to the garden. He unlocked the gate and let us take some pictures.

"Just the flowers, sir! No members, sir, they would not like to see themselves in some American paper. Very careful they are, sir, about that."

The sun cooperated, and the gardener even cut a few red Lancastrian roses for us. We could imagine Shakespeare walking by the same garden and seeing the roses. As a matter of fact, Shakespeare has more allusions to roses than to any other flower.

We left the Temple Garden and headed down the street toward Blackfriars Bridge, in the vicinity of Shakespeare's Blackfriars playhouse and the area where he himself bought a house. The deed given Shakespeare by the seller is now in the Folger Library in Washington; the agreement given to the seller, bearing Shakespeare's signature, is in the British Museum.

The Blackfriars region was once a place of residence of some of the most aristocratic and prosperous of Londoners. Originally it had been the site of a vast Dominican monastery that had fallen into partial ruin after Henry VIII's dissolution of religious houses between 1536 and 1539. A part of the monastery had been made into a theater about 1596, and Shakespeare's company in 1608 took it over as a playing place. Unlike the

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He often saw the Tower of London **6**; he mentions it more than 50 times. Passing the time at the Guildhall **7**, he found it a place to "look for the news," as he wrote in *Richard III*. Shakespeare surely visited bookstalls in the courtyard of St. Paul's **8** (predecessor of Sir Christopher Wren's cathedral), where copies of his plays were sold. And he wrote of Baynard's Castle **9**, Richard III's London residence before he seized the throne. Of these places, only the Tower of London, the Guildhall (bombed during World War II but restored), and Southwark Cathedral survive.

Globe and other public playhouses, the Blackfriars was completely roofed, and plays were given there at night by candlelight.

While we were searching the area for relics of Shakespeare's time, a lorry driver pulled up. "Show you something over 700 years old," he volunteered. "Very 'istoric spot this 'ere is. Nice plays they used to have right 'ere where you are standin'—very elevatin'. And before you go, you ought to see Apothecaries' Hall, just around the corner there."

At that moment the butcher from the shop next door came out to join in the conversation. "You are talking to Old Mr. Antiquity himself," he commented.

We thanked Mr. Antiquity and offered him a half crown in token of our appreciation of his help. "Certainly not," he said, rejecting the coin. "I was in the army with 3,000 Yanks. Always glad to help one of you."

FARTHER along Carter Lane toward St. Paul's we found the site of the Bell Tavern, with a plaque showing that Richard Quiney had written a letter to his good friend William Shakespeare from the Bell. Quiney wanted to borrow £30 to cover losses in a fire at home in Stratford. Shakespeare must have been quick to respond, for on the same day Quiney wrote home to say that his "countryman" had promised the money. Quiney's note is the only bit that remains of Shakespearean correspondence.

Some of Shakespeare's merriest meetings with his cronies took place in the Mermaid Tavern, which once was somewhere between Bread and Friday Streets, off Cheapside, but the spot eludes a modern visitor. The site of the old Boar's Head, where Sir John Falstaff reveled with Prince Hal, is equally hard to locate. Nothing remains, of course, of the ancient pub, which stood not far from the Monument, the tall column designed by Wren to commemorate the Great Fire.

The Southwark side of the Thames, opposite the old City, has many associations with the players of Elizabeth's time. There in 1599 Cuthbert and Richard Burbage and their associates built the famous Globe playhouse, and there Londoners were accustomed to come for pleasure, gaiety, frivolity, and even less respectable amusements.

The bear- and bull-baiting rings were in this neighborhood, and in time play producers built theaters there to be out of reach of the censorious city authorities, who could not bear to think of their apprentices wasting their time in riotous entertainment.

Besides the Globe, the Swan and the Rose offered dramatic fare. Philip Henslowe, proprietor of the Rose, was the great producer who rivaled Shakespeare's company. Thanks to Henslowe, who kept an account book known as "Henslowe's Diary," we have a record of many players and dramatists who worked for him. Unhappily for historians, Shakespeare was not employed by Henslowe, and Shakespeare's company had no record-keeper whose notes have survived.

FOR our next sortie, we headed for London Bridge and Borough High Street on the Southwark side of the Thames. Rain had begun to pour, and we took refuge in Southwark Cathedral, where the records show that Shakespeare's brother Edmund is buried, though his grave cannot be found. The church retains several relics to remind one of the Elizabethan period. There is a memorial window and semi-recumbent statue of Shakespeare. The window shows some of Shakespeare's most famous characters: King Lear, Hamlet, Romeo and Juliet, and many others.

Between showers of rain, we went in search of the Globe, whose site is somewhat disputed, and at length found a plaque, at the convergence of Park Street and Horseshoe Alley, covered with a plastic sheet to protect it during the construction of a new brewery. The plaque, which asserts that the Globe stood on this spot, is the only evidence to remind one that the place has historic significance. This famous playhouse was an octagonal building, more richly decorated than any previous public theater (pages 654-6). It could be reached on foot over London Bridge, but many of the patrons crossed the river by water taxis, called "wherries."

Few things recreational remain in this sooty industrial district, except one or two pubs. The theater that stood here once echoed with the laughter and applause of Elizabethan audiences privileged to see the first performances of some of the world's most enduring plays. In our mind's eye we could see the gay crowds wandering through the open streets and parkland around the theater, a region today utterly drab and dreary.

One aspect of London that remains almost as Shakespeare knew it is the Thames, the great river that winds its serpentine way

*(Continued on page 661)*

*With a heavy heart . . . go I unto the Tower*

RICHARD III (ACT III, SCENE I)

One dark night in the Bloody Tower, tradition says, two royal children—Edward, Prince of Wales, and his younger brother Richard, Duke of York—were murdered at the instigation of their uncle, Richard III. This very room saw Sir Walter Raleigh a prisoner when he wrote his *History of the World;* the showcase holds an early copy.



KODACHROME © NATIONAL GEOGRAPHIC SOCIETY

BRITISH MUSEUM © N.G.S.

***This is the way to Julius Caesar's ill-erected tower*** RICHARD II (ACT V, SCENE 1)

**These words reflect the belief in Shakespeare's time that Romans built the Tower of London. A page from a manuscript of 15th-century poems by Charles, Duke of Orleans, shows him a prisoner in the Tower, writing to the Duke of Burgundy for aid in raising ransom.**

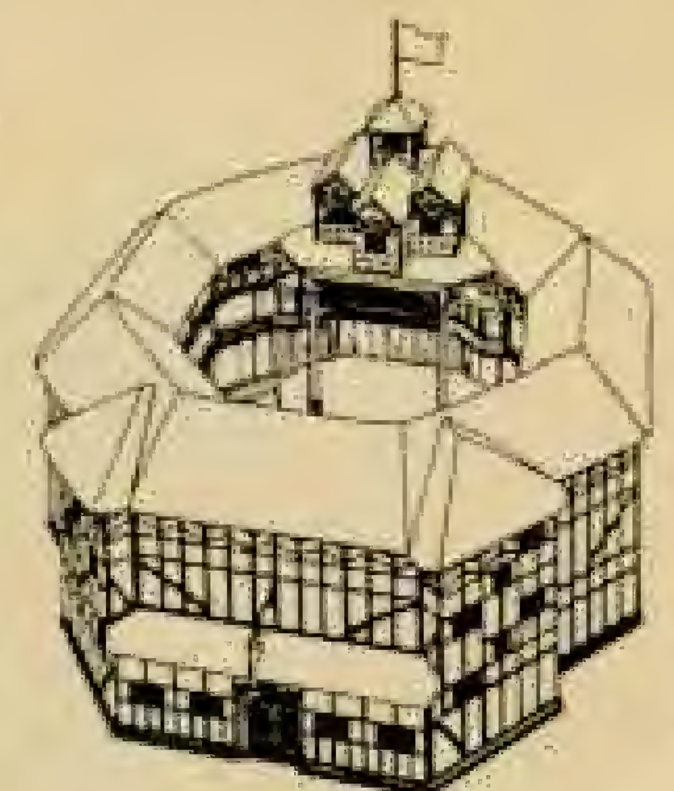
# *The* GLOBE
# SHAKESPEARE'*s* "*Wooden O*"

*O for a Muse of fire, that would ascend*
*The brightest heaven of invention,*
*A kingdom for a stage, princes to act,*
*And monarchs to behold the swelling scene!*
*. . . Can this cockpit hold*
*The vasty fields of France? Or may we cram*
*Within this wooden O the very casques*
*That did affright the air at Agincourt?*

THUS, in the prologue to *Henry V*, did Shakespeare appeal to his audiences to imagine settings to fill his "cockpit," the Elizabethan public theater whose design followed the inn courtyards where strolling actors played. Most of London's players fled the city limits to escape the jurisdiction of aldermen who contended that plays caused disturbances and lured apprentices from work; large crowds also spread the plague.

Shakespeare, dramatist, actor, and entrepreneur, lived for a time on the south bank of the Thames (page 650) and staged many of his plays in the Globe. Erected in 1599, the first Globe burned in 1613 when a cannon wadding ignited the thatched roof during a performance of *Henry VIII*. A rebuilt Globe disappeared in the same century, and Londoners forgot its exact site.

In this painting, drawn from a wooden model in the Folger Library, actors present *Othello*. "Groundlings" pay a penny to stand in the pit; richer spectators occupy balconies. Flag, visible to Londoners across the Thames, proclaims a performance in progress.



Bird's-eye view of the Globe (right) shows its octagonal shape and open central pit.

CURTAIN CALL IN THE ROYAL SHAKESPEARE THEATRE, STRATFORD-UPON-AVON. KODACHROME BY JOHN E. FLETCHER AN

*All the world's a stage, and all the men and women merely players: They have their exits and their entrances*

AS YOU LIKE IT (ACT II, SCENE 7)

THIS PAGE FOLDS OUT

CLIFFORD ROSE MAKES UP FOR THE ROLE OF DUKE OF EXETER IN HENRY VI

*And one man in his time plays many parts*

AS YOU LIKE IT (ACT II, SCENE 7)

DEAN CONGER © N.G.S.

SUSAN ENGEL AS ELIZABETH IN RICHARD III

*Advance your standards,*
*draw your willing swords. . . .*
*Sound drums and trumpets,*
*boldly and cheerfully; God and*
*Saint George! Richmond and victory!*

RICHARD III (ACT V, SCENE 3)

DEREK WARING AS EARL OF RICHMOND IN RICHARD III

*I had rather be a*
*country servantmaid*
*Than a great queen,*
*with this condition,*
*To be so baited, scorn'd,*
*and stormed at:*
*Small joy have I in*
*being England's queen*

RICHARD III (ACT I, SCENE 3)

DEAN CONGER © N.G.S.

through city and country. Only one bridge crossed the stream in Shakespeare's time, London Bridge, with its shops and houses like those on the Ponte Vecchio in Florence.

When Queen Elizabeth traveled between her palaces at Whitehall and Greenwich, she went by the Thames in the royal barge. Shakespeare and his company, too, went by boat when they performed *The Comedy of Errors* at Greenwich in December, 1594. The Queen's palaces have long since disappeared, but boats still ply between Whitehall and Greenwich, taking tourists to the National Maritime Museum and Royal Naval College.

The Queen also went by barge up the Thames to her palaces at Richmond, Hampton Court, and Windsor. Shakespeare must have known this portion of the river well. The players were called upon at intervals to play before the court, wherever it was.

A legend persists that Queen Elizabeth was so entranced with Falstaff that she commanded Shakespeare to write a play showing the fat knight in love. The result was *The Merry Wives of Windsor*.

Falstaff's description of being tossed into the Thames from the basket of soiled linen where he had hidden is one of the most comical passages in the play:

"Have I lived to be carried in a basket, like a barrow of butcher's offal, and to be thrown in the Thames? Well, if I be served such another trick, I'll have my brains ta'en out and buttered and give them to a dog for a New Year's gift. The rogues slighted me into the river with as little remorse as they would have drowned a blind bitch's puppies, fifteen i' the litter; and you may know by my size that I have a kind of alacrity in sinking: if the bottom were as deep as hell, I should down. I had been drowned but that the shore was shelvy and shallow—a death that I abhor, for the water swells a man, and what a thing should I have been when I had been swelled! I should have been a mountain of mummy" (III, 5).

*We'll bring you to Windsor*

THE MERRY WIVES OF WINDSOR
(ACT V, SCENE 5)

Royal Borough of Windsor sprawls in the lee of the walls and towers of Windsor Castle, a fortress begun by William the Conqueror in the 1070's.

Tradition says Shakespeare wrote *The Merry Wives of Windsor* at the request of Queen Elizabeth I to show his comic knight Sir John Falstaff in love. She may have seen the play's first performance at the castle, a place of interest to today's sightseers.

*About, about!*
*Search Windsor castle, elves,*
*within and out:*
*Strew good luck, ouphs,*
*on every sacred room,*
*That it may stand till*
*the perpetual doom*

(ACT V, SCENE 5)

*I see by you I am a sweet-faced youth*

THE COMEDY OF ERRORS (ACT V, SCENE 1)

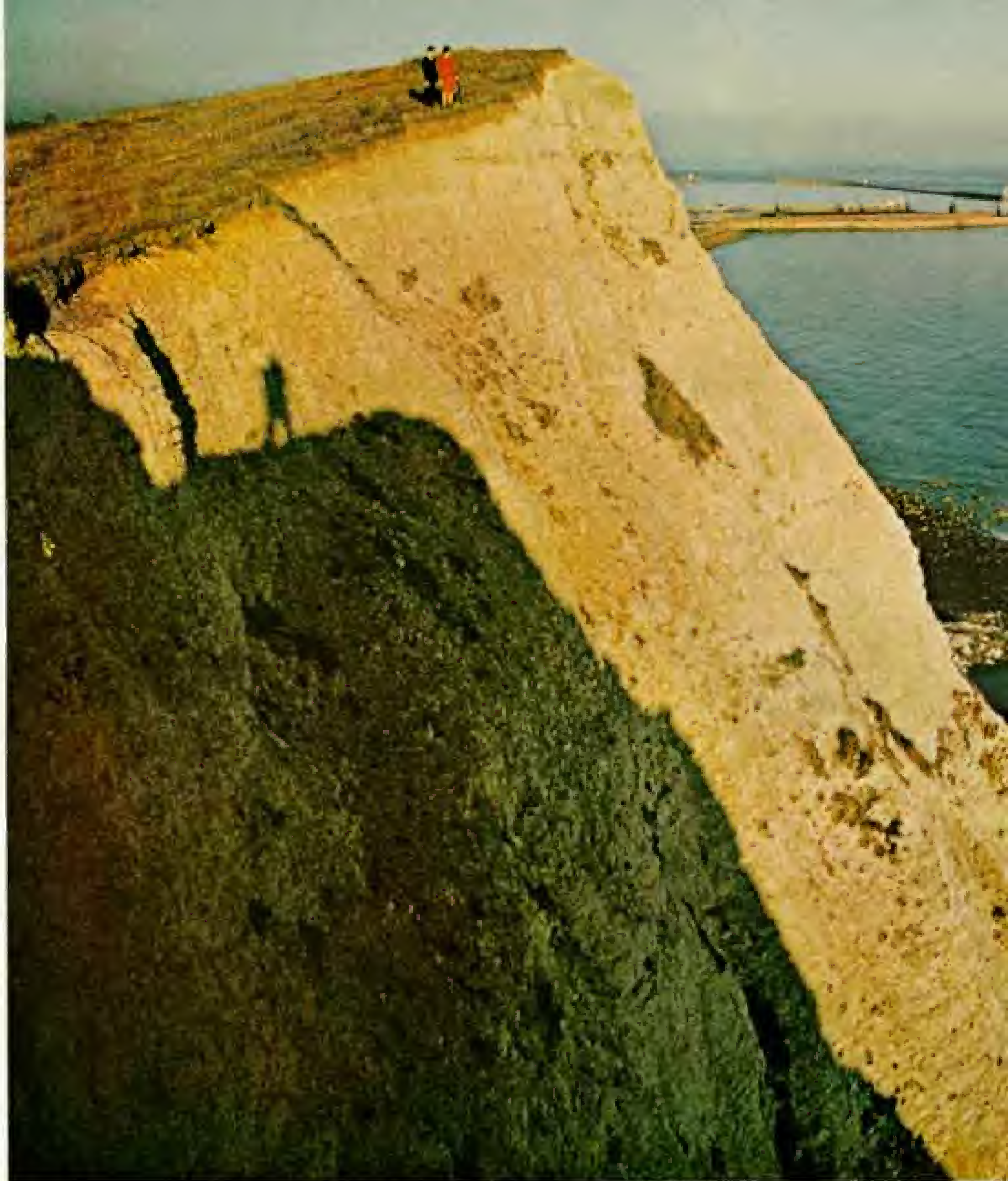
Jolly meeting of Dromio of Syracuse with Dromio of Ephesus came on December 28, 1594, when a "company of base and common fellows," possibly including Shakespeare, performed *The Comedy of Errors* in the 16th-century hall of Gray's Inn, one of England's four Inns of Court (law schools).

**At dinner in Gray's Inn,** Lord Devlin (center) shakes hands with students who have been called to the bar by the Inn after completing their law course.

Portia, Shakespeare's most famous lawyer, was not only a woman but an unlicensed practitioner, yet her defense of Antonio remains unexcelled:

*The quality of mercy is not strained,*
*It droppeth as the gentle rain from heaven*
*Upon the place beneath. It is twice blest—*
*It blesseth him that gives, and him that takes.*
*'Tis mightiest in the mightiest. It becomes*
*The throned monarch better than his crown.*
*His sceptre shows the force of temporal power,*
*. . . But mercy is above this sceptred sway,*
*It is enthroned in the hearts of kings,*
*It is an attribute to God himself;*
*And earthly power doth then show likest God's*
*When mercy seasons justice.*

THE MERCHANT OF VENICE (ACT IV, SCENE 1)



Although there is no positive evidence that Shakespeare traveled widely through England, he must have made trips out of London, and he evidently knew the country to the south. He may have gone by Rochester to Canterbury, as Chaucer's pilgrims had done before him. He sets some of Falstaff's adventures on the road to Rochester, and today at Gad's Hill, two miles west of Rochester Bridge on the Gravesend road, the Sir John Falstaff Inn commemorates the association.

If one can forgo the superhighway and take the slower roads through Rochester to Canterbury and on to Dover, the trip will be rewarding. Kent is one of the most pleasant counties in England. It is an important source of the domestic hops used by English brewers, and in summer the land is green with hop vines growing up to overhead wires. Itinerant hop pickers, some on stilts, may be seen at work in August and early September.

Hops were brought to England before Shakespeare's birth. A doggerel rhyme, long quoted, declares somewhat unhistorically:

*Hops, Reformation, bays* [baize], *and beer*
*Came into England all in a year.*

Canterbury would have been of interest to Shakespeare, as it is to us, for many reasons. Christopher Marlowe, the man from whom he learned the use of sonorous blank verse, was the son of a Canterbury shoemaker and

*This fortress built by Nature*
*for herself*
*Against infection and the hand*
*of war,*
*This happy breed of men,*
*this little world,*
*This precious stone set in the silver sea,*
*Which serves it in the office*
*of a wall,*
*Or as a moat defensive to a house,*
*Against the envy of less*
*happier lands;*
*This blessed plot, this earth, this realm,*
*this England*

RICHARD II (ACT II, SCENE 1)

Sunset gilds chalk-white Shakespeare Cliff, rising high above the English Channel at Dover.

attended the King's School, which had 50 boys in Marlowe's time and now has 670.

In Canterbury Cathedral, Shakespeare would have visited Henry IV's tomb. After the King's death at Westminster Abbey, a barge took his body down the Thames on its way to Canterbury. A terrible tempest arose, and long afterward a legend grew up that the boatmen had lightened their cargo by emptying Henry's coffin into the river.

"The story was pure myth," a friendly clergyman at the Cathedral told us. "Records prove the tomb was opened many years later and Henry was found in his coffin, well-preserved, looking much as the marble image you see there."

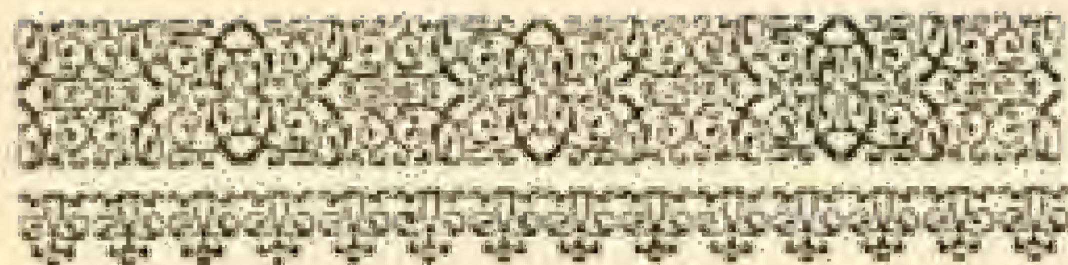
If Shakespeare ever went to sea—and a Scottish scholar is writing a book to show that Shakespeare must have served for a time in the Queen's navy—he would have sailed along the English Channel and observed the white cliffs of Dover. On a clear and windy day we peered over Shakespeare Cliff (left). It got its name from Shakespeare's description of the dizzy height at Dover in *King Lear* (IV, 6):

*How fearful*
*And dizzy 'tis to cast one's eyes so low!*
*The crows and choughs that wing*
*the midway air*
*Show scarce so gross as beetles . . .*
*The murmuring surge*
*That on the unnumbered idle pebble chafes*
*Cannot be heard so high.*

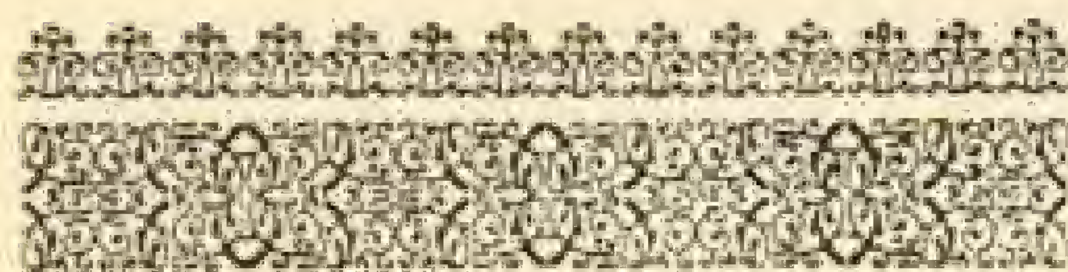
THE ENGLAND that Shakespeare knew, the England he creates vividly in the minds of his readers, is the country that most Americans like to envision. From the white cliffs of Dover to castles on the wind-swept moors of Yorkshire, they go in quest of the romantic past that Shakespeare enables them to re-create for themselves.

Shakespeare has given us more than our history of medieval England; he has left us geographical references and descriptions that establish in the land itself points of eternal interest.

THE END



# New-old *Map* Re-creates *The* BRITAIN of the Bard



"NIMBLE THOUGHT can jump both sea and land," says a Shakespeare sonnet. John Speed, a contemporary of the poet, could have adopted the line as his personal motto, for he gave much nimble thought to mapping the land and seas that made up the realm of England.

Speed was preparing his maps, now classics of their time, during the same years that Shakespeare was immortalizing his island homeland in words. The coincidence proved a happy one for your Society when it began to plan a map of the Britain Shakespeare wrote about. For who better than John Speed could chart the playwright's principal stage? Hence, one of Speed's plates published in 1611 became the basis for the special map supplement, **Shakespeare's Britain,** distributed to members with this issue.*

This latest map is an informative, decorative companion to "The Britain That Shakespeare Knew" (beginning on page 613). It locates the action of Shakespeare's plays in the land he loved best—"that England, hedg'd in with the main, That water-filled bulwark, still secure And confident from foreign purposes." Play settings are lettered in brown; adjoining tabs name the plays in which the scenes take place. Symbols in brown represent towns, abbeys and churches, castles, battlefields, and forests and heaths.

Forty-five sites are marked, among them the field at Bosworth where Shakespeare's Richard III cries his last words, "My kingdom for a horse!"; Dunsinane in Scotland; and nearby Birnam Wood, whose approach doomed Macbeth. The Forest of Arden, a background for *As You Like It*, appears near the town Speed calls "Stretford upon Auen."

Thus the map is designed to fill a need for relating action to setting. Researchers, in quest of accuracy, leaned heavily upon the scholarship of the famed Folger Shakespeare Library in Washington, D. C.

Many people prize Speed's plates for their beauty, although of course they lack the accuracy of present-day cartography. In Speed's day, Scotland, for example, was considered much larger than it is. On this map it almost touches Ireland, and the channel between the two practically disappears. The longitudes, too, copy Speed, whose prime meridian lay nearly 21 degrees west of Greenwich.

**Shakespeare's Britain** also retains Speed's principal map decorations. GEOGRAPHIC artist Lisa Biganzoli matches stroke for stroke the Speed rendering of James I's coat of arms, and the lion and unicorn that spring from

NATIONAL PORTRAIT GALLERY, LONDON (ABOVE AND RIGHT)

**Shakespeare's queen,** Elizabeth I fulfilled his promise, showering "Upon this land a thousand thousand blessings, Which time shall bring to ripeness." He wrote most of his plays during her reign.

**Elizabeth's father,** Henry VIII (right, upper) won this politic tribute in the Bard's play about the monarch: "I know his noble nature."

"The Germain Ocean" (North Sea). In "The British Sea" (English Channel), the Spanish Armada meets defeat in 1588.

Every word on the Society's new map was hand-lettered by Miss Biganzoli. She followed archaic spellings, including the use of the soft, medial "s," or "ſ" (thus Bristol is Briſtoll). She kept the symbol for the double "ſ," as seen in *Glaſſenbury* (now Glastonbury), to the south of Bristol. For Birmingham, she used Speed's Bromiſham, an old spelling still reflected in the name of the city's football team, the Brums, and in the word "brummagem"—cheap or gaudy—deriving from the days when Birmingham was a mart for tawdry toys and fake jewelry. Miss Biganzoli also drew the insets, deftly capturing Speed's style.

The largest inset depicts London as Shakespeare knew it. Here by the "Thames fluuius" stands the Globe theater. On the opposite shore we see "S. Paules Church," now replaced by Sir Christopher Wren's cathedral. To the right of London Bridge, banked with homes and shops, rises the Tower of London, so often mentioned by Shakespeare.

To help the reader keep track of the procession of kings that moves through Shakespeare's history plays, there is a table dating the reigns of these monarchs and listing the years of the action described in the plays.

The map should prove of almost universal value among English-speaking peoples, for, as Christopher Morley once put it:

"Everyone is a Shakespearean scholar unconsciously. You yourself have probably quoted him today. . . . If you said, and I'll wager you did, that the wish was father to the thought, as sound as a bell . . . method in his madness . . . or said something was lousy, or told someone to laugh that off . . . it was not you speaking but Shakespeare."

*Additional copies of the map, **Shakespeare's Britain**, may be ordered for 50 cents each from Dept. 167, National Geographic Society, Washington, D. C. 20036.

BRITISH MUSEUM

**Ill-starred Plantagenet king,** Richard II goes to his grave in a 15th-century miniature. "Mount, mount, my soul," cried the dying man, murdered in Shakespeare's *Richard II*.

**Victor at Agincourt,** Henry V inspired troops with "cheerful semblance and sweet majesty."

**Floodlights bathe** the soaring marble columns and slotted canopy of the new 10-story home of the National Geographic Society in Washington. At this fount of geographic knowledge, the Society's magazine, maps, globes, books, and bulletins are prepared and its expeditions planned. Up to

5,000 visitors a day throng ground-floor Explorers Hall, a wonderland of science and adventure.

# President Johnson Dedicates the Society's New Headquarters

"TODAY, in this house of exploration, let us invite exploration, by all nations, for all nations. . . . What greater challenge can there be than for the National Geographic Society to take the initiative in this endeavor?"

With these words, President Lyndon B. Johnson dedicated the new headquarters of the National Geographic Society in Washington, D. C., on January 18, 1964.

"Why should not the National Geographic, in this land and around the world, serve as a clearinghouse for knowledge to bring together men of science of every land to share and spread their knowledge and their talents? Where they begin, others will follow," said President Johnson.

From across oceans and continents, guests had journeyed to the Society's handsome white-marble home. First Washington building designed by Edward Durell Stone, architect for the John F. Kennedy Center for the Performing Arts, it has been acclaimed as one of the most beautiful in the Nation's Capital. It stands at 17th and M Streets, Northwest, near the older 16th Street building, which the steadily growing Society continues to use.

Among those assembled in Explorers Hall for

the occasion were Justices of the Supreme Court; members of the Cabinet and of Congress; diplomats; scientists, educators, and directors of museums; representatives of the arts, the press, radio and television.

When President and Mrs. Johnson arrived, they were greeted by Chief Justice Earl Warren, representing the Board of Trustees, and Dr. Melville Bell Grosvenor, the Society's President and Editor. As the United States Marine Band, led by Lt. Col. Albert Schoepper, played "Hail to the Chief," the Presidential party joined architect Stone and builder Slater Davidson on the podium.

The Reverend Dr. Edward L. R. Elson, of the National Presbyterian Church, delivered the invocation:

"Almighty God, Creator of this universe and the universe beyond it, as Thou hast been the guard and guide of our fathers, so wilt Thou bless this Society, its members and its workers. Further it in all its endeavors

**President and Mrs. Johnson ascend the steps,** flanked by Chief Justice Earl Warren, a Trustee of the Society, and Melville Bell Grosvenor, its President and Editor.

**Distinguished guests** include statesmen and explorers, jurists and geographers. TV cameras broadcast the dedication ceremony. At right, the Chief Justice and Dr. Grosvenor await the President. Exhibits in the new Explorers Hall commemorate notable expeditions by the Society in its 75 years.

to spread geographic knowledge. Watch over it in future explorations. Prosper its manifold activities. Enable it to promote peace on earth, and uphold it forever in the service of all mankind. In the Redeemer's name. Amen."

Dr. Grosvenor then presented the President of the United States.

"This is a very proud—and happy—occasion," the President began. "In the homes of our land—and in all lands around the world—the National Geographic Society and its magazine are old friends and a very welcome companion.

"You have broadened the horizons and narrowed the misunderstandings of many generations; and you have helped us all to be better citizens of the world and better citizens of our times. It is gratifying today to join now in welcoming the Society and its magazine into this new and magnificent home. This imposing home for the National

Geographic stands not as a monument to the past but as a testament of confidence in—and enthusiasm for—the future.

"For free men, whatever land they may call home, these qualities are indispensable. The future is the special trust of the free. We are not likely to keep that trust—or likely to keep our freedom—unless we keep our confidence in the future and unless we maintain our enthusiasm for always meeting new challenges and new opportunities.

"The last four centuries of human experience have been centuries of exploration and advancement of the frontier of man's knowledge. And we of this strong and still developing young Nation are—more than any others—children of those explorations.

"America as we know it, and freedom as we know it, could well not exist tomorrow for either our children or their children if we should lose from our national life that confidence in the future and that enthusiasm for exploration which has brought us to this high moment of history and high moment of hope.

"All the seas have been circled, and all the continents have been explored. The highest mountains have been scaled and the darkest jungles have been penetrated. We have reached into the realms of space—and out toward the domain of the stars. Yet our work is not complete, and our race is not yet won.

"This generation of Americans is challenged to live a life of high adventure. If we are to keep our trust in freedom, we must—in these last four decades of this century—undertake explorations in many realms; realms which dwarf all those of the past four centuries.

"We must participate in the high adventure of advancing man's knowledge of both the universe about us and the capacities within us. We of this land must commit ourselves to a demanding life of dedicated participation in the forward movement of the times in which we live.

"We are called to the greatest works that man has ever done. And if we are to live as free men in a world of danger, we must explore for new and better ways to maintain our security without impairing our solvency. If we are to live in peace in a world of peril, we must set forth to discover the secrets of peace, just as we long ago discovered the awesome secrets of war and devastation.

"If we are to live with pride in a world of decency, we must commit ourselves to removing from the earth the scars and scourge of human poverty and disease and ignorance and intolerance.

"These works are not—and can never be—the works of one nation or one people alone. These works will be accomplished when they become the joint works and the common

**"You have broadened the horizons** and narrowed the misunderstandings of many generations," President Johnson tells his National Geographic audience, "and you have helped us all to be better citizens of the world and better citizens of our times."

Mrs. Johnson and architect Stone sit behind the President. Front row (left to right): Mrs. Melvin M. Payne; Dr. Payne, the Society's Executive Vice President and Secretary; Mrs. Melville Bell Grosvenor; Mrs. Earl Warren; Mrs. Stone; Dr. Thomas W. McKnew, Vice Chairman of the Society's Board of Trustees and Chairman of its Building Committee; and Mrs. McKnew. Dr. Robert V. Fleming, Society Vice President and Treasurer, sits behind Mrs. Grosvenor.

labors of nations and people everywhere. And if that is to come to pass, nations must have more than common forums in which to meet: They must have common enterprises on which they can work together for the common good.

### President Poses a Challenge

"We of the United States believe today—as we have long believed—that the realms of scientific exploration offer this opportunity for common enterprises and endeavors. Scientific exploration and research know no national boundaries. Human knowledge is never the captive of international blocs. Common sense dictates that all nations lend their learning to all other nations. And this is a loan in which the science of all nations is the beneficiary and the good of all mankind is advanced.

"The more that we share with each other, the less we misunderstand each other. Today, in this house of exploration, let us invite exploration, by all nations, for all nations. And the only way to begin is to begin. What greater challenge can there be than for the National Geographic Society to take the initiative in this endeavor? Why should not the National Geographic, in this land and around the world, serve as a clearinghouse for knowledge to bring together men of science of every land to share and spread their knowledge and their talents? Where they begin, others will follow.

"So let us renew our hope that all nations with the interest and the capacity for scientific exploration unite in mutual enterprises of discovery for the benefit of their neighbor nations.

"As the late beloved President Kennedy said one month before his death, 'Recent scientific advances have not only made international cooperation desirable, but they have made it essential. The ocean, the atmosphere, outer space, belong not to one nation or one ideology, but to all mankind.'

"This is the principle upon which we stand. Explorations and discoveries of centuries past were most often meant to serve the interest and advantage of individual

ALGERIA
LIBYA
NIGER
CHAD
SUDAN
NIGERIA
UPPER VOLTA
GHANA
IVORY COAST
GABON
REP OF THE CONGO
ANGOLA
GULF OF GUINEA
YUGOSLAVIA
PORTUGAL
UNITED ARAB REP.
SAUDI ARABIA

**Making the world go round,** Mrs. Johnson presses the button that sets in motion the huge globe in Explorers Hall.

**Beyond the great globe,** 34 feet in girth, President Johnson pledges the Nation "to build a better world for all the races of man."

**First Lady** receives a 16-inch National Geographic globe as a souvenir of her official "launching" of the giant globe in Explorers Hall. Dr. Grosvenor points out to President and Mrs. Johnson that, in honor of the Society's 75th anniversary, a small diamond marks their Texas home, Johnson City.

To President Johnson, Dr. Grosvenor presented a volume, specially bound for the occasion, holding two NATIONAL GEOGRAPHICS. One was the issue for October, 1919, the month in which the mother of the 11-year-old future President became a member of the Society. The other—February, 1964—contains the article he wrote as Vice President: "Friendly Flight to Northern Europe."

**The world grows smaller** as Robert C. Watson III samples cake. Sara Grosvenor tries an orange. Blue, brown, and green icing reflects colors of the Society's flag.

nations. Today, as we meet here, we believe that the explorations and the discoveries of decades ahead must be meant to serve the aspirations and the well-being of individual men in all nations.

"This Nation is committed now to the most intensive effort ever made by any peoples to advance the frontiers of human knowledge. We shall remain committed.

"The cost of knowledge—whatever its price—is small against the price mankind has already paid throughout all history for his ignorance and for the darkness.

"The United States shall welcome any who wish to join with us in seeking to serve the common good of mankind. But if others are not willing—or if they are not able—to join with us, our own endeavors will not slacken.

"With confidence in the future—and in ourselves, with enthusiasm for the opportunities that the future may present to us, we therefore welcome the privilege of leading this century's great explorations to find a better life, to build a better world for all the races of man.

"So in this spirit, it is my very proud privilege now—on this 18th day of January, in the year one thousand, nine hundred and sixty-four—to dedicate this beautiful new home of the great National Geographic Society: 'To the increase and diffusion of geographic knowledge: to man's eternal quest for knowledge of earth, sea, and space.'"

**Explorers Hall Welcomes Visitors**

"Mr. President," Dr. Grosvenor replied, "with all my heart, and on behalf of four million members of our Society in every country in the world, I thank you for your very stirring and fascinating words. I pledge you, sir, that this work will go on, and that we will continue in the future, as you have requested us in your words of dedication, the increase and diffusion of geographic knowledge.

"Here in the new Explorers Hall, you can see some of the scientific souvenirs from that eternal quest. These are the mementos of the Society's 215 major expeditions of science and exploration. When our doors are open on Monday, the public will be invited to explore Explorers Hall.

"Of all the exhibits, none is more interesting than the great globe of the world. The globe is decorative, of course, but we can also use it. It can do wonderful things in the teaching of geography, and you can turn it upside down and see any part of the world you choose.

"But the world always needs the woman's touch. Now our charming First Lady will push the button to set the world in motion."

After Mrs. Johnson had started the globe rotating on its axis, Dr. Grosvenor said:

"Ladies and gentlemen, for the National Geographic Society this dedication marks the climax of our 75th, or Diamond, Anniversary. But we also mark another anniversary: the 45th year of a close and friendly relationship. On October 25th, 1919, the Society entered on its rolls the name of Mrs. Samuel E. Johnson, of Johnson City, Texas. But we had no way of knowing then what a remarkable home the NATIONAL GEOGRAPHIC was entering. Nor did we know the Johnsons had an 11-year-old son, a lad with a quick mind and thirsting interest in the world and its peoples.

**Magazine Proved Prophetic**

"Lately I have re-read this NATIONAL GEOGRAPHIC for October, 1919. It's a fairly typical issue. But today, with the hindsight of 45 years, the articles seem almost prophetic: a bird sanctuary in California, the islands of the South Pacific, Mexico, and the Congo.

"Now which of these subjects would have been helpful to an 11-year-old boy? Well, that California bird sanctuary might have interested a farm boy who already enjoyed the outdoors. Later he showed concern for, and interest in, conservation. We know for certain that he found California exciting. Just four years later, the Johnson boy went adventuring westward to California.

"In a small Texas town, the South Pacific isles must have seemed pretty remote in 1919. But 22 years later, the Johnson boy went to those islands. By then he was a Congressman. The day after Pearl Harbor, and one hour after he voted for the declaration of war, he left his seat in the House of Representatives —to become the first Congressman on active naval service in World War II. He brought back a Silver Star from the South Pacific and later was promoted to commander.

"That article on Mexico also figures in his life story. When the tall young Texan took a lovely bride, the newlyweds chose Mexico for their honeymoon. On frequent trips south of the border, they developed a warm understanding of the Mexican people. Years later, as President of the United States, Lyndon Johnson signed his first treaty with the republic of Mexico, settling a century-old dispute.

"What about the 1919 article on the Congo? Well, it typifies the world problems of today.

The list is long: Viet Nam, Berlin, Cuba, Zanzibar, Panama. Each place and each problem is different, yet each concerns a man who would make the world safe for diversity.

"Fortunately, President Johnson has a great firsthand knowledge of the world's diversity. He has a rare and remarkable command of geography. As Vice President, he visited more than two dozen nations. He traveled not simply as a high official—but as a dynamic friend. He moved among the people, shook their hands, listened to their problems. He proved—time and again—that wise men are those who continue to learn.

"All his life, Lyndon Johnson has continued to learn. As a Senator he studied the problems and policies of space; he wrote the laws that established NASA in 1958. Later, as chairman of the Space Council, he helped our country continue to learn the secrets of space.

"President Johnson sums up his own approach in the article he wrote for the February issue of NATIONAL GEOGRAPHIC. This is the story of his September visit to Scandinavia. He writes of his friendships and conversations with the people along his route, of 'agreements that would improve this world and our knowledge of the space beyond it.'

"Thanks to Lyndon Johnson's article, others will learn much about that portion of the world. Many young men will read that magazine—among them, perhaps, a future President.

**Building Erected by Millions of Members**

"For all of us in the National Geographic Society, that is a daily challenge: We need to stir new interests. For today, in all the world, there is no such thing as an unimportant place.

"And now, Mr. President, I am happy to say this classic building is paid for as we move in. No wealthy individual, no foundation

**The Editor serves at an open house for the Society's 1,400 employees and their families**

contributed to it. Our millions of members around the world—ranging from mechanics to prime ministers, from nurses to queens—all have helped pay for it, over the years, with their modest dues.

"While this building is monumental and, we hope, a mecca to visitors, still it is a workshop for some thousand employees. On one floor you will see our cartographers preparing the nearly 30 million maps our Society sends out each year. Elsewhere you will see one of the finest photographic laboratories in existence, and floors devoted to editorial offices where we report on our world-wide researches.

"Mr. President, it occurred to us, as a memento of this wonderful occasion, you might like a copy of that now historic and long-out-of-print October, 1919, NATIONAL GEOGRAPHIC. It is with much pleasure—recalling it was your mother who introduced you to the pleasures and discipline of geography—that I hand you this volume. Bound in it also is the current issue that carries your heart-warming account of your Scandinavian journey.

"Here, sir, is another copy for the Johnson Library in Johnson City."

Just as the sponsor of a ship receives a token of the launching, so Mrs. Johnson was given a souvenir after starting the 11-foot-diameter globe. Dr. Grosvenor presented to the First Lady a 16-inch National Geographic globe.

"But there is one difference," he explained. "On most maps and globes, Johnson City, Texas, is a dot. . . . But on this, our Diamond Anniversary, Johnson City is marked by a diamond."

The dedication brought messages of congratulations from all over the world, notably a telegram from Dr. and Mrs. Gilbert Grosvenor in Florida.

Master builder of the National Geographic, and now Chairman of its Board of Trustees, Dr. Grosvenor, 88, has served the Society and its magazine for 65 years, with the constant help of his devoted wife.

"We had hoped to return to Washington for the dedication of the Society's new headquarters, but our doctor says we must not," said the telegram. "We regret we cannot be with you to welcome today our great President of the United States, Lyndon Johnson, and his lovely lady.

"Please tell the President we are enjoying and are very proud of his fascinating article in the February NATIONAL GEOGRAPHIC, describing their visit to Scandinavia.

"Will you also kindly remember us to Senator and Mrs. Harry Byrd, Mr. and Mrs. Thomas Byrd, Mrs. Richard E. Byrd, Comdr. Richard Byrd, Jr., all of whom have done so much through many years for the NATIONAL GEOGRAPHIC and for us personally.

"We congratulate you and the Board of Trustees, officers and staff on the magnificent new headquarters of the Society.

"We congratulate you all on your continuous improvement of the NATIONAL GEOGRAPHIC MAGAZINE and of the research and exploration and many other activities of the Society. We congratulate you that the members of the Society have recognized your superb planning for the expansion of the Society's work by greatly increasing the membership everywhere. We send our affectionate remembrances to the Board of Trustees, staff, and all members of the Society.

"Elsie Bell Grosvenor
Gilbert Hovey Grosvenor,
Chairman of the Board of Trustees."

At a reception after the reading of this message, President and Mrs. Johnson, with Dr. and Mrs. Melville Bell Grosvenor, greeted the Society's Trustees and officers, members of its staff, and distinguished guests.

Later, at an informal dinner, the Board of Trustees honored the men responsible for the design and construction of the new building, Mr. Stone and officials of the Charles H. Tompkins Company.

"An architect," said Mr. Stone modestly, "can only design a great building for a client with vision, imagination, judgment, and taste. He is completely limited by the ability of the client to appreciate what he does. It takes a great client to make a great building. I should congratulate the Society, rather than take any bows myself." THE END

**the following day.**

ANTHONY STEWART © N.G.S.

# *Malaysia's Giant Flowers*

**RIBBONS OF CLOUD** *streak 13,455-foot Mount Kinabalu, highest on the island of Borneo. Forbidding slopes and tangled rain forest make the peak hostile to man, but the author climbed to ten thousand feet to gather rare plants that catch and digest insects. He found* Rafflesia, *the world's largest flower, growing on the slopes at right.*

# *and Insect-trapping Plants*

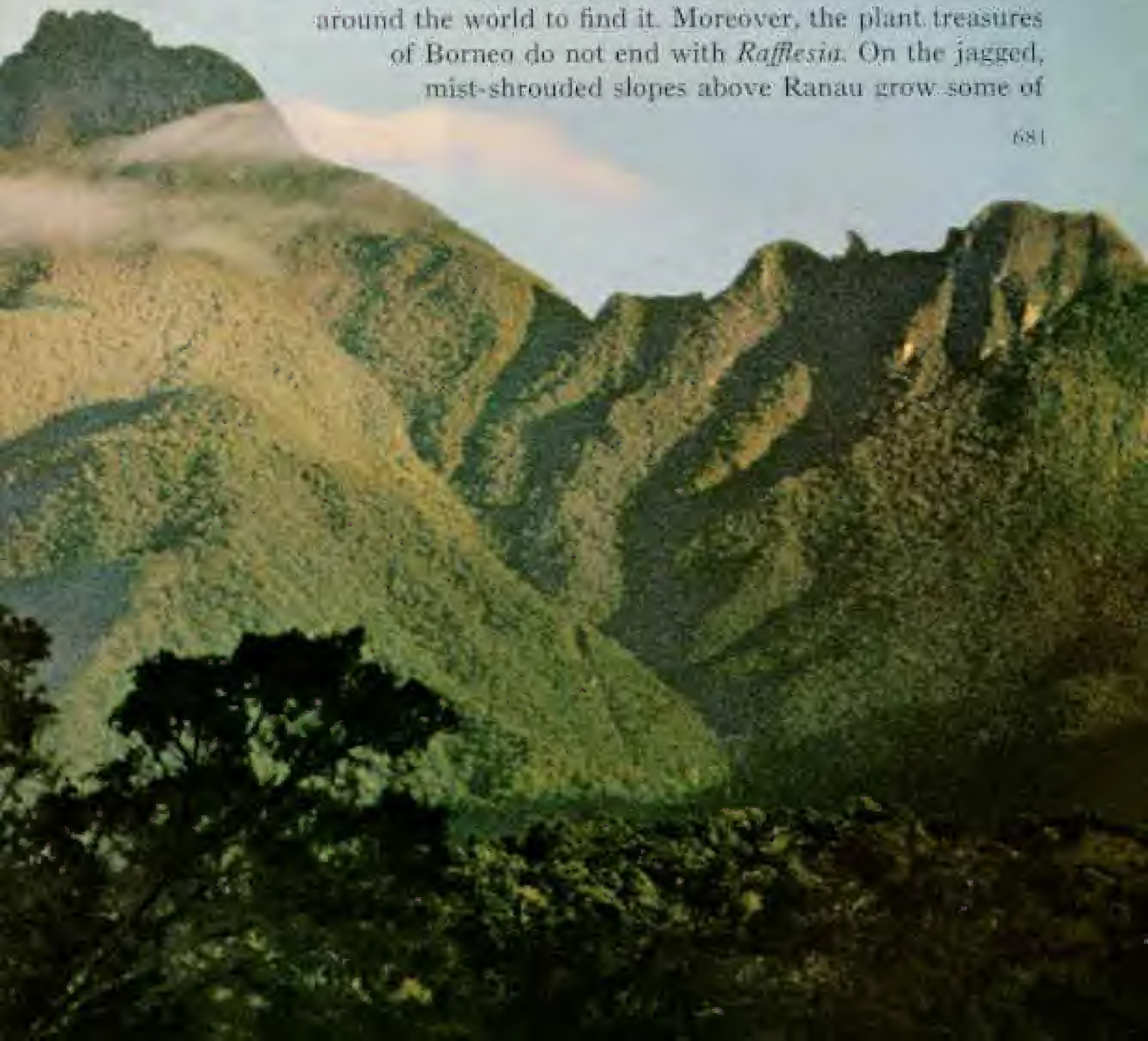
Article and photographs by PAUL A. ZAHL, Ph.D.
National Geographic Senior Staff (Natural Sciences)

"NOT THAT I DOUBT your word," said Jim Brock as we waited out a tropical deluge on the veranda of the Government Rest House at Ranau, in Sabah, or North Borneo, "but a flower the size of a *washtub*—that I've got to see!"

I explained that I had never seen one either; in fact, very few people had. But I knew a man who said he could show us one, and I was ready to believe him. Authenticated reports declare that blooms of the genus *Rafflesia*—the world's largest flower—sometimes reach this size.

It was a prize worth seeking, and I had come halfway around the world to find it. Moreover, the plant treasures of Borneo do not end with *Rafflesia*. On the jagged, mist-shrouded slopes above Ranau grow some of





the strangest plants extant—the giant insect-trapping pitcher plants called *Nepenthes*. I hoped to make a color photographic survey of the group. Now I was about to gain an important ally.

Jim Brock, a stalwart 19-year-old Peace Corpsman from Bridgewater, Massachusetts, had been assigned to a land survey in this remote district. He had just completed a tour of bush duty and, hearing of my unusual mission, offered to join me as aide and interpreter during his leave.

I jumped at the offer. A rugged young American, perceptive of the ways and familiar with the language of the native Dusuns, would be invaluable in my ascent of Mount Kinabalu, a 13,455-foot mass of sawtooth rock that is the highest in the whole of Malaysia (map, page 684). Rising beside the South China Sea, its ravine-cut slopes and spurs below the rocky top are covered with jungle of the densest kind (preceding page).

Here live many plants found nowhere else in the world. And parts of this botanical paradise have never felt the foot of man.

My other ally, I hoped, would be Anggau, my big-flower man. He was at work on a government road crew, as were many North Borneo men, since torrential rains had virtually wiped out the dirt "highways" of the area.

### Big-flower Man Offers Credentials

When Anggau reported to me, he presented his credentials, which consisted solely of a photograph, immaculately kept and wrapped in cellophane. It was his identification, passport, and license to practice—for it showed Anggau standing beside a big *Rafflesia* bloom. It proved that he had, at least once, found the rare and incredible plant.

Anggau was a wiry Dusun about five feet tall, a member of North Borneo's most numerous tribal group. His field equipment consisted entirely of a whacking big bush knife. In another era, that weapon would have alarmed us, for the Dusuns are reformed headhunters. Skulls still adorn some of their homes, although the same stilt-borne thatch building may now also proudly house a transistor radio.

Oddly, the skulls as well as the radio are likely to be Japanese; the prohibitions against head-hunting brought in by the British were relaxed in World

**Insect-trapping plants** cluster on the ground near Singapore. Photographer-naturalist Christina Loke dips her finger into a pitcher that holds a fluid deadly to most insects that tumble in. The plants digest their victims, in some cases aided by bacteria. In this way *Nepenthes ampullaria* obtains needed nutrients.

**Magnified view** of the same colony reveals an ant (*Camponotus gigas*) teetering precariously on a pitcher's brink. Another step will be its last. Open lids of these pitchers admit rain, sometimes diluting the fluid.

Quest for rare plants carried Dr. Zahl 3,800 miles in the new federation of Malaysia.

War II. Japanese occupation troops at times fell into ambuscades of roving guerrilla bands and died in a silent rain of poison-tipped blowgun darts.*

Visitors to Borneo run no such risks now, for reform of the head-hunters seems complete. I did hear of one fight in which a tribesman's neck was severed—not, however, for the sake of taking the head but in the fury of the moment. Even brawling is rare among the Dusuns, who are by nature a mild-mannered people.

### No Need to Thirst in Bamboo Country

At dawn, with Anggau and two carriers of equally formidable ancestry, Jim and I set off. For an hour, we hiked around the neat edges of rice fields and across green, buffalo-dotted fields. The usual route up Kinabalu lies on the south face, but Anggau was taking us toward an eastern spur. I could only hope he was right.

Before us, Kinabalu's peaks were, as usual, cloud-wrapped, but we soon lost any sense of the mountain as such, for we plunged into virgin rain forest which grew denser and darker with each upward step. We became burrowers rather than hikers.

Two thousand feet above the valley, our course threaded a belt of towering bamboo. Each emerald shaft was four to six inches in diameter—and each bamboo segment was a canteen full of water! Mudah, one of our carriers, showed us how to drink. He whacked the bamboo shaft just above a joint, and out poured a crystal-clear fluid, both cooler and purer than the chemically treated supply in my aluminum canteen. I tried it and found the taste like that of distilled water (pages 688-9). The inside of the bamboo stalk is completely aseptic.

Higher on the mountain, shortly before noon, Anggau signaled a halt. We were in a forest zone so eerie it seemed bewitched. Under and around towering trees writhed lianas as thick as a man's leg, ever straining upward in search of sunlight. Other dank vegetation seemed to clutch at us like enchanted trees in a horror film.

This is the homeland of gibbons, orangutans (the legendary "men of the forest"), wild pigs, deer, and perhaps even rhinoceros. It is a haunt of cobras and other deadly serpents, too.

But throughout nine weeks of field work in Borneo and adjacent areas, I saw only monkeys. The reason: Natives of this part of the world are careful to make quite a bit of noise as they work their way through the jungle—the exact opposite of the stealthy American Indian of legend. The noise scares away the beasts.

From overhead came a soft, chilling "whisk-whisk" of huge wings. A black shadow moved across the roof of the jungle, and a demoniacal shriek split the stillness. After an instant of uncertainty, I knew what the intruder was—a hornbill, the large weird bird that patrols these elevations.

### Cigarettes Disengage Jungle Leeches

But if this strident apparition was harmless, some silent worms were not. Lurking in chinks in the humus or under fallen leaves, leeches surrounded us.

When we walked, the vibrations of our footsteps, our scent, our body heat, or perhaps their primitive sense of sight led these bloodthirsty little abominations to us. Across the ground they came, hunching and lunging along like so many inchworms. These jungle leeches are, in fact, related to the earthworm, but instead of harmlessly eating dirt they live entirely on fresh blood.

A rasp at the head works through your skin so smoothly that the little parasite is gorging

*Malaya, Singapore, Sarawak, and Sabah, or North Borneo, banded together last year to form the new British Commonwealth nation of Malaysia. See "In Storied Lands of Malaysia," by Maurice Shadbolt, NATIONAL GEOGRAPHIC, November, 1963.

**Emergency water supply** passes a test high in Malaya's hills. Sealed lids of immature *Nepenthes sanguinea* shut out dirt; their content does not harm men but dooms most insects. "It tasted good, though warm," reports the author (right).

**Open goblets** of *sanguinea* invite unwary crawlers inside, where a plunge awaits.

**Lifeless husks** in a pitcher are mostly ants, the bulk of the plant's victims.

**Monster Flower Blooming in a Malaysia Jungle Lives as a Parasite on a *Tetrastigma* Vine**

Halfway up Mount Kinabalu, Dr. Zahl located this 26-inch-wide flower belonging to the *Rafflesia* genus, producer of the world's biggest blooms; some reach a yard in diameter. Here Peace Corpsman James M. Brock clasps two cabbagelike *Rafflesia* buds. Guide Anggau holds a section of the host plant, *Tetrastigma*. *Rafflesia* has no visible stem or leaves. It germinates in bark, the root tissues then pushing inward until they tap the vine's sap.

**Cut into three pieces,** a *Rafflesia* bud reveals its internal tissues. Lumpy yellow core has been partially removed from its tight wrapping of nearly mature petals.

**Still not in full bloom,** a *Rafflesia* measures some 15 inches across. In several days the flower will resemble the bloom at upper right. Later a sticky mass of seeds will form. Some authorities believe that jungle animals unwittingly carry the seeds to other *Tetrastigma*.

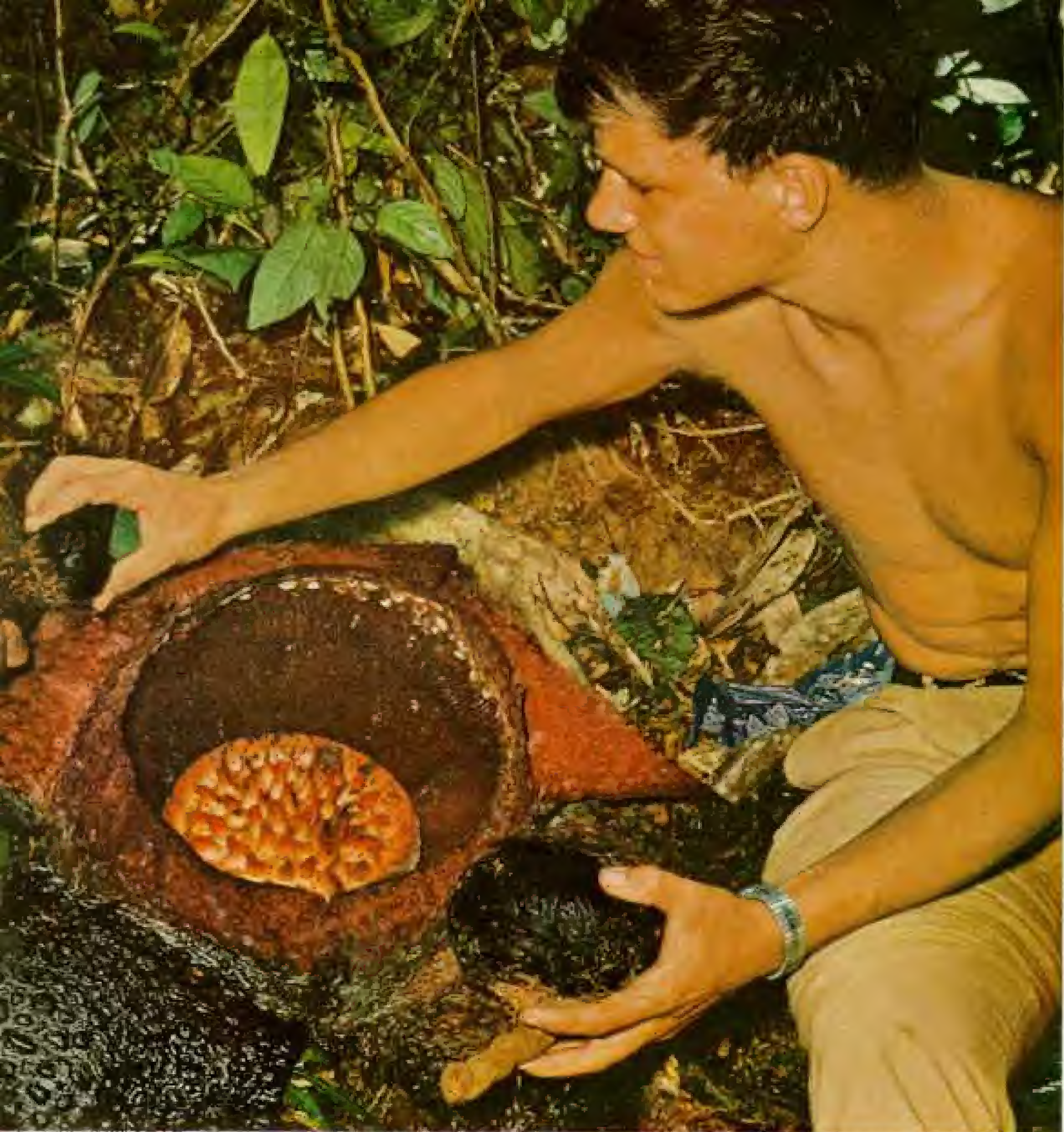
KODACHROMES BY A. L. ANTHONY

himself on your blood before you can feel him.

As we waited for Anggau, we held a de-leeching session, picking off the little devils manually, touching them with the lighted end of a cigarette, sometimes in desperation even swatting them—a gory practice.

Suddenly, Anggau called. Fifty feet from our trail we found him, sad faced, sitting on a heavy liana half buried in ground litter. Beside him was the rotting mass of an enormous flower.

I must have registered strong disappointment, for Anggau showered



KODACHROMES BY PAUL A. ZAHL, NATIONAL GEOGRAPHIC STAFF © N.G.S.

Jim with a torrent of explanation in Dusun dialect, which added up to: "You come back in seventh month; find fresh flowers then."

"Next July!" Jim exploded in English. "Now is a fine time to tell us!"

Kneeling on the jungle floor, I examined the flower. It was so far gone that any effort at dissection or analysis would have been futile. It was now mid-March. If, as Anggau's words implied, the flower had bloomed the previous July, its remains would be more than half a year old, which seemed impossible in view of the speed with which organic matter disintegrates in the tropics. Further, I had a recollection of having read or heard that a *Rafflesia* bloom lasts for only 5 or 6 days.

I turned to discuss the matter with Anggau, but he was nowhere to be seen. Just then I heard another shout, and once more Jim and I were off to investigate. Not far away, in another tangle of vines, stood the obviously embarrassed guide bent over a series of knotty black-brown lumps on the surface of a liana. Some were the size of walnuts, others large as cabbage heads.

"Young flowers," Jim translated.

I sliced into the largest with my bush knife. There in cross section were unmistakable floral parts on a gigantic scale—a cluster of almost mature petals curled snugly around a thick central core (opposite). The bud seemed to have been on the verge of blooming, which

made me wonder even more. Apparently Anggau had his doubts too, for he circled the area as if still hopeful of locating a fresh flower. Finally a joyous call brought us stumbling to his side.

On a mammoth vine grew a flower that was truly the size of a washtub. Its deep-set central tissues glowed yellowy-orange like the coals of a banked fire, although the encircling leather-thick petals, already slightly beyond their peak, were brown and flaccid. No deterioration had set in, however; this was a perfect specimen. Here on the southeast slopes of Mount Kinabalu, on the dank floor of an uncharted jungle, was one *Rafflesia* not born to blush unseen (pages 686-7).

With unconcealed amazement, Jim gently raised two of the drooping petals on either side of the great bloom, while I measured the distance from edge to edge: 26 inches.

The flower had no visible stem or leaves, although careful dissection would have revealed them underneath in an atrophied, functionless form. *Rafflesia* is, in fact, a parasite and thus has no need for leaves or photosynthesis. Its food is sucked through strands of tissue sunk deeply and invisibly into the host vine. The arrangement is rather in the manner of certain mushrooms, although *Rafflesia* is definitely not a fungus but a true member of the seed-bearer group.

### Giant Bloom Lacks Fragrance

The only part of the plant ever exposed is the bloom. Life-cycle details are still inexactly known, but it is believed that nine months are required for a bud to mature into a flower, male or female. A fetid odor given off by the bloom attracts flies, which may serve as pollinating agents.

How the seeds find their way to new host vines is unknown, though one authority believes that squirrels or other small rodents nibble at the fruit and deposit swallowed seeds at random about the forest. Because the seeds are sticky, some may cling to the dining rodents and fall off later, perhaps on another host vine. This vine (genus *Tetrastigma*) is, of course, unrelated to its fabulous guest.

By nightfall we were back in Ranau. In

KODACHROME © NATIONAL GEOGRAPHIC SOCIETY

**Water will burst** from bamboo when Jim Brock slashes it. Basket holds a living *Rafflesia* bud on a vine.

**North Borneo bearer** drinks bamboo water. When one segment runs dry, the Dusun tribesman sticks his knife into another.

**Thin leech** on author's arm becomes gorged with blood in 10 minutes (below). This cousin of the earthworm detects man, possibly by sound and smell, and pursues him by bunching on suckers. Its bite causes itching, and sometimes infection.

settling with Anggau, a bonus was indicated. He accepted it graciously, with the request that I send him a new "license"—a snapshot of himself next to the flower. Better still, I shall send him a copy of this issue.

At the rest house, preparing to shower, Jim discovered 28 leech bites on his legs and thighs; I counted 22 of my own. Some leeches were still fast to our skin, feeding; others, having gorged themselves, had released their holds and fallen between socks and ankles where, during our descent, they had been messily crushed.

A good wash took most of the blood off, but some of the openings continued to seep. Every good thing has its price, I philosophized, finally easing through the mosquito bar and onto the bed. My thoughts were mainly on that marvelous flower—and on some other wonders I hoped to find.

Borneo is the distribution hub of a genus of bizarre insect-catching plants known as *Nepenthes*, or, because of their shape, pitcher plants. They are scattered widely over regions of the Indian Ocean and western Pacific—ranging from Madagascar eastward into the Philippines and from southern China southward into Australia. Despite this vast spread, the most spectacular pitcher plants are hidden by nature on the least accessible heights of Borneo.

About a week after our search for the giant flower, Jim Brock and I worked step by step halfway up Kinabalu's steep south wall. Altitude at the moment, 6,500 feet; air, sharply cool; humidity, 99.9 percent; vegetation, montane rain forest. Our three carriers were again Dusuns, but this time from the area of Kundasang rather than Ranau.

By late afternoon we had reached 8,500 feet; the going was staircase steep. A cold drizzle bathed us; mud sucked our shoes. On all sides were fascinating shrubs, vines, and mossy boughs; our plan, though, was not to linger now, but to collect and photograph on the descent the next day. Perhaps because of this grueling push, the carriers began to lag and expressed regret that we had neglected to bring along chickens and eggs for sacrifice on or near the summit.

Dusuns who inhabit the foothills below Kinabalu believe the mountain's crags to be the retreat of departed spirits, and thus out of bounds for mortals unless suitable offerings are made. Our carriers were young men who under ordinary circumstances might have tended to make light of this ancient superstition. But the cold, sloshing ascent, together with the prospect of a miserable cliffside night, seemed to have brought about a reversion.

Finally, the front man squatted down on the trail, indicating he would budge no farther.

Jim, who understood Dusuns better than I, seized the leader's pack, swung it on his own shoulders, and strode up the trail without a

**Sheer slopes** of Mount Santubong, Sarawak, shelter another rare pitcher plant, *Nepenthes veitchii*. Here on a lagoon 11 miles from Kuching, an expedition bearer points to the 2,658-foot summit as he shows a fisherman specimens of the plant. Though not a parasite, this species climbs on trees.

**Christmas-tree smile** lights a Sea Dyak's face as he brings the author two *veitchii* pitchers. A Chinese dentist, drilling away sound teeth, gave him his fashionable gold caps enameled with red and green.

KODACHROMES BY PAUL A. ZAHL, NATIONAL GEOGRAPHIC STAFF © N.G.S.

backward look. The two other carriers, not to lose face, fell into line. Before long so did the third, packless and sheepish.

Just before dark we reached our objective, a great overhanging boulder at 9,000-plus feet called Paka Cave, under which five people could find comfortable shelter. Soon we had a fire going and our beds made. After a meal of canned tuna and peaches, we heard no more of spirits or sacrifices.

Next morning everyone felt better, although there was no improvement in the weather. Mist and drizzle were still the order of things, and the peaks directly above our heads were invisible. But we had climbed high enough. We set out to explore the 7,000- to 10,000-foot vegetation zone.

Moss and air plants weighted down the gnarled, twisting branches of mountain oak and conifer. On the ground lay a shin-deep matting of soggy sphagnum, with lichened rocks protruding here and there. Filling the spaces were banks of rhododendron, with herbaceous shrubs of a dozen varieties, many bearing delicate flowers. Hidden birds chirped. From somewhere in a ravine came the muffled rumble of falling water. I was reminded of a climb I had made into Africa's Mountains of the Moon.*

### Vines Offer "Monkey Cups"

But further resemblance to any other place in the world stopped there, as my eyes fell on the object of our quest—*Nepenthes villosa*. Here, in construction and color, was one of the most marvelous of all pitcher plants, found only at this one level of this particular mountain. Its vines were everywhere—creeping along the ground, clinging to lower branches of trees, snaking into bushes.

Many long leaves tapered into stout tendrils which ended in weird hanging structures shaped like the bowl of a pipe. Each bowl had intense red edges that were precisely fluted and bore a bristly stalk supporting, in turn, a heart-shaped cap which spread its protective surface above the pitcher's gaping mouth.

Some of the vessels were no bigger than a demitasse; others were as broad and deep as beer mugs; these living pitchers hung from knee- to eye-level, so profuse in places that we had to move cautiously to avoid spilling their loads of fluid (page 695).

The carriers called them "monkey cups," a name I had heard elsewhere in reference to *Nepenthes*, but the implication that monkeys drink the pitcher fluid seemed farfetched. I later proved it true. In Sarawak I found an orangutan that had been raised as a pet and later freed. As I approached it gingerly in the forest, I offered it a half-full pitcher. To my surprise, the ape accepted it and, with the finesse of a lady at tea, executed a delicate bottoms-up (page 696).

Of the hundreds of pitchers adorning the forest

*Dr. Zahl described his climb up the eerie Mountains of the Moon in the NATIONAL GEOGRAPHIC of March, 1962.

**Plant Pitchers Carry Water for Tea at a Stopover on Mount Kinabalu**

Peace Corpsman Brock balances *Nepenthes villosa* pitchers he filled at a torrent beside this dank cave in North Borneo. The expedition spent the night here because the forest was too dense for the men to make camp. Bearers are pagan Dusuns. When guides or porters climb Mount Kinabalu, they feel more secure if the spirits are propitiated with a sacrifice of chickens and eggs.

# Life thrives in a perilous pool

WELL OF NO RETURN for most insects, a pitcher provides a cozy home for protozoans, algae, diatoms, worms, crustaceans, spiders, and even tadpoles. Some species are found only in plant pitchers. Here a blood-red spider crawls through the pool while waiting for insects lured by the plant's secretions. Immune to the fluid's effects, the eight-legged predator easily negotiates wax-smooth walls on which insects find no footing. Drowned ants and other insects float on the pool of *Nepenthes rafflesiana*. The pitchers belong to the genus *Nepenthes*, which takes its name from the drugged wine cup in Homer's *Odyssey*. Laboratory experiments have shown that the fluid can digest egg white and meat.

**Deadly maws await incautious insects** on Mount Kinabalu. Spikes resembling tank traps help to prevent insects from escaping the pools within these *Nepenthes villosa* pitchers. The pitcher walls secrete a wax that weakens the grip of an ant's claws. Unable to hold on, the insect tumbles into the well of the plant to its death.

around us on Mount Kinabalu, the great majority were a fourth to half full of water—not an accumulation of rainwater, but a fluid that is mainly of plant origin, and, although fatal to most insects, is passable for human consumption.

". . . we found it very palatable, though rather warm, and we all quenched our thirst from these natural jugs," reported the 19th-century naturalist Alfred Wallace, referring to the water of certain lowland pitchers. I found that immature pitchers still sealed by their caps contained the best-tasting water. It resembled in taste the water from the giant bamboos; certainly it was preferable to that of older pitchers in which insects had begun to accumulate. The gluey fluid near the bottom of the cup was less appetizing. Potable in an emergency, I should say, but hardly recommended for routine use.

**Genus Takes Name From Ancient Tale**

The word *Nepenthes*, by the way, is the name of a legendary drug used, according to Homer, by ancient Egyptians to allay pain and induce euphoria. Myth says it helped Helen forget her troubles when she fled to Egypt after the fall of Troy.

Certainly the fluid has a quieting effect on the pitcher's insect victims. While I studied one specimen, an ant circled the lip of the vessel, antennae aquiver. Suddenly, it lost footing and slid over the rim. Struggling to escape, it climbed the slick sides until the overhanging row of spikes, rather like the teeth of a comb, stopped it, and into the liquid it tumbled. Within 15 seconds it was quiet.

I dumped the contents of a large pitcher onto a handkerchief. The water flowed through, leaving a heap of debris—the skeletons of ants, flies, beetles, worms, and a miscellany of other crawling and flying things that had somehow fallen in and drowned. Their misfortune was not accidental; in fact, it was the result of ingenuity and deception that only nature could devise.

Lining the mouth of each *Nepenthes* pitcher are glands that produce insect-attracting chemicals. Thus lured to the brink, the unwary often fall into the well; or they encounter, just past the rim, strategically placed bristles on a waxy-smooth surface which claws, sticky pads, or hooks cannot grip. Lining the lower walls are other glands that secrete into the well digestive enzymes lethal to insects. Often with the help of bacteria, the victims are digested.

**Nitrogen Lack Explains Plant Carnivores**

Why do such plants trap insects? Most certainly, this means of obtaining nutrients stems from a lack of nitrogen in the soil. Here on the mountain, where eons of heavy rain have leached away essential minerals, these insects supplement the usual plant diet. These same conditions are found in the bogs of North Carolina and northern California where I have collected other carnivorous plants.*

Early observers reported that the cap of the pitcher plant moved and would clamp down when an insect entered. Actually, no part of the plant is capable of such movement.

Other observers thought the pitchers to be flowers. Instead they are modified leaves, which serve this strange function for a while. Then, in the manner of all deciduous leaves, they pass through a series of color changes and die.

Each plant we examined that misty morning on the mountainside bore pitchers in every stage of development—tiny ones with their caps still sealed; slightly bigger ones with newly opened mouths and a few victims inside; fully grown pitchers containing a virtual soup of insect remains; brittle ones in the process of deterioration.

Flowers of most *Nepenthes* appear as delicate pea-size blooms arranged in spikelike racemes which usually project high from the upper extremities of the vine. Male and female are distinct and grow on separate spikes (page 699). How pollination is accomplished is unknown, although wind, rain-splash, and insects may all be involved.

Weather was no friend on this trip, and by noon the drizzle had turned to beating rain.

*See "Plants That Eat Insects," by Paul A. Zahl, NATIONAL GEOGRAPHIC, May, 1961.

**Orangutan Sips a Cup of Nectar From Nature's Own Tea Table**

To test a belief that monkeys and apes drink from pitchers, often called monkey cups, Dr. Zahl offered a *Nepenthes rafflesiana* pitcher to this orangutan, which promptly downed the contents. Captured as an infant and raised as a pet, the ape had been released in the Sarawak wilds after it grew dangerous.

FOURCHROME © NATIONAL GEOGRAPHIC SOCIETY

**Forest ranger** holds a mature *Nepenthes lowii* pitcher found on Kinabalu. Lacking the barbed, escape-proof rims of many species, the plant depends on waxy walls to imprison insects.

**Tiny pitchers** appearing on two-month-old *Nepenthes gracilis* seem ready to catch insects. In this enlargement, a straight pin provides scale. Prof. T. L. Green of the University of Singapore and his wife grew the plant from seed in their living room.

**Male and female flowers** of *Nepenthes sanguinea* grow on separate spikelike racemes. Female, on the left, has pistils; the male wears pollen-bearing anthers.

**Creamy pollen** coats the tips of red anthers on a male *Nepenthes rafflesiana*. This pitcher plant, like the unrelated giant *Rafflesia*, honors Sir Thomas Stamford Raffles, the Englishman who founded Singapore. The author gave seeds of these and other rare pitchers to various botanic gardens.

This dampened any hope Jim and I might have had of scaling the peak. So, having collected a complete series of *villosa* pitchers, carefully wrapped in moss, as well as a stock of flowers and seeds, we began the descent.

### Foot-long Pitchers Wear Bright Collars

By day's end our trail had emerged onto the jeep track that runs through the foothills between Jesselton and Ranau. There Jim was met by friends and given a lift back to Ranau.

The carriers and I trudged five miles down the road to a shelter maintained by the Government Forestry Department. I worked two days there on my collection, then returned to coastal Jesselton, and from there flew to Kuching, in Sarawak, North Borneo's friendly neighbor to the south (map, page 684).

In that former land of white rajas, I spent several days in the pleasant and instructive company of Conservator of Forests B. E. Smythies, who showed me the habitats of local *Nepenthes*, including the seldom seen *veitchii* and *northiana*. Their pitchers, wearing high collars of bright scarlet, were nearly a foot long. Then, by plane I crossed the South China Sea, back to Singapore, ready to wrap up nine weeks of work, which had ranged not only into North Borneo and Sarawak but also Penang and the highlands of Malaya.

"Glad to see you still have your head," said Professor T. L. Green of the University of Singapore, when I dropped in to deliver seeds fresh from the heights of Kinabalu. He and Mrs. Green study the seedling phases of various *Nepenthes*. I owed a special debt to the Greens, for on my arrival in Singapore two months earlier they, along with Director H. M. Burkill of the Singapore Botanic Gardens and the well-known local naturalist Mrs. Christina Loke, had personally shown me places within earshot of the city's bustle where pitchers grow in abundance.

**Like hanging stockings,** *Nepenthes* pitchers deck vines in central Malaya's highlands. The largest appears to wear a lady's bonnet, one of the many shapes assumed by the caps of the plants. Caps keep rain from diluting the fluid and may exude substances that draw insects toward the slippery slopes of the pitchers.

**Bold spider,** awaiting hapless insects, perches above liquid in *Nepenthes gracilis.* Dark dots and yellowish disks are glands that produce the plant's enzymes.

KODACHROMES © NATIONAL GEOGRAPHIC SOCIETY

**Ants sample** secretions on the cap of *Nepenthes gracilis;* one insect unwarily ventures toward the smooth walls. *Gracilis* vines often climb other plants.

Two days remained before my plane left for the United States, and in my first free moments I drove out to one of those habitats, off Adam Road, for a final look.

I wanted to check an observation I had made earlier on Kinabalu: the presence of living spiders inside the pitchers. In this woodland, at least half of all the *Nepenthes gracilis* I examined contained a delicate web and its spinner, a small red spider, perched just above the water line (above).

Obviously the spider lived there to prey on the pitcher's insect victims.

### Deft Diver Swims Fatal Pool

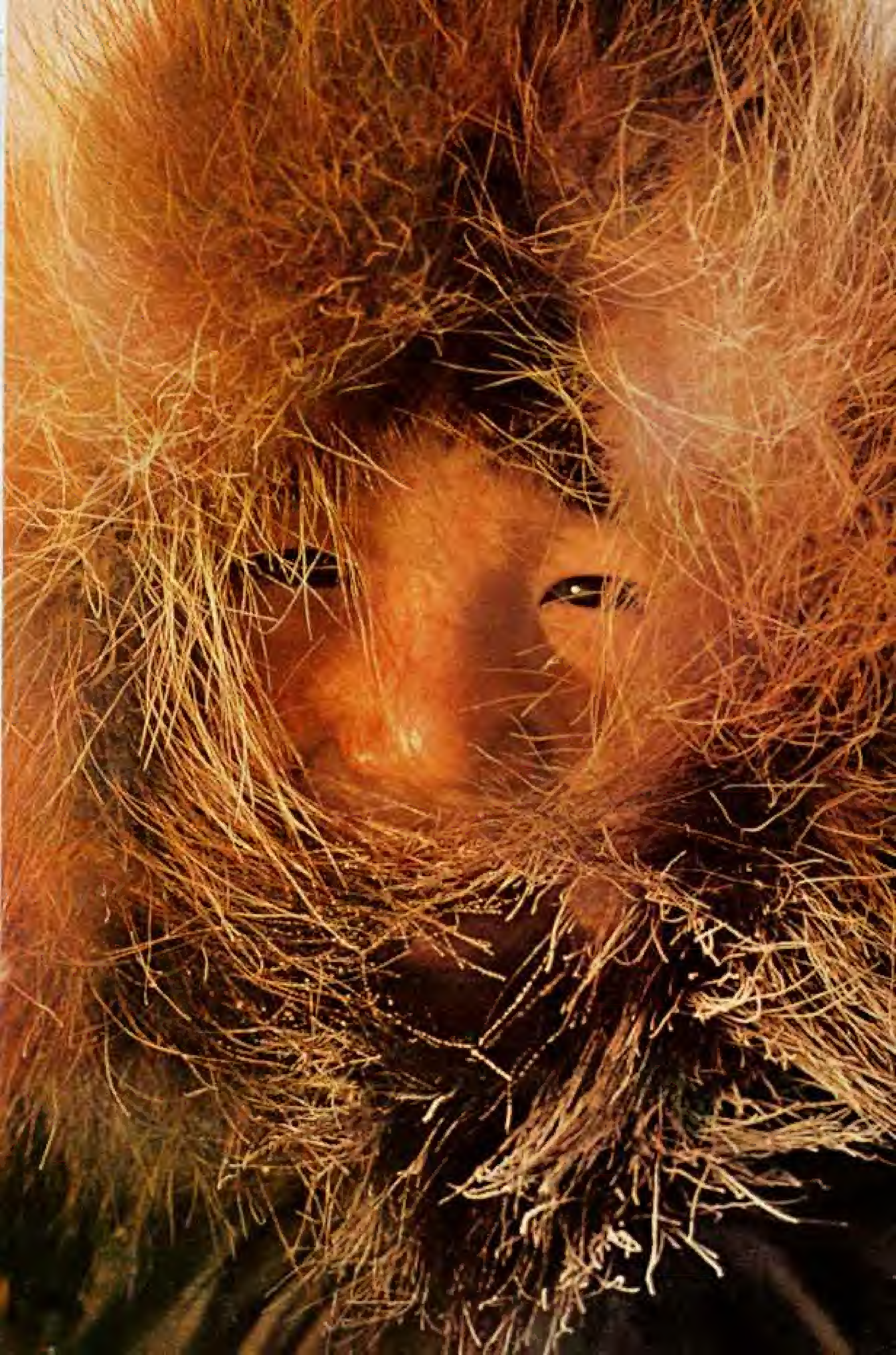
But most remarkable was his aquatic deftness. If I touched him ever so lightly with the point of a pencil, he would immediately dive into the pool. If I frightened him no further, he would reappear at the surface in a few seconds, crawl back on his web, and reassume a position of vigilance. Whether he used his swimming prowess to seize drowning insects, I do not know.

The fluid inside the pitcher plant dooms many insects, but not the spider. Why, no one knows. Indeed, a whole spectrum of insects and other small creatures resides in pitcher pools and takes advantage of a steady source of food. A study made some years ago listed as living in the wells of various *Nepenthes* pitchers: larvae of 19 species of mosquitoes, six flies, and two leaf miners; also four spiders, and a host of protozoans, diatoms, bacteria, and even tadpoles.

So what precisely *is* the effective agent in the pitcher's watery trap? We are not sure. During the past hundred years, a good deal of analytical work was done on the fluid both in Europe and North America, and it was concluded that enzymes—complex organic compounds that hasten chemical changes—are responsible, together with bacteria. But the experimenters could not agree on just which enzymes, and how they worked.

Eighteenth-century Swedish plant classifier Linnaeus, who first applied the name *Nepenthes* to the Eastern pitcher plant, once wrote: "What botanist would not be filled with admiration, if after a long journey he should find this wonderful plant?" As I left the woods and returned to my Singapore hotel, this statement expressed my sentiments exactly.

THE END



# Banks Island: Eskimo Life on the Polar Sea

By WILLIAM O. DOUGLAS

*Photographs by CLYDE HARE*

"HOW ABOUT a TV dinner for your last meal on Banks Island?"

The speaker was Fred Carpenter, whose father was an American whaler, whose mother was Eskimo, and who heads the Eskimo settlement at Sachs Harbour. He laughed as he spoke, his laughter coming in low, guttural merriment that finally exploded. His blue eyes danced with joy: "A TV dinner in an Eskimo home!"

We had the TV dinner—chicken, mashed potatoes, and peas. Agnes, Fred's accomplished young wife, served it piping hot at a small table in the kitchen of their five-room frame house. It had arrived frozen in Inuvik, a new Canadian town on the Mackenzie River Delta, and was flown to Sachs Harbour (map, page 707). Fred kept the TV dinner frozen in a typical Banks Island deep freeze—a hole in the ground.

Permafrost, which begins one to five feet below the surface and extends downward 1,000 feet or more, provides an icebox that keeps seal, caribou, fish, or any other foods frozen until needed.

A TV dinner in an Eskimo village was only one of many surprises I experienced on this sojourn on Banks Island. I learned that in the western Canadian Arctic the igloo has practically disappeared; that the kayak no longer is used; that Eskimo children in school at Inuvik, where all instruction is in English, are losing their language and native culture. One of the greatest delights was almost endless summer daylight. The light-meter reading at two o'clock on a May morning was almost as high as for a sunny day in Washington, D. C.

This was the trip I had been eager to take ever since I had visited Aklavik ten years before. Aklavik—whose name means "place of brown bear"—then was the northernmost town on the Mackenzie River. Inuvik had not yet been built, 35 miles away.

One day in August, 1953, I stood on the dock at Aklavik and saw the *North Star*, loaded with polar bearskins and white fox fur, come in from Banks Island with Fred Carpenter at the wheel. That was a sad journey for Fred, because his first wife lay dying of tuberculosis in the Aklavik Hospital.

My friendship with this warmhearted Eskimo continued through the years. When a letter from him in March, 1963, told of mid-May's ample sunshine, I planned my trip.

Banks Island was discovered by British explorers W. E. Parry and F. W. Beechey in 1820, and was named for Sir Joseph Banks, president of the Royal Society. Since that time many explorers, including Vilhjalmur Stefansson, have scouted the island. Sandy Stefansson, a part-Eskimo youth of Banks Land (as its inhabitants call it), venerates the great Arctic pioneer, and has indeed taken his name.

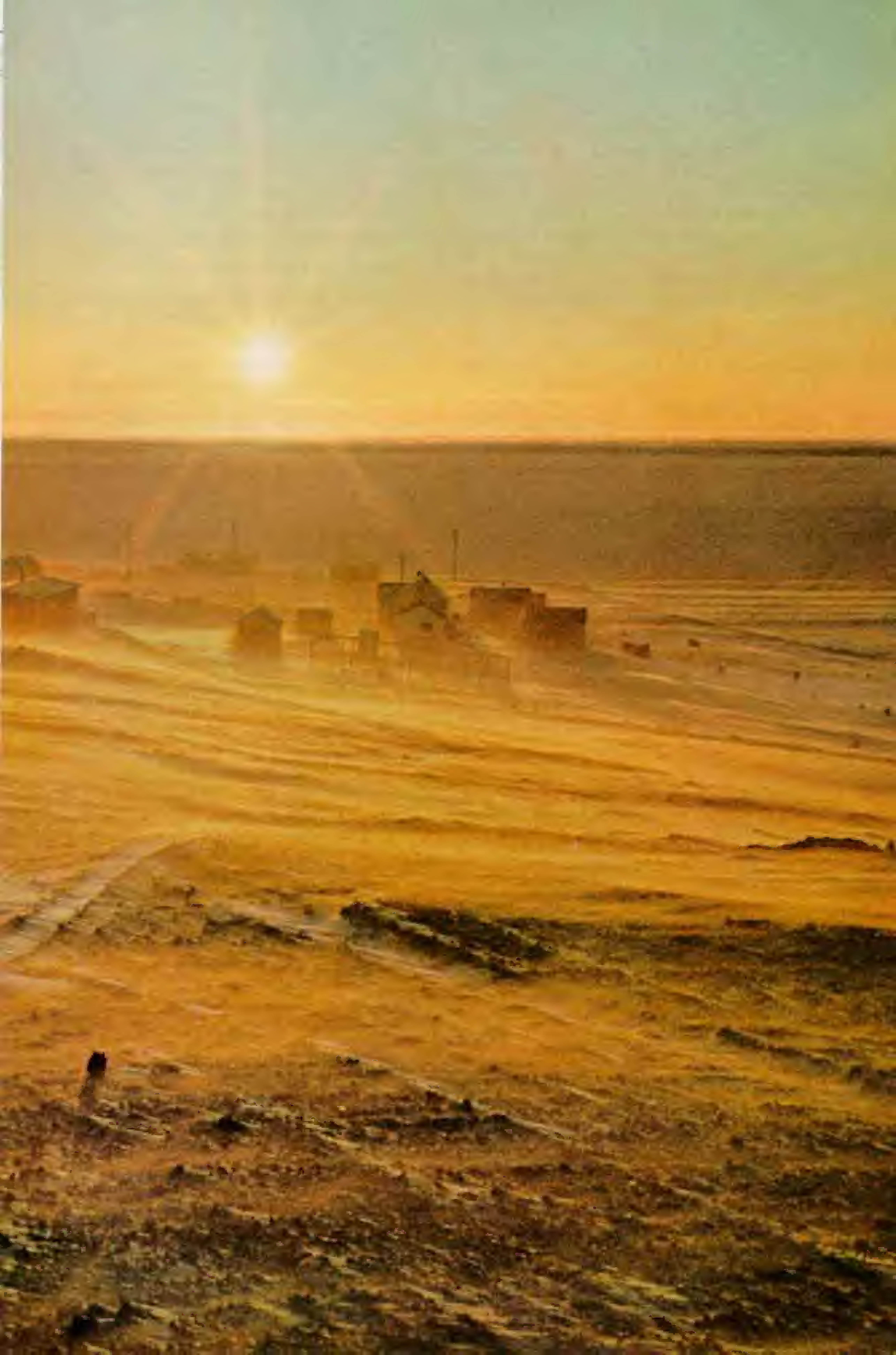
Eskimos of the Thule culture lived on Banks Island 500 years ago; many of their artifacts are in the National Museum of Canada, at Ottawa. In the centuries that followed, only occasional Eskimos visited the island, and not many settled there for long. Why they did not stay is a mystery. In Canada's western Arctic there is today no land more plentiful in food.

Fred Carpenter was born in 1908 near Tuktoyaktuk, an old Eskimo village on Canada's Arctic shoreline. Tuktoyaktuk means "where caribou used to be." In recent years it has been the home base of a reindeer herd imported from Alaska as an experiment.

**Wolverine fur fringes the parka of a Banks Island Eskimo boy, Chuckie Esau.**

EKTACHROME © NATIONAL GEOGRAPHIC SOCIETY

WIND-WHIPPED *snow blurs Sachs Harbour, only settlement on Banks Island, a Canadian Arctic land mass about the size of West Virginia. In winter, some 70 Eskimos brave temperatures that occasionally plummet below −50° F. Here the late-October sun, hanging near the horizon six and a half hours a day, bathes the island in the warm bronzes and pinks of a standstill sunset. Beyond the beached vessels lies the Arctic Ocean.*



Fred was supporting a widowed mother by hunting with a bow and arrow when he was 13. In 1932 he came to Banks Island and settled for a year near Liot Point, on the west coast. In those days, one who went to Banks Island one summer could not leave until the next, for there was no radio, no mail, no planes.

The next year Fred moved down the west coast and settled north of Cape Kellett on Blue Fox Harbour. Then he returned to the mainland, not coming back to Banks Island until 1937. That year he established the settlement at Sachs Harbour, named for the ship *Mary Sachs* of the Canadian Arctic Expedition of 1913. Today some 70 Eskimos live there in a rare degree of prosperity.

Fred's frame house, set on oil drums embedded in the permafrost, is lined in the flooring and roof—as well as in the walls—with Fiberglas insulation. His first house was a tent, walled outside by ice blocks. Today ice bricks are seldom used, except as windbreaks around a door of a home.

Banks Island is 250 miles long and from 110 to 180 miles wide—about the size of West Virginia in area. Cape Parry, 70 miles south, is the closest point on the mainland. Sachs Harbour, like several other Eskimo settlements, is provisioned from Inuvik.

Inuvik's airport can take even prop-jets; and bush pilots with smaller planes do a lot of business there. On May 10, I flew to Inuvik from Edmonton, Alberta, by Pacific Western Airlines. Mike Zubko runs the Aklavik Air Service out of Inuvik. It was his twin-engine Beechcraft that flew me 320 miles northeast to Sachs Harbour in about two hours, half of which was over the Arctic Ocean. With me was Angus Sherwood, a long-time Arctic resident who knows the Eskimo intimately.

### Wind-swept Willows Grow Sidewise

"You will find no Christmas trees on Banks Island," Inspector T. A. Stewart of the Royal Canadian Mounted Police told me before we left Inuvik. Even Inuvik, which is 120 miles north of the Arctic Circle, has only scraggly spruce and birch, poplar and pine, and they do not grow much farther north. When we left Inuvik, snow still filled the dwarf forests. But the robins, swallows, and curlews had arrived, and in warmer spots the pussy willow was in its full glory.

On Banks Island, mostly tundra, no trees grow except scrub willow. Fred Carpenter in describing these held his hand about six inches off the ground and said, "They grow sidewise rather than up." The willows are mowed by fierce winds and dwarfed by a climate that seldom grows warmer than 68° F. In the winter 50° below zero is not unusual.

Yet ravens often stay at Banks Island the

**Sachs Harbour,** one of the northernmost communities in the world, had no permanent residents when Fred Carpenter (right) led settlers to Banks Island in 1937. Abandoned sites show that Eskimos inhabited the land centuries ago.

**The author,** a Justice of the United States Supreme Court, attends an Anglican service in the Carpenters' home. The Reverend Berry Capron, a visitor by dog sled, prays in Eskimo.

**News from** the mainland absorbs Fred Carpenter and wife Agnes. They shop by mail order, plan months ahead to meet their needs. Mr. Carpenter, son of an American whaler, was supporting his widowed Eskimo mother with bow and arrow when he was 13.

year round, and mosquitoes breed there briefly. "Summer is so cool and the summer winds so sharp that the mosquitoes last only a few days," Agnes Carpenter told me.

There are two species of lemmings on Banks Island—the varying lemming and the brown lemming. They are a favorite prey of the white, or arctic, fox, the snowy owl, and the rough-legged hawk. Lemmings, like people, have their golden age. But then comes a mounting population, until finally the lemmings, many think, commit mass suicide by plunging into the sea.

Fred Carpenter has a different theory. Lemmings are good swimmers, and when they leave Banks Island, according to Fred, it is not to commit suicide but to find new food supplies on the mainland, a 70-mile swim away. Fred, who has lived for years on the Arctic coast, has seen lemmings swim in from the ocean. What percentage survives the trip, no one knows.

To the newcomer, Banks Island seems bald and barren. Yet it becomes a pleasant land when the May melt starts. Normally by July the bays are free of ice and the land is ablaze with arctic flowers.

Of Banks Island's 172 species of flowering plants and ferns, at least 72 are found in the United States. The pasque flower of the prairie states and Pacific Northwest is there; also a yellow mountain saxifrage common in New York, the bladder fern and red fescue found in West Virginia's Alleghenies, and the cotton grass and dandelions of Colorado.

### Coal Burns Better With Blubber

The island has numerous glacial moraines, and glacial action produced many lakes. Some beaches have been hummocked by ice pressure, and steep limestone and sandstone cliffs mark some shorelines (page 730). Most of the island is made up of rolling hills and flat uplands. Its highest point is 2,460 feet.

There are peat bogs and many open seams of coal. Fred Carpenter, who, like the other Eskimos at Sachs Harbour, now uses fuel oil for heating, burned coal all one winter. When I asked him how it was, he answered, "All right, I guess." Then laughingly: "But it worked best when I added seal blubber."

Large rivers rise in the east of the island and flow mostly west, some north. One called Egg River gets its name from the lesser snow geese that nest there. We beat the migrating snow geese to the island by a few days. We also beat the ducks, the sandhill cranes, the whistling swans, and the snow buntings that nest there.

One morning Fred and I were standing on the ridge above Sachs Harbour near a small cemetery that has no grass but is beautifully decorated by bright red and yellow lichens. Seven snow geese flew in from the south. Fred's eyes first showed excitement and then became serious as he told me of Egg River, the problems of the snow geese, and the plight of the Eskimos.

The Canadian season on snow geese opens on September 1st, after nesting is over. By then the geese usually have left Banks Island. The Eskimo, whose food supply is precarious

EKTACHROMES BY CLYDE HARE © N.G.S.

**Fine needlework** re-creates wild flowers that cover Banks Island in brief summer.

**Polar bearskin** is scraped clean with an *ulu*, a piece of crosscut saw attached to a bone handle. Timothy Lennie, who killed the bear, relaxes with his children while wife Bessie works. Gasoline lantern lights the room; Sachs Harbour homes lack electricity.

EKTACHROME © NATIONAL GEOGRAPHIC SOCIETY

some years, can take none of them, nor may he take any of their eggs. The Royal Canadian Mounted Police at Sachs Harbour enforce the law.

"The law is not just," said Fred Carpenter. "It means that every Canadian except us Eskimos can shoot snow geese."

He went on to describe the nesting losses. Snow geese lay their eggs on the ground, and the banks of Egg River are at times covered with thousands of eggs. Some eggs are laid on the snow, other eggs on top of those, until at times the piles get quite high. If any eggs hatch, it is only the few on top. Nesting snow geese fall easy prey to the marauding white fox, which feasts on the eggs as well as on the birds.

"Are we Eskimos not as important as the white fox?" Fred asked.

The day before we left Sachs Harbour, Fred received a reply to a petition he had sent to Ottawa. He summoned the men of the settlement to hear an announcement by the Royal Canadian Mounted Police that brought a smile to every face: "Ottawa says each Banks Land family in 1963 may shoot thirty geese."

The main diet of these Eskimos is caribou, seal, and arctic hare, supplemented by fish. Whales are virtually unknown as food at Sachs Harbour.

The wolves have been poisoned out, and Fred, in expressing approval, states a trapper's law: A wolf that comes onto a white fox trapline destroys every fox. One wolf took seven foxes from seven consecutive traps and still kept an hour or so ahead of Fred.

### Musk Oxen Make a Comeback

It is the disappearance of the wolf, the Eskimos say, that has led to the resurgence of the musk ox. Musk oxen were part of the ancient fauna of Banks Island. This century they seemed to be on the road to extinction, but under Canadian conservation measures they have come back. Their herds have multiplied on Banks Island, where they are still protected.

Arctic hare often appear in droves of hundreds. Their dark meat makes delicious stews; their white fur trims gloves and mit-

**Modern Eskimo kitchen** lacks tap water. The stove, burning fuel oil, melts ice for winter household needs. Shod in yellow-banded mukluks, Frank Carpenter, son of Sachs Harbour's founder, converses with his Indian wife Florence and a Canadian meteorologist. Mrs. Carpenter teaches Sunday school in this kitchen. Like her neighbors, she prides herself on a neat house.

**Arctic char**, a troutlike game fish, rests on rime-coated grass beside a frozen lake. Its succulent white flesh sells for as much as $2 a pound in Montreal.

**Eskimo chops ice** for melting. Some blocks may form a windbreak around his door.

EKTACHROMES © NATIONAL GEOGRAPHIC SOCIETY

tens and can also be used as edging for parkas. Caribou are numerous; they are shot mostly in the winter when they migrate to the south side of the island. The meat is cut into steaks and frozen.

"Frozen caribou eaten raw is the best," Agnes said. But she cooked the caribou steaks she served to us, being aware of the white man's preference.

"Seal meat frozen, is that good?" I asked.

"Yes," she said. "But we usually cook it."

"What is the best seal meat recipe?"

"The blubber," she replied, "is cut off and used for dog food or for baiting polar bear traps. The seal meat is on the back. It should be boiled with onions and a lot of salt."

Fred spoke up to say that his favorite seal dish was Agnes's recipe with the seal meat cut into small bits so that the dish could be eaten as soup.

"And the liver?" I asked.

"The best of all," he said. "It is rich in vitamins and keeps us all healthy."

We talked of fish. The Arctic Ocean as it washes Banks Island has few fish. One small fish, the capelin—about the size of a large sardine—at times appears in large schools. They can be seen from the shore; the people of Sachs Harbour take to canoes to dip-net them. Occasionally cod are taken.

There are many lakes on Banks Island that offer lake trout. In the rivers are arctic char, the fish Fred Carpenter calls "salmon." The Eskimos use nets in the rivers and bait or spears in the lakes. Much of the lake fishing is done through the ice that holds all the waters of the island in its grip for 10 months of each year. The low dwarf willow is sometimes used in the summer months to smoke the fish. More commonly, they are dressed, split, boned, and frozen.

"Raw frozen fish is excellent," Agnes said.

"You do not cook fish?"

"Very seldom. The older people here like the fish raw, provided it is frozen."

Fred spoke up to say that frozen fish and frozen caribou eaten raw seem to provide more "strength" than cooked food. But today caribou meat is usually cooked.

"How about polar bear for eating?" I asked.

**Abstract painting?** No—a view through a frosty window pane. Setting sun outlines aerials and cables of a weather station on Banks Island.

**Antenna-studded** weather station on a hill overlooking Sachs Harbour sends radiosonde balloons up to 100,000 feet to measure barometric pressure, temperature, humidity, and winds high overhead.

**Snow fills cracks** on the frozen Arctic Ocean. Ice forms this crazy quilt 10 months out of each year. When seals surface at air holes, they may find a polar bear or Eskimo hunter awaiting them.

**Ice-coated mustache** glistens on parka-clad Corp. Howard Kearley, in charge of the Royal Canadian Mounted Police post at Sachs Harbour. Later he shaved his lip, using a coffee can as mirror. When firing at game, he flings off clumsy mittens, but the pompon-studded cord saves them.

**Dogs Pull a Hunter's Sled Past Ice Hummocks on a Solid Sea**

Fred Carpenter, traveling along the shore, looks for holes where seals come up to breathe. He needs at least one seal a week to feed his well-trained nine-dog team. In avoiding obstacles, the lead dog veers left or right in response to shouted commands. Rear dogs take the sled to the exact spot where their leader turned; then they swing off to follow.

Fred said it was good, especially younger bear. "The older bear tastes strong and takes a lot of boiling."

"Do you folks eat white fox, too?" I asked.

"Yes, we do," Fred answered. "A fat female fox freshly caught is very good. But if it has been in a trap for a day or so, we feed it to the dogs."

Two species of ptarmigan—the willow and the rock—frequent Banks Island and supplement the Eskimos' diet.

"No milk, no cheese, no butter, no fresh vegetables, no fresh fruit, no sugar in the Eskimos' diet?" I asked.

"There wasn't until recent years," Fred said. "And we were always healthy. Look at our old people's teeth, and you will see they are strong."

He became serious. "A great change is going on. Our children are in school at Inuvik. They have candy and the white man's diet, and their teeth are decaying."

"How about the people of Sachs Harbour?"

"Their diet is changing, too. Charter planes bring in food from Hudson Bay stores. Our people, if they have the money, can eat what people in Edmonton or Vancouver eat."

"Are there many Eskimos at Sachs Harbour who are still on the traditional meat diet?"

"Only a few. Come, I will show you."

Fred took me to the general store he runs, stocked with canned meats, soups, stewed fruits, powdered milk, a powder that makes soft drinks, jack knives, snow glasses, and many other goods (pages 720-21).

"Do your people take to white men's diet?"

"Yes," Fred said. Then with a chuckle he added, "except for macaroni and cheese."

"Why that exception?"

"I don't know. Agnes and I like it very much. But none of the other Eskimos do."

The traditional Eskimo stoves, oil lamps, and water buckets were heavy articles, made from soapstone, which is plentiful on the

**Eskimo Hunter, Rifle on His Back, Keeps Eyes Peeled for Quarry**

Peter Esau can hit a ptarmigan from more than 100 yards, blowing off its head without mangling the edible portions. Wolverine fur keeps wind from his face and sheds frost.

**Ptarmigan explode** from snowy camouflage almost under the feet of Corporal Kearley. These plump grouse make excellent eating. Ranging the barren lands below the North Pole, they turn white in winter and gray, brown, or black in summer.

mainland but not found on Banks Island. Sachs Harbour has only metal stoves that burn fuel oil, buckets of galvanized iron, and dishes from Canadian markets.

Women are not subservient in Eskimo society; they are often the real force behind the scene. Yet the theme of male supremacy is dominant. The division of labor is conspicuous. Eskimo women do the customary housework, and they do it with joy. They also perform many less pleasant tasks, such as dressing and cleaning white fox fur.

White fox are trapped in the winter months and after skinning are put in a pit, where they stay frozen until summer. Incisions are cut from the base of the tail down the rear legs and the skin peeled off whole. Women share this work or do all of it; and then they take the pelts and "flesh" them. That is a scraping operation, done with an *ulu*.

### Careless Eater May Lose a Nose

The ulu on Banks Island was once made of slate. It is now made from a section of a crosscut saw, ground to a sharp edge. A piece of copper is riveted onto the crescent-shaped blade, and a bone handle is affixed to the copper. The product would be familiar to every housewife who has used a chopper to cut cabbage or other vegetables in a bowl.

The ulu also can be used in eating. Meat placed in the mouth is cut off by one downward stroke.

"It's a safer stroke than the ones the Indians use," Angus Sherwood said. "Indians use an upward stroke, and an Indian friend of mine once lost a piece of his nose as a result of a careless movement."

Only one side of the ulu blade is honed. The sharp edge is drawn over a knife blade

to remove any bead that would furrow a hide. Some Eskimo women want their favorite ulu to be buried with them.

An Eskimo woman with a sharp ulu may be able to flesh 16 fox pelts a day. But it is close, delicate work, one false move reducing the grade of the fur. Once a fox fur is fleshed, it is put on a stretcher and placed on overhead stringers in the kitchen to dry. When dry, it is hung like laundry on a clothesline and allowed to air outside for several days.

### $4,000 Clothesline

Only a few furs were that far along during my visit to Sachs Harbour. Peter Sydney, who married Fred's half sister Susie, had a dozen or more fox pelts on his clothesline.

"Come back in July," Peter told me, "and I will show you a $4,000 clothesline." This was no idle boast, for white fox pelts were selling as high as $40 apiece.

Fleshing sealskins is also a woman's job. "It is messy work," Mary Elias, wife of islander Angus Elias, told us. It is done outdoors, since the blubber removed from the skin is thick and gooey. After fleshing, the sealskin (which, if first class, sells for $18) is stretched flat between stakes pounded into the ground.

Women also flesh polar bearskins (page 709). These huge skins have a coarse residue of fat on them. It takes two women at least three hours to do an average hide. Then the skins are hung outside for some weeks so that the wind

**Frozen Kellett River** becomes a dog team's highway. Snow ridges take shape behind wind-lashed pebbles.

**No pampered pet's life** awaits these sled-dog pups, pride of Peter Sydney of Banks Island. Strictly draft animals, they will be no more welcome in the Eskimo's house than a walrus, but are treasured as future members of a nine-dog team.

**With a mother's touch,** Agnes Carpenter decorates a birthday cake for her absent six-year-old son George, while daughter Diane watches. Photographer Hare took the cake to the boy, in his first year of school at Inuvik. Like other pupils from Sachs Harbour, George comes home for the summer.

**Fred Carpenter's store** has no competitor within hundreds of miles. When not hunting, Mr. Carpenter sells everything from candy to laundry tubs. Here he holds a ringed-seal bag amid wolverine and wolf pelts. Hareskin purse beside him looks like a living arctic hare. Stretchers will hold fox hides.

**Flashlight in hand,** Mr. Carpenter looks up from a roomy storehouse dug in permanently frozen ground. He uses the hole as a deep freeze for perishables. Permafrost begins one to five feet from the surface and extends down 1,000 feet or more.

may clean and freshen them. Fred Carpenter's boat, *North Star*, lay beached, and from its spars hung many bearskins.

In cleaning furs, especially the white fox, ground cereals such as corn meal or oats are used, a brush being first dipped into the cereal and then used to scrub the fur.

### Eskimos Resist a Woman Leader

Women make the clothes on Banks Island. Parkas may be padded with eiderdown, or they may be made from muskrats obtained from the mainland. The parkas of the Eskimos of Sachs Harbour are usually fringed with fur of the wolverine, an animal now extremely rare on the island. These days wolverine fur is obtained from the mainland.

Men make the ulus, the sleds, the toboggans, and the harness for the dog teams. There are no wells on Banks Island, because of the permafrost, and the men carry water from lakes or rivers in the summer. In the winter and spring, ice is cut from the lakes and brought in by dog team (page 711).

There are two expressions that inflame the Eskimo man. One is to suggest that no one knows who his father is. Even worse is a statement that he acts "like an old woman."

In 1963 Canada held national elections. The Liberal Party candidate for the Northwest Territories was a fine woman, Isabel Hardie. But of 21 votes cast in Sachs Harbour—Canada's Eskimos enjoy political equality with whites—only five were for the lady candidate. I asked Fred why. He scratched his head of tousled black hair, and looked away. Peter Sydney, big-boned and pleasant-faced, spoke up in English: "We don't want to be bossed by a woman."

Yet the men of Sachs Harbour admire a woman, even when she outdoes them. And the widow Susie Tiktalik has done just that

**Gleeful children toboggan** on a hillside beside their school at Inuvik, a town in the Mackenzie River Delta. Some 500 of the 850 pupils at the school are brought in from outlying villages like Sachs Harbour.

more than once. Susie is afraid of nothing and has the skills to back up her courage, as she showed last year when out with her dog team hunting seals through the ice.

Each seal has several air holes. Once a hunter has found the holes, he posts himself beside one. If he uses a harpoon, he watches for the first movement in the thin crust of ice and then drives the harpoon home. He may use hooks rather than harpoons, in which event he lowers the hooks into the water. The hooks are in a cluster the size of a man's fist. Once the presence of the seal is sensed, one upward pull affixes the hooks into seal flesh.

Fred told me that some hunters, but none of them from Sachs Harbour, have been lost through seal holes because they tied the rope to their waists.

"To hold a hooked seal, I have had to lie flat on the ice, my arms in the hole up to my armpits, as the seal goes round and round," Fred said. "You hang on for dear life."

But wounded seals lose their strength quickly; so a hunter using hooks can shortly pull the seal through the air hole.

On this particular day, Susie Tiktalik was using hooks and had landed several small ringed seals. Suddenly her dogs sounded the alarm. Susie looked around to see four polar bears approaching.

Five dogs would be no match for four polar bears, and the loss of the dogs would be a tragedy. Good dogs cost $100 each in the Arctic—a leader as much as $200. Even an average dog costs $50; and Susie, one of the poorest Eskimos, could not afford that loss.

Her sled was safely anchored by a three-tine hook fastened in ice, and thus the dogs could not charge the bears. Yet she had no gun on her sled that day. Susie did not panic. She swung the seal hooks around and around her head, making them sing. They were brightly polished and glistened in the sun.

As Susie swung the seal hooks she crouched low, moved slowly towards the polar bears, and made coarse, guttural noises that mounted to a crescendo. The bears stopped and studied this strange apparition. In a few minutes they turned and walked away.

One year Susie Tiktalik shot more caribou than any man. The week before we reached Sachs Harbour, Susie and her 16-year-old daughter Mabel traveled inland 70 miles by dog sled on a fishing and hunting trip. They returned with 15 lake trout weighing about 20 pounds each, and a load of caribou meat.

Some said Susie shot seven caribou, some said a dozen. But Susie, secretive in the manner of some hunters and fishermen, remained discreetly silent. Under my questioning as to how many caribou she had shot, her only answer was, "Plenty."

### Teeth Tell Story of Wifely Devotion

For spunk, for courage, for hunting skills, there is no one more honored at Sachs Harbour than Susie Tiktalik. She is more than 60 years old, her face is tattooed, her teeth—though worn—have no fillings (page 724). Those teeth helped Susie fulfill important wifely duties.

On their feet, most of the Eskimos at Sachs Harbour wear mukluks whose soles are moose hide and whose tops are canvas. An inner shoe, known as "duffle," is worn in cold weather, as well as ordinary woolen socks. In the old days the soles of mukluks for use

**Young Banks Islanders learn to read** at the Sir Alexander Mackenzie School in Inuvik. At home they grew up speaking a mixture of English and western Eskimo.

[illegible] © NATIONAL GEOGRAPHIC SOCIETY

on slushy sea ice were made of the skin of the bearded seal; today, from any sealskin.

Women soften and shape the sole with their teeth, turning it up so as to have an inch or so of sealskin on the side of the boot. Susie Tiktalik has made dozens of sealskin mukluks in her day.

Susie, who can charge a polar bear, is the gentlest of persons. One night she sat for hours on a caribou skin in our hostel while Peter Sydney translated for us. I regretted I did not have a tape recorder so that her soft, musical voice could be preserved. It was the voice of a mother speaking tenderly to a child; it was a voice reaching back through eons of time to rescue from oblivion bits of mythology and folklore that have traveled with every Eskimo in the western Arctic on his long sled journeys.

**Tattooed Susie Tiktalik,** Sachs Harbour's oldest resident, outshines the menfolk in hunting. Armed only with a cluster of seal hooks, she once scared off four polar bears. Her teeth, though worn down by shaping sealskin mukluks, need no fillings. Younger women have given up the tribal tattoo.

The Eskimos of the western Canadian Arctic have an Abominable Snowman; Susie talked of it. They have legends of the Big Bear constellation, and Susie spoke of them. They explain the Big Dipper in terms of a massive caribou migration.

Susie told tales of two men struggling for the affection of one woman. Susie did an Eskimo dance for us—a solo performance that reminded me of the Sioux and Navajo.

One night when Angus Sherwood, always a practical joker, asked Susie if she would marry him, she wanted first to know his age. When he counted out 72 on his fingers, she turned to Peter and asked, "Would this old seal be able to perform his husbandly duties?"

### Eskimo Courtesy Takes Subtle Forms

During our stay at Sachs Harbour, the young traveling Anglican minister from Holman on Victoria Island to the east paid his first visit to Banks Island. The Reverend Berry Capron is a dedicated man who can speak the Eskimo dialect of the western Arctic (page 706). The prayers he offers, the songs he leads, and some of the sermons are in western Eskimo.

"Can you understand an Eskimo from the east?" I asked Fred Carpenter.

"Yes," he answered. "But it would take some time for us to be talking really well."

Holman is about 250 miles by dog sled from Sachs Harbour. Dog teams take eight days ("seven sleeps") for the journey, about 30 miles a day. There are stiff climbs to make and open ice to cross—an expanse that is hazardous because of the cutting winds.

Berry Capron's work is sometimes complicated by Eskimo social customs. Eskimos in the western Canadian Arctic are eager conversationalists, and they also have a keen sense of the proprieties. A wife who wants to borrow an ulu or a cup of lard will go to her neighbor for a visit. An hour or more will pass in conversation about the health of the children, the latest reports from the hunters, radio news of atomic bomb testings, the prospects

of an early spring, and so on. Eventually the real purpose of the visit will be disclosed.

"On some days," Berry Capron mentioned to me, "conversations with these wonderful people may go on consecutively for many hours. In their culture they use leisure time for conversation, and they save face by asking favors subtly and indirectly."

When Berry Capron left for Holman by dog sled, most of the settlement came out to see him off. There were tears in some eyes as he made the rounds, shaking hands. It was a day of clear skies, the temperature stood at 48°, and the snow was melting fast—brown patches of ground were beginning to appear everywhere.

He gave the lead dog of the nine-dog team a sharp command, and the sled went forward so fast that he had to run to catch it. In a few minutes this dedicated, God-fearing man was only a speck against the distant slopes of snow; yet his prayers and sermons would live in the hearts of the people at Sachs Harbour until he returned a year hence.

Other dedicated people serve Sachs Harbour. The Mounted Police keep a watchful eye on the settlement; their radio can bring a doctor or nurse promptly, and it can also command an aircraft to take a sick person to the mainland. One Mountie spoke of the first-aid work as perhaps the most important.

"We bandage cut fingers, and we even help deliver babies in an emergency," he said. The Mounties also administer relief to the destitute. Of the 71 Eskimos at Sachs Harbour when I was there, only two are on relief, both of them widows. These days relief to an Eskimo means $85 a month for food and clothing, 18 barrels of fuel oil a year for heating, and a .22 rifle, if the person is able to hunt.

Joy Hayward, an attractive English nurse then attached to Public Health at Inuvik, made a monthly trip to Sachs Harbour. She inoculated for whooping cough, typhoid, tetanus, and smallpox. She kept a watchful eye for signs of tuberculosis. "The chest ailments," she told me, "are the Eskimo's greatest plague." Alexandria Elanik was the only midwife at Sachs Harbour, so Joy Hayward was trying to train more.

Canada's Department of Transport maintains an important weather and communications station at Sachs Harbour. The base, in the most exposed spot of the settlement, feels the first blasts of storms coming in from the Arctic Ocean. The D.O.T., while I was there, also was extending and improving the 4,000-foot-long gravel runway for planes used to supply the weather station.

In the eastern Arctic, Eskimos make carvings out of walrus-tusk ivory. But in the waters near Banks Island there are few walrus. Some Eskimos produce soapstone engravings, but not here, since there is no soapstone on Banks Island. Art work at Sachs Harbour consists of the embroidery of the women (page 708), and the mats they make of sealskin cut to show hunting scenes or wildlife or summer flowers. They also make mukluks, some of them beaded, and mittens fringed with the fur of the arctic hare.

### Dogs Named for Dead Eskimos

The Eskimos at Sachs Harbour are clean and neat. A Carpenter or an Elias home is spic and span. Cleanliness is instinctive.

Every Sachs Harbour Eskimo is highly intelligent and has a yen for modernity. Half a dozen Eskimo families have cameras, and a few take movies. One night they showed their 16-millimeter color films at the Department of Transport station. The subject matter of their movies revealed in a telling way their major preoccupations.

First are their dogs. Each family has dogs, nine being the usual number. The Mounties are raising Siberian dogs. The Eskimo's dogs appear to be crossbreeds. They are longer legged than the Siberians and as big as German police dogs. They are clannish and attack a strange dog. Each dog has a name; when an Eskimo father or mother or other loved one dies, it is customary to give a dog the deceased's name.

"It makes us all seem closer to the deceased," Angus Elias told me.

When thaws begin and freezes still occur at night, sharp needles of ice cut the dogs' feet. Angus Elias was making moccasins for his dogs as we left.

The dogs are chained at discreet intervals; and no matter the weather, they stay outdoors at all times. Occasionally in bitter 50°-below-zero weather a dog is frozen, although Fred has never lost one. The dogs are fed once a day; a nine-dog team will eat at least one seal a week.

All teams in the settlement spring to noisy life whenever they see another team being harnessed. Some bark, others howl like the wolf that is in them. Amid the tumult are the voices of the newborn puppies.

**PROWLING FOR LEMMINGS,** *an arctic fox lopes beside a golden ocean. He likes to sit on a knob and watch for prey. Knowing his habits, Eskimos set traps on hills, masking them with snow. This fox's white coat indicates that winter nears.*

**WOUNDED POLAR BEAR** *fights three dogs. In a 16-mm. motion picture made by Frank Carpenter, a dog in first frame nips at the heels of the bear, which then turns and mauls his tormentor. A bullet stopped the bear.*

**Mother bear** leads her nearly mature cubs, one obscured, on a stroll across cakes of ice.

**Frozen bearskin** leaves a boat for air shipment to Inuvik. Tanned, the pelt may fetch $750 in Winnipeg. Drums of oil will heat and light Fred Carpenter's home and store.

There are no snowshoes or skis at Sachs Harbour. All transport is by dog team.

The sleds are of three kinds. The *komatik* is a long open sled with steel runners. In cold weather the runners are coated with mud and then iced. This makes for excellent travel. The toboggan has canvas sides for winter use. The basket sleigh is a toboggan raised several inches from the ground, with runners added. Strong side rails serve as handholds for the driver. All three types of sled are built for endurance, not comfort.

The prowess of dog teams is tested by races with these vehicles. One was staged for us, each driver being allowed five dogs. The course was four miles round trip—two miles to an island in the harbor and return. Moses Raddi, one contestant, hitched his dogs tandem; the rest put the lead dog in front, followed by two pairs. All except Fred Carpenter used a komatik; he raced in the basket sleigh.

Angus Sherwood thought there should be a consolation prize, so he offered a reward—a bottle to warm the heart—for the man who came in last.

Peter Sydney said quickly: "This will be the slowest race ever held at Sachs Harbour."

The Eskimos, whose wit is keen and subtle, roared with laughter. It was a Carpenter day. Frank, Fred's son, took first prize, making the four miles in twelve minutes; Fred took second; and Andy, another of Fred's sons, took third. The consolation prize went to Moses Raddi, who was last by 15 minutes.

### Polar Bears Shoot Themselves

Second in prominence in the Eskimo movies were the hunts. The most dangerous involved polar bears and seals.

Polar bears are often trapped, the chain being allowed to freeze deep in the ice so that the bear cannot drag the trap. A variation is to bury a gun in the ice, with the muzzle at the edge of a hole baited with seal blubber. The bear puts his head into the hole and pulls out the seal blubber, causing the gun to fire.

The Eskimos in the past sometimes used whalebone to kill a bear. The bone was bent into the shape of a U, tied with sinews, and then baited with seal blubber. The bear bolted the whole thing down. In time, the sinew dissolved in the bear's stomach, the whalebone straightened, and the bear died an agonizing death.

By July the polar bears are hunting seals amid the broken ice, and the Eskimos can pursue them in their canoes.

The seal hunt is the most common type of hunt, for the dogs are especially fond of seal meat and it is their main diet.

The ice in the Arctic Ocean was breaking up when we were at Sachs Harbour, and there were leads of open water 14 to 15 miles offshore. One day five hunters went out in search of seal.

Seal hunters usually use their canoes when they reach open water. This day they did not. They waited on the ice for seals to come up

for air, shooting them with rifles. Then they threw barbed grappling hooks to retrieve the carcasses. Four of the hunters left the fifth man farther back with the dogs. They were now in the danger zone: The sea ice often breaks unexpectedly.

The hunter left behind with the dogs will sound the alarm in case the ice starts to break. He will be able to turn the dogs loose so that they can swim to an ice floe, where the hunters can reach them by canoe.

On this day there was no trouble, and the five hunters brought in 24 ringed seals. One bearded seal was shot, but it sank out of sight before it could be retrieved.

Once, however, not many years back, the Eskimos of Sachs Harbour lost 20 dogs. They were hunting seals in canoes, their four dog

teams being in harness with their sleds anchored on ice. Suddenly the ice broke and the 20 dogs drifted out to sea before a strong offshore breeze. There was no way to save them. All the dogs were lost—all but one. A month later he raced into Sachs Harbour. But how he reached it no one knows.

The third topic of the Eskimo movies was children. Traditionally, boys start hunting with their fathers at 13. By 17 they are mature hunters going out on their own.

Children are precious to Eskimos; and they seem especially precious at Sachs Harbour. One reason is that when the child is six, he or she leaves home and goes to school at Inuvik. It is a public school; the children stay in hostels, one Catholic, the other Anglican. From the age of six the child is home only in the

**Snow-white flowers** of the arctic lousewort *(Pedicularis capitata)*, a perennial herb, rise above the tundra in spring.

**Craggy pinnacles** along the coast show erosion's work. Most of Banks Island consists of flat uplands or gently rolling hills.

**Lichens paint rocks** in brilliant colors. Plants cling tenaciously to areas from which soil and snow have blown away.

KODACHROMES BY CLYDE HARE (LOWER) AND FRANK CARPENTER © N.G.S.

summer. And as Florence Carpenter, wife of Frank, said: "A home is empty without a baby."

We learned from Joy Hayward and Dr. Joseph Cramer, head of the government hospital in Inuvik, that Eskimo babies seem peculiarly susceptible in the young years to diarrhea. Many die each summer from it.

"Because of unsanitary kitchens or failure to boil water?" I asked.

"No," Dr. Cramer replied. "Diarrhea and measles originally brought by the whites are now endemic to the Eskimo. A case that affects the white child lightly may be fatal to the Eskimo. It is not uncommon here for a mother to lose half her babies in infancy. Death seems more taken for granted, however, more easily accepted than in Western civilization."

### Eskimo Youth Aims for Medical School

Sixteen Eskimo children from Sachs Harbour were attending the public school at Inuvik. The youngest at the time of my visit was Mabel Kudlak, in the first grade. The oldest was Fred Carpenter's son, Noah, who graduated from high school in 1963.

Little Mabel Kudlak has all the charm, cunning, intuition, and seductiveness of her sex. Ten years from now, when she finishes high school, she will be farther in many ways from Sachs Harbour than from Ottawa. Will she return to the primitive life and flesh hides for an Eskimo husband?

Red-headed, freckle-faced Noah Carpenter entered the University of British Columbia in 1963, and plans to go on to medical school.

Noah looks forward to this career and hopes that education will lead other Eskimos into similar paths. He, too, has a sense of mission, a desire to see his people in the forefront in all the professions.

"But how about the Eskimo language?" I asked him.

"There is no instruction in the schools in Eskimo," Noah replied. "Only English. So I have forgotten most of the Eskimo I ever knew. I would probably pick the language up again if I were in an Eskimo community." After a pause he added, "But I do not expect to be."

There is criticism in Canadian educational circles of this omission of instruction in Eskimo. But as one teacher told me, "None of us can speak Eskimo, let alone the different languages of the Loucheux, Hare, and Slave Indians"—all of whom have children in the school at Inuvik.

There is criticism of the reading matter for young Eskimo children. Why produce readers depicting zoos, milkmen, traffic lights—none of which Eskimo children have seen? Why not build readers on the Eskimo child's foundation—trees, snow geese, seals, foxes, guns, and furs?

These debates may be largely academic. What child who finishes school at Inuvik will return to Sachs Harbour? Fred Carpenter thinks fewer and fewer will return home to trap the white fox and hunt caribou, polar bear, and seals; to flesh hides and clean furs; to live without modern comforts.

"They have running water in the hostels at Inuvik," Fred said. "Will they come back to

**Chopping dinner** for his dog team, Frank Kudlak hacks a frozen seal carcass into cuts to be boiled in the steel drum with meal. He may save the vitamin-rich liver for his family. On shooting a seal, he may freeze it whole, or remove the skin at once and spread it out to freeze. His wife will clean and salt down the skin for shipment to mainland Canada.

**Face masked in white,** a snowy owl competes with foxes for lemmings. This bird has suffered its rivals' fate: It is caught in a fox trap. Snowy owls migrate south from Banks Island only in years when lemmings are scarce.

cut ice from the lakes, and to haul it miles for drinking and cooking?"

He paused, and after a moment continued. "In Inuvik there are flush toilets. Here there is only the 'honey bucket' to empty. In Inuvik there are electric lights and movies; here, only lanterns. Will the Eskimo children after high school come back to Sachs Harbour? I don't think so."

On this theory the settlement at Sachs Harbour will in time disappear.

No one, of course, can prophesy. Sachs Harbour has a powerful attraction for those who enjoy living off the land. There is a spirit of independence and individuality here.

Angus Elias can never grow shiftless, for he must match his wits against the weather and the animals he stalks. Frank Kudlak can never be regimented, for, as long as he is master of his dog team, he will call the tune. And he must be always on the move. His dogs need seal meat almost every week; and hunting seals is an arduous task. The economics of the fur market will bring him boom or bust. But Frank will never starve on Banks Island; there are no unemployment lines,

**Whirling snow whips Sachs Harbour as children trudge home from Sunday school, one backing**

and Sachs Harbour does not tolerate a drone.

Most of the 20 families at Sachs Harbour speak some English. Every family has a radio —some have short-wave sets as well as sets of regular frequency.

The radio brings English-speaking programs from Canada and the United States; the short-wave set puts the Eskimo in touch with programs all over the world. Moscow and Peking both speak in English to the people of Sachs Harbour.

I was surprised to find that, as a consequence of radio, even the Eskimo on Banks Island was thinking profoundly on many aspects of international affairs.

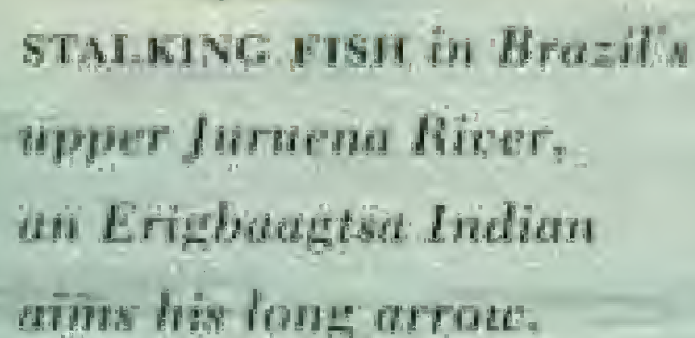
One night Fred Carpenter, Peter Sydney, Angus Elias, Moses Raddi, and a few youngsters were holding forth in our room. I had exhausted them with questions when Pete asked if it was now his turn. I nodded, and he asked, "Have you been to Russia?" I replied in the affirmative.

"Then tell me this—where is Molotov now?"

I answered by quoting the latest report—that Molotov was living in Moscow. I'm not sure it was news to Pete.

THE END

**into the savage wind. Eskimos only a short way from the village have become lost in blizzards.**



STALKING FISH in *Brazil's upper Juruena River, an Erigbaagtsa Indian aims his long arrow.*

*Author Schultz, whose studies among remote Brazilian tribes are aided by the National Geographic Society, lived four months with these little-known Indians, sharing their food and joining their hunts.*

# Indians of the Amazon Darkness

*Article and photographs by* HARALD SCHULTZ

AT DUSK WE BATHE, listen to our radio, and take to our hammocks early. With our Erigbaagtsa Indian friends, we are camped beside the upper Juruena River, in a little-explored region of Brazil's vast State of Mato Grosso.

How quiet it is in the jungle! Slight rustles herald the arrival of night-prowling monkeys. In the shadowy gloom they leap and cavort like a troupe of clowns. A margay—a small, spotted jungle cat—dashes through camp. Just as I am nodding off, I hear the voice of Para, my young Brazilian guide of Indian descent. "Senhor Haraldo, are you asleep?"

"No. What's the matter?"

"Senhor Haraldo, do you have your pistol ready to hand?"

"Yes, I have it right here. What is it?"

"That sound—like a trumpeter bird calling. That is surely an Indian watching us. I have never seen trumpeter birds hereabouts."

Indians are wont to stalk in the dark around a camp they intend to attack. They imitate birds to cover up their noise. Before dawn, when everybody is asleep, they strike quickly and cruelly.

As a precaution, we break camp and move to an island. On shore, the ominous bird calls continue. We were wise to move, we think.

In the morning we return to our campsite. Nothing has been touched. The sounds *had* been made by trumpeter birds, after all, and we had been fooled.

"Bad Indians far away," says Radiokoobee, closest of my Erigbaagtsa friends.

### Tales of Cannibalism Persist

My wife Vilma and I, both scientists of the Museu Paulista of São Paulo, had come to this remote region to investigate the Erigbaagtsa, a people we had never before encountered in all our wanderings among the Brazilian jungle tribes. As on previous expeditions, we had been given generous assistance by the National Geographic Society.*

For some months reports of Indians who ate other humans had been trickling back to São Paulo. They came mainly from diamond and gold prospectors returning from the upper Juruena and Aripuanã Rivers. The prospectors told of finding the remains of roasted human limbs at abandoned fire sites.

*The author has described visits to other remote tribes in NATIONAL GEOGRAPHIC. See "Children of the Sun and Moon," March, 1959; "Tukuna Maidens Come of Age," November, 1959; "Blue-eyed Indian," July, 1961; and "Brazil's Big-lipped Indians," January, 1962.

The multiplying reports all pointed to a tribe known generally as the Canoeiros, a name meaning "travelers in boats," though the ones we visited have no boats. These people call themselves Erigbaagtsa. This, to the best of my knowledge, means simply "we ourselves," like many tribal names.

While we pondered the prospectors' tales and planned our expedition, we knew that much of the Erigbaagtsa region had already been penetrated—indeed, pacified—by the Reverend Johann Dornstauder, an Austrian Jesuit missionary stationed at the Mato Grosso village of Utiariti. Father Dornstauder's most gruesome find was a number of human skulls enclosed in basketwork and dangling from the roof of an Erigbaagtsa hut.

Were these people cannibals? That was one of the things we hoped to find out.

To take advantage of the jungle dry season, we set out in May, 1962. We flew to Cuiabá, capital of Mato Grosso, and then jounced 350 miles by truck across savanna and over narrow jungle trails to Pôrto dos Gauchos, last outpost of civilization on the Arinos River, a tributary of the Juruena (map, page 740).

At Pôrto dos Gauchos live about 500 families—mostly of German and Portuguese extraction, with a few White Russians, Japanese, and Chinese. They have migrated from southern Brazil to help clear the jungle for one of the country's largest rubber plantations.

The habitat of the Erigbaagtsa lies a few days' journey farther downstream, on the upper Juruena. Anyone attempting to run the fierce rapids without an expert local guide would court disaster.

Para is one of the best whitewater men in these parts. With calm skill he pilots our heavily laden craft through gorges and rapids, shoals and whirlpools.

Each time we reach a particularly hazardous stretch, Vilma and Roberto, Para's helper, leave the boat. They carry cameras and other precious gear over winding paths through the forest, and rejoin us below the rapids.

PHOTOGRAPHS BY HARALD SCHULTZ © NATIONAL GEOGRAPHIC SOCIETY

**Grim hunting trophies,** the skulls of wild pigs and monkeys crown poles near a hut. Indians roasted and ate the heads.

**Author's Erigbaagtsa friend,** Radiokoobee, displays the bright plumage of a macaw, which his wife will pluck and cook. Long quills will fletch bamboo arrows tipped with notched palmwood. Feathers of earlier kills hang from slits in Radiokoobee's ears; only breast and wing feathers are used for personal adornment. Beads are pierced grass seeds.

**Upper Juruena River** borders the remote home of the Erigbaagtsa visited by the author. From Cuiabá he rode by truck over savanna and jungle trails to Pôrto dos Gauchos, then traveled by boat down the Arinos. He reports the tribe dwindling rapidly and estimates its present numbers at only 300.

**Thick layers of babassu palm fronds** thatch a *maloca*, single-room home for two Indian families and a bachelor. Larger dwellings may shelter five or more families. Entrances stay tightly closed to bar bloodsucking flies. To escape the gnat-size pests, the Erigbaagtsa spend much of their lives indoors, venturing into daylight only to hunt and fish, bathe, and fetch wood and water. Here Radiokoobee, bidding his son stay home, sets out for a hunt in the jungle.

**Smiling mother dandles baby** in a clearing outside the maloca. Dusk draws the Indians outdoors for play and gossip. Small calabashes, nuts, seeds, and red berries of the necklace tree, *Ormosia coccinea*, serve as beads.

**Juruena River** provides sparkling water for a latherless shampoo, but its banks are a favored habitat of bloodthirsty flies. Basket sieve holds small fish captured in drying water holes.

**Quick bite** kills a fish, the first step in cleaning.

KODACHROME © NATIONAL GEOGRAPHIC SOCIETY

On the second day we approach the dread Cinco Bôcas, or "five mouths." Only one of these water passages is navigable. Para, alert at the tiller, steers expertly between the boulders, which are almost near enough to touch. Suddenly our metal boat describes an arc and shoots through foaming waves with loud crashes onto the rocks, crunching, thumping, pounding, and trembling, then comes to rest on dry ground. A few yards away one of the five torrents foams past us in a smother of white spray.

Para gives a cry of alarm.

"Senhor Haraldo! Our engine is smashed!"

It is true. The hull is intact, but the 12-horsepower outboard motor is damaged beyond repair. Para is ashamed.

"For five years," he says, "I have been navigating boats through these rapids, carrying provisions to the rubber tappers. I have never before had an accident!"

We get the boat back into the water, shoot down the rapids without power, and continue with our spare three-horsepower motor.

### Rubber Tappers Prowl Deep Jungles

The rubber tappers, most of them bachelors, lead lonely lives along these rivers in central Brazil. They penetrate the jungle on narrow paths, tapping the trees so that the liquid latex sap flows into little cups. Sometimes they go for weeks without meeting

another human being, with only a dog or a parrot to talk to. Most of these men are friendly and peaceable, but also among them are rowdy specimens, fugitives from justice.

From a large island near the mouth of the Arinos River, two men and a woman wave to us, and we bring our boat alongside.

These people, rubber tappers, say some Erigbaagtsa came through here the previous day. One of the Indians quarreled with another rubber tapper living here. He threatened him, whereupon the tapper shot him dead. The other Indians moved off, threatening to augment their forces and return for revenge.

The rubber tapper fled in his small boat, after burying the Indian, and these friends arrived to protect his abandoned dwelling.

As darkness falls we tie up to shore, set up camp, spread mosquito nets over our hammocks, and light a supper fire.

Until late at night we hear the sounds of many shots—the rubber tappers warning the Indians away. The Indians do not return; somewhere in the jungle, they mourn for their dead companion.

On the fourth day we halt on the bank of the upper Juruena. A few hundred yards away a *maloca*, or communal hut, looms like an immense haystack. We find it empty.

Rubber tappers tell us the Indians moved out weeks ago. Each year in May or June, when the dry season begins, they head for the upper reaches of small rivers to cut bamboo canes for arrow shafts.

We turn back and look for other huts that are inhabited. The next day, in a hut well back from the river, we encounter our first Erigbaagtsa—Radiokoobee, his brother Barari, their wives, and three children.

One of the women, struck by a falling tree trunk, has a serious leg wound. That is why these Indians did not go with the others to cut bamboo. The injured woman looks wretched and thin as a skeleton.

"Must I die?" she asks, her eyes large and filled with fear.

"No, you'll get well," I reply, using some of the Erigbaagtsa words I learned from rubber tappers. She smiles, showing beautifully even teeth.

Her husband, Radiokoobee, is the most solicitous I have ever seen. He hunts and cooks, cares for his infant son, clears the ground, sows, plants, hoes, and harvests singlehanded, and tends his wife with patient and loving care.

When we stay too long in the forest, hunting, he says, "I must turn back—my child is crying." He imitates the crying, makes signs for the words "turn back" and "at home." We understand each other quickly.

We give the woman a light sedative and with a razor blade open the infected wound. She recovers very quickly.

After a few weeks we leave with Radiokoobee and Barari. They have offered to lead us to the hut of Ipatoto, an Erigbaagtsa chief

**Expertly flinging water** onto his tongue, a tired hunter drinks from a brook. When the author tried the hand-to-mouth method, he soaked his shirt. Shredded bark provides a G-string for the Erigbaagtsa; he believes bark-fiber armlets enhance his strength



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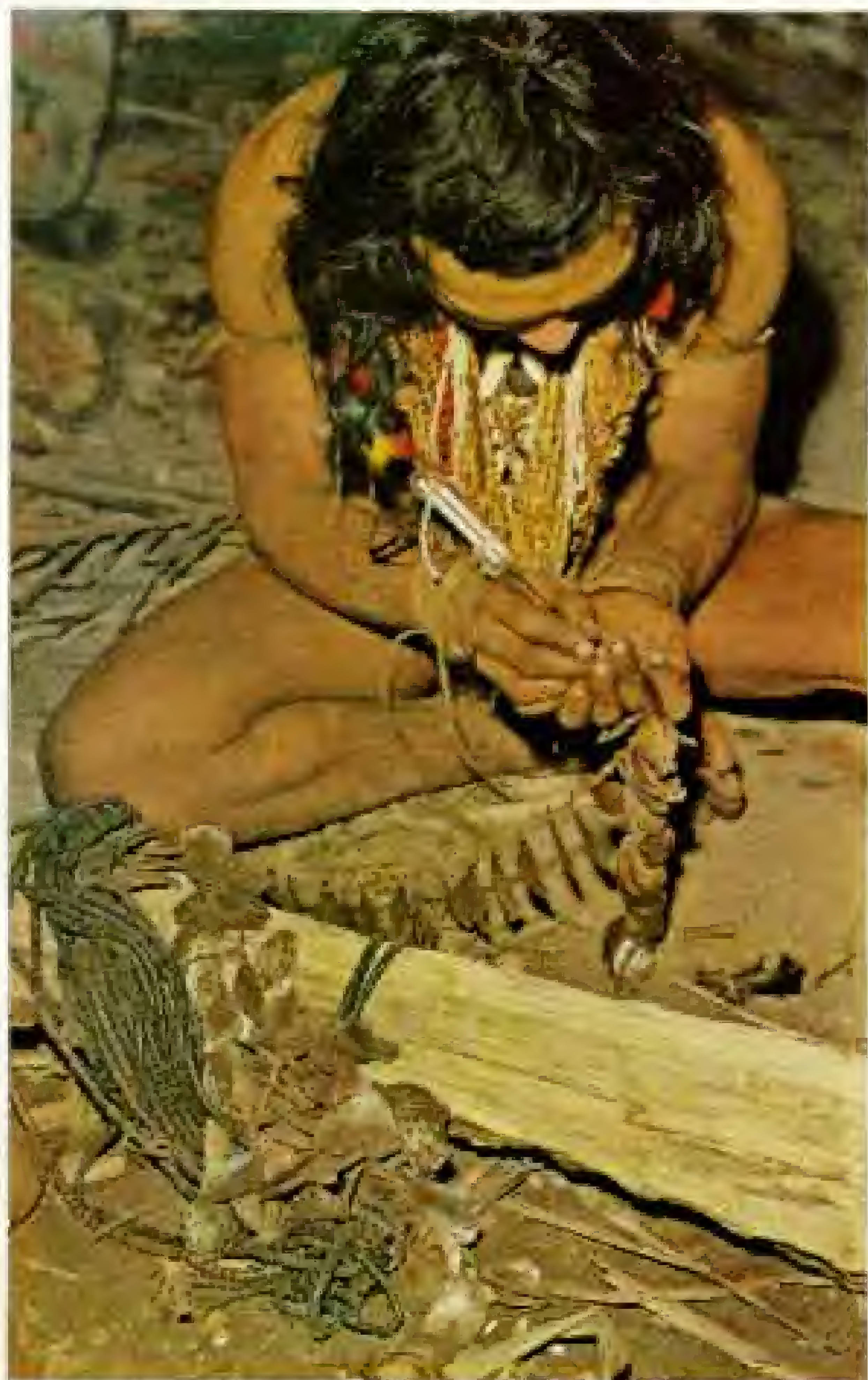
**Spinning home-grown cotton** into thread, Radiokoobee's mother twirls a palmwood spindle whose beeswax weight turns inside a shallow clay bowl. She will knit the thread around strands of twisted palm-leaf fibers to make a hammock, such as the one in which she reclines. Spoons hanging above baskets at upper left were given her by Mr. Schultz.



**Artisan Uses Author's Knife to Adorn Fish-shaped Shells**

Women grind mussels to resemble fish, and men incise the scales. If no knife is available, the men use stones. Strung with tough strands of bark fiber, the necklaces rattle rhythmically when women dance at festivals. This carver sits in a dark maloca, where a pencil-thin shaft of sunlight falls on his work. Camera flash lights the picture.

now believed to have returned from cutting bamboo.

The river is a mass of rapids. On the bank we spy a white object. We steer over to have a look. It is part of a human skull.

"Boema!" exclaim Barari and Radiokoobee. Boema is a feared chieftain of the Erigbaagtsa tribe. He lives 15 days' march away in the jungle between the Juruena and Aripuanã. Indians of other Erigbaagtsa groups dare not go there. He has not yet made peace with the white men, and now he is also an enemy of his own tribesmen.

My friends say the owner of the skull was an Erigbaagtsa, and they believe he was killed by Boema. Parts of the body may have been eaten—who knows?

A month ago two Indians were beaten to death in a battle of rival Erigbaagtsa groups at the bank of the Juruena.

"Did they devour these dead?" I ask Barari and Radiokoobee. They laugh out loud.

As we press them they consent—apparently with pleasure—to tell stories that may be made up only to satisfy the white man's curiosity. Or are they?

With much mimicry and few words Radiokoobee demonstrates how, during an Indian festival, the guests practiced malevolent sorcery. With tiny bows they shot tiny arrows in the direction of their hosts—at a great distance away, of course. Soon many of the hosts became ill and died.

Then the survivors fell upon their erstwhile guests, killing several with arrows bearing broad dagger-shaped wooden heads.

**Profusion of seed necklaces** and pendant of wild pigs' teeth adorn Shebah, a tattooed mother, who carries her son in a cotton sling. Buttons and a pillbox, acquired by trade, embellish her bead tunic, the only covering worn by the women. Dark, woody bracelets are cut from Brazil-nut pods (page 751). Armored tail of a giant armadillo supplied the ivorylike wristlet.

Radiokoobee imitates the cries and imprecations of those who had been struck. Then, he says, the Erigbaagtsa cut off their enemies' heads, roasted parts of their bodies over an open fire, and ate them. Afterward the skulls, with flesh and brain removed, were encased in woven baskets and hung in the huts.

### "I Have Eaten Vilma"

"Nowadays we do not kill white man any longer—only hostile Indians of other groups," says Radiokoobee. "We have thrown the skulls away."

He and Barari laugh, and we get the impression that the entire tale is only a joke. But is it? I ask.

"Radiokoobee, make me a magic bow."

But my friend misunderstands me. He thinks I want him to shoot me with a magic arrow. Shocked, he answers emphatically:

"No! You would get violent headaches, and your back would become ill!"

One day I return to camp and cannot immediately find my wife.

"You are looking for Vilma?" asks Radiokoobee. "I have killed Vilma, and roasted her and eaten her." He grins mischievously.

I smile too—as Vilma appears.

For years, we learn, the Erigbaagtsa looked upon rubber tappers and other white men as enemies, and frequently attacked them. Gradually, enmity died out, so that today Indians and whites generally enjoy cordial relations.

The Erigbaagtsa claim it was they who pacified the whites, not the other way round.

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**Sitting at the river's edge,** a raven-haired child curiously examines a kite swallowtail butterfly *(Eurytides).* Innocent of either cruelty or gentleness, Erigbaagtsa children handle such helpless captives matter-of-factly.

Three-inch lantern fly (upper right) rests its crocodile-like head on a branch. *Fulgora's* ugly features give rise to a false belief that its bite is venomous. Bristly poisonous ant *(Paraponera clavata)* grows to nearly an inch in length; its vicious sting causes intense pain. Katydid *(Thliboscelus hypericifolius)* mimics the leaf on which it feeds.

"We Indians," says Radiokoobee, "were afraid of the thundering weapons. We wanted peace in our forests. We watched the rubber tapper go from tree to tree, make a deep cut in the bark, and then put there a cup which began to fill up. We walked quietly behind him, so that he couldn't see us, and collected these fine cups and took them to our huts."

Radiokoobee crooked his fingers in succession, saying *"Nipa . . . nipa,"* meaning sleep once, sleep once more—passage of time.

"After a few days, when the liquid had hardened, the tapper returned to collect the little rubber balls—and couldn't find his cups!

"We hid behind large tree trunks and watched how angry he was. A young fellow wanted to approach the tapper, but Mapatati, the chieftain, was much afraid and said no."

Radiokoobee bent double with laughter as he told this. Fear is a disgrace to an Indian. He continued:

"A young fellow leaped from behind the tree trunks and shouted, 'Rubber tappers are good—the Erigbaagtsa are also good!' "

Thus trouble was averted, and the rubber tapper went away in peace. These same words, I learned, are still a greeting today between the Erigbaagtsa and rubber tappers.

One day we see rubber tappers in small boats paddling up the Juruena in such a hurry that they do not even talk. Only one of them spends the night with us.

"There are hostile Indians farther down in the jungle," he reports. "They are coming through the forest, following the river upstream. We are afraid to be alone in the forest. We are seeking refuge upstream where there are no bad Indians."

Rumor follows rumor. Nobody has actually seen the hostile Indians, but excitement mounts, and I decide to be more careful.

That was the night we were fooled by the trumpeter-bird calls and moved to an island.

"Bad Indians far away," say our Erigbaagtsa friends, laughing.

### Tiny Flies Rule River by Day

Along these shores of the upper Juruena the air is filled from dawn to dusk with dense clouds of tiny black bloodsucking flies called *piums*. When they bite, they leave swellings that itch strongly and soon turn black.

Bathing is out of the question by day. Vilma and I wear long trousers and pull stockings over cuffs to protect our ankles. On our hands we wear socks with holes cut for fingers. Our shirts have long sleeves, and our necks and heads are covered by cheesecloth veils.

The Indians, who wear no clothes, also fear these pests and avoid the river. They work their fields of corn, manioc (cassava), and cotton before dawn. When the sun rises, they return to the dark of their huts, which so tightly shut out light that the piums can't pursue them. Piums are creatures of the sun.

The day after the false alarm we trek for two hours over a winding path through the forest. We come upon a large straw house in a small clearing. In each of the four walls there is an opening closed off by a thick layer of palm leaves. There is a rustling when someone lifts the leaves to squeeze through into the single room. I enter into the darkness, feeling as if someone has blindfolded me with a black cloth.

Small fires flicker on the ground. After a while I make out the hammocks slung next to the fires. In these hammocks lie women with their babies. They spin cotton into cord for hammocks, roast corn, and cook monkey meat or wild pork.

Boys and men squat on tree trunks that form a rectangle, chatting as they make arrows. Over a fire roasts a huge boar's head.

Friendly hands sling our hammocks at the far end of the hut. There a young, powerful man with an expressive, intelligent face lies stretched out.

*"Ikia Ipatoto?"*—Are you Ipatoto?"

*"Uta Ipatoto,"* he answers.

*"Uta Haraldo*—My name is Harald."

Beside Ipatoto an older woman roasts kernels of corn in a clay dish over the embers of a fire. Ipatoto speaks to her and she fetches ripe bananas from the rafters of the hut. Ipatoto places the bananas and the dish of corn on the ground before me.

*"Mamutixana*—eat!"

**Giant Anteater Swimming the Juruena River Snorkels With Its Long Snout**

This toothless mammal feeds by ripping into logs and anthills with powerful foreclaws and then probing for termites and ants with a slender, sticky tongue. The author photographed the four-foot specimen of *Myrmecophaga jubata* from a boat. "Do you want to eat this animal?" he asked the Indians. They answered flatly no—*"bahai."*

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One of the young lads brings a large clay vessel. Ipatoto drinks first, using a gourd cut in two. Then he fills the gourd for me.

"*Pete pihi*—honey water!"

Delicious!

In this Indian hut, deep in the forest, we settle down for a few weeks.

Adults and children spend nearly the entire day in the darkness of the maloca, or communal hut. Because of the insects, only rarely do they venture out to fetch wood or water.

Five families live in the maloca. The men are blood relations. Each family has its own area in the one large common room. There are no separating partitions.

A man and his wife will sling their hammocks on either side of their little fire. Small children sleep in their mothers' arms, the older ones in their own hammocks. Nights are cool, but all sleep in the nude.

Harmony prevails. Everyone is friendly and speaks in a low voice.

The bachelors and young boys sleep apart, in hammocks slung from rafters. In the center of the log rectangle—the area reserved for menfolk—they keep a fire going.

The log rectangle is the men's meeting place, their club. Here they eat their meals together, make bows and arrows and feather decorations, and talk away the hours. No woman ever ventures inside the rectangle.

### Forest Shades Sandy Playgrounds

One afternoon two little girls go into the forest, carrying their baby sisters on their hips. Vilma goes along. At a shady spot in the forest, there are three sandy open spaces—playgrounds. In one stands a palm-leaf hut, just large enough for the little girls to crawl inside. In the sand lie small baskets and paddles for fanning a fire—the girls' toys.

When they come home later, they bring along small baskets of fruit. At home they play with baby *jacus*, or jungle chickens, feeding them grains of corn which they have first chewed.

A very small girl drags a bundle of corn straw around with her and treats it as a doll, holding it in her arms or rocking it in a hammock. There are no other toys.

Never in our twenty years of trekking

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through the forest have we seen any quarreling Indian children.

At dusk all work stops. Women and children meet in the narrow village gathering place bordering the jungle. They squat on the ground, chat, help one another in picking the bothersome insects out of their hair, and play with the children. The men sit on logs, apart from the women, talking, cracking jokes, and teasing one another.

To show the strength of his palmwood bow, Ipatoto draws it so far back that it forms a semicircle. His bamboo arrow speeds straight and high into the air. Then, in a graceful curve, it drops in the forest nearby.

Radiokoobee, who has accompanied me to Ipatoto's hut, owns a much smaller bow.

I tease him. "Why, that bow is for children."

Radiokoobee only smiles. Then he shoots his arrow higher still, almost out of sight.

Radiokoobee shows me how, with this short, light bow pressed tightly to his side, he can dash through the forest after wild pigs, without being impeded by trees or vines.

### Fireflies Glow in Two Colors

A succession of rainy nights stirs up snakes, lizards, and insects. Tree frogs hammer and sing, crickets and cicadas hum. Brilliant butterflies flutter about, seeking shining flowers.

With darkness, large fireflies glow among the trees, seemingly chasing each other and sometimes getting into the hut. Children and grownups enjoy their glow, reddish in flight, greenish while at rest. The Indians catch the insects, then let them fly off again.

Before dawn the women add wood to the fires, roast corn for breakfast, and fetch water.

The hunters test the spring of their bows, then tighten palm-fiber bowstrings. They take up their rustling bundles of arrows.

"Haraldo, come, get your rifle!" says Ipatoto. "I know where the monkeys eat much ripe fruit. Very sweet fruit!"

The forest is still quite dark. But soon silver arrows of light penetrate the leafy bower. They strike dripping-wet leaves in a shimmer of green. Day spreads through the forest.

Near the hut, atop a row of poles stuck in the ground, sit the skulls of many monkeys and wild pigs—hunting trophies (page 738). The skulls are split open; head and brain are special delicacies for all Indians.

Every Indian settlement is surrounded by a strip of forest or savanna in which game has been exterminated or driven away. The hunter must go farther and farther afield to find plentiful game. Therefore, Indian tribes prefer to move their settlements from time to time to new hunting grounds.

It is silent in the forest; only now and then is there a screech from a pair of flying macaws. We are surrounded by eternal and boundless green. Moldering leaves shine on the ground in bright yellows and browns, in patterns like the markings of a jaguar.

We hear rumbling noises; then all is silent again. The noises sound as if they were produced by some dangerous large animal.

But it is only a black bird, glossy as silk and big as a well-fed rooster. It is still invisible to us, but I know it is a bush turkey, with

**Charred Branches Strew a Fresh Field That Fire Has Prepared for Planting**

The Erigbaagtsa know only a primitive agriculture. Each year in May or June—start of the dry season, the Indians' summer—they abandon the past season's weed-choked fields and wrest new cropland from dense jungle by felling trees and cutting underbrush. Before the first rains in September or October, they set blazes to clear the land. This woman uses a pole to dig holes for corn kernels. Men will drop the seed and cover it.

**Squatting farmer** plants cassava stems. Edible roots will be ready in six months.

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**Singeing and scraping** bristles from the rib cage, a cook prepares to roast a wild pig

velvety eyes and a bright red knob on its upper beak. The Brazilians call it *mutum*. It is a shy quarry that usually spots the hunter long before he sees it.

"Wait!" murmurs Radiokoobee, and begins cautiously to cut palm leaves. With them he builds a blind, and we squat behind it.

Radiokoobee purses his lips and makes gentle, endearing, whistling sounds, like the love call of a female mutum.

The rumbling noise, a deep bass, comes again from the forest. Then strong beats of wings and a heavy thud, as if somebody had leaped to the ground.

Radiokoobee again sends out delicate fluting sounds, winding up with a sharp tone that gradually fades away. There is rustling in the dead leaves.

"The bird is coming," Radiokoobee laughs.

And there he is . . . a black bird scampering on strong legs directly toward our hiding place, blind in his search for the female which has come into his domain.

The point of an arrow barely protrudes from the screen of leaves. The taut bowstring sings. The amorous bird collapses.

### Bird Sounds Jaguar Alarm

We push deeper and deeper into the jungle, following winding narrow paths for miles and miles. It grows dark, and then heavy rain gushes down, transforming the barely discernible path into a brook.

The two hunters break off palm leaves and tie the stems together to make splendid umbrellas. Soon sunlight dances again on the leaves, shimmering in green through the rain drops. A bird twitters. It sounds alarmed. Radiokoobee and Ipatoto stop dead. They place arrows to bowstrings. They listen.

"*Onça*—jaguar," says Radiokoobee. Time goes by. Nothing happens. The hunters relax. "The jaguar has gone," says Ipatoto.

Now the two break into a run. They leap through the underbrush and beckon to me. "Come! Quick!"

"Monkeys," one of them says when they finally halt. "They are passing up there in the treetops."

Branches rustle and snap, quivering under the weight of many monkeys. A band of sakis keeps emitting reedy, quavering whistles, almost like a whine. Silently following them are some woolly monkeys, which with the sakis are among the largest monkeys in the Brazilian jungles. Adult males lead. Females follow, their young clinging tightly to their fur. Then come the adolescents and finally a single straggler, apparently a youngster on his own for the first time.

Ipatoto shoots an arrow straight up. A saki cries out, falls, but holds on with hands, feet, and long prehensile tail. Only after three more arrows does he fall.

Again we run through the forest and halt breathless. The Indians know exactly where the monkeys will pass again, for the animals follow established "highways" in the treetops. We must be there ahead of them.

We repeat this game a third time. After that the animals are so frightened that they scatter in all directions.

We have bagged two fat woolly monkeys and a male black saki with long beard and powerful fangs. Recovering them from undergrowth, we find a young one clinging to one of the woolly monkeys. As I free it from the mother's fur and take it on my arm, it breaks into heart-rending cries. It quiets down only after I have talked to it for a long time. That

**Using fire tongs** of lashed saplings, a woman rakes a charred pod of Brazil nuts from a bed of coals. To get the jungle delicacy, which the Indians enjoy half ripe, women and girls burned down a 125-foot-high *Bertholletia* tree that bore hundreds of nut-filled capsules.

**Machete bares** Brazil nuts in a spongy paste.

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**Gathering wild honey,** an Erighaagtsa chops into an ax-felled tree to remove a bees' nest. Angry insects, driven out by the blazing fire, beset his companion. The bees, of the genus *Melipona*, lack poison stingers but inflict painful bites.

**Grimacing from bee bites,** a woman ladles wild honey into a bamboo pipe. She obtained the metal cup from rubber tappers. Baby girl, clutching honeycomb and wearing a necklace given to her by the author, shields her face from the darting bees.

**Youngster packs honeycomb** in a leaf basket laced with fiber.

night it sleeps in a basket with my pet spider monkey. Before dawn the baby crawls into my hammock, seeking protection and love.

The slain animals have been eviscerated, then neatly trussed with bark fiber and carried home on the hunters' backs.

Back at the hut, the spoils are turned over to the women. They stir the fires, throw on new logs, and wait until the flames burn high. They singe and scrape off the fur, leaving the skin to be eaten with the meat. The tail goes to the lucky hunter. He shares it with his hunting companions.

Often many days go by without game to speak of. On those days we eat corn, bananas, wild honey, Brazil nuts, sweet potatoes, manioc, and corn mush. When the rainy season comes, the forest is full of sweet fruits, which are eaten raw or cooked into a soup sweetened with honey.

Near the maloca stands a gigantic *Bertholletia,* or Brazil-nut tree. It rises about 125 feet, and at ground level the trunk is a good ten feet in diameter. In its leafy green crown are hundreds of *ouriços*, the large fruits containing Brazil nuts.

At this season of the year the ouriços have not yet ripened. It will be another few months before they fall to the ground. But our friends want to harvest their Brazil nuts now; they enjoy them half ripe.

Three women and a few little girls stuff pieces of firewood into a small hole in the trunk and kindle a fire there. The women and girls blow on it until flames shoot out.

**Fallen Giant Gives Indians a Feast**

This operation is repeated for four days, while the hole in the trunk grows larger, and the fire becomes so powerful that the entire tree trembles. At last there is a tremendous crash as the tree falls.

The women jump for joy and children shout *"Pitsi! Pitsi!"*—their word for Brazil nuts.

The falling trunk has ripped a clearing in the jungle, tearing down other trees. These catch fire, but the flames soon go out.

The fall has hurled ouriços as far as 300

**Hard-won honey** sweetens a big kettle of corn mush. To prepare the mixture, women crush corn kernels with mortar and pestle, sieve the mash into a clay pot, add water, and boil. Cooking done, the Indians add honey. Palm-leaf strainer traps bee larvae and wax.

**Bamboo Trumpets Sound the Planting Season's Start**

Simple instruments are fitted with slender pipes adjusted to vary the tone. A rectangle of logs marks off the men's club within the community house. Here the males eat, make bows and arrows, and spend hours in talk. Clay pot holds honey thinned with water.

feet. The women pile them into great heaps. They beat them on the ground with heavy clubs, breaking open the outer woody tissue. Inside is a very hard shell containing the Brazil nuts.

Now the women light a fire. Into it they throw the shells divested of their outer husks, and leave them in the embers until they are charred. Then, with tongs fashioned of two sticks lashed together, they fish the blackened shells out of the embers (page 750).

After they have cooled, the shells can be opened with a machete or smashed by being thrown vigorously to the ground. The tasty nuts are then picked out with a sharpened sliver of wood.

The women weave baskets of young palm fronds in which to carry the nuts home. For days everybody gorges on the Brazil nuts.

Because of the bloodthirsty flies the Erigbaagtsa only rarely go down to the river to fish. When they do, they catch many varieties, such as the *pintados*, a spotted catfish that grows to nearly a yard in length and weighs 20 pounds or more.

Missing are the vicious piranhas, as well as the notorious sting rays and electric eels, all denizens of Amazon waters. These are kept from the upper Juruena by Augusto Falls and by rapids extending hundreds of miles along the lower river.

The Erigbaagtsa soundlessly take up positions in trees that swing out over the river. Holding their bows and arrows at the ready, they chew on fruits and let scraps fall into the water. As soon as a fish approaches for a

**Painted youth** whistles a reedy solo on a primitive Panpipe of bamboo stems. Red dye squeezed from the pulpy seeds of the annatto tree stains his face. Toucan feathers dangle from slits in the upper edge of his ears. Bark-fiber bracelets gird his wrists. An Erigbaagtsa's hair never knows a comb.

KODACHROMES BY HARALD SCHULTZ © N.G.S.

**Innocent of Clothing, Motherless Sister and Little Brother Rest**

No partitions hide hammocks inside a maloca, a hut that many people may share. Five families—the men all blood relatives—occupied the one-room dwelling where Mr. and Mrs. Schultz stayed. Despite the lack of privacy, friendliness and harmony prevailed.

Children usually sleep with their mothers until they grow too large, then they get hammocks of their own. Bachelors keep a night fire blazing to drive away the chill.

When grown, this boy will stand little more than five feet tall. He faces an average life span of only 25 years. Few Erigbaagtsa reach the age of 60, says Mr. Schultz.

nibble, it is struck by an arrow. The hunters then leap in and seize their prizes.

More often the Indians fish in the gloom of the forest, in water holes that are about to dry up. These holes, connected with the river by ditches, are populated by fish during the rainy season. After the rains end, some of the fish do not retreat promptly enough.

**Fish Caught in Baskets**

The women wade into the deep mud, dragging small baskets through the murky water to catch small fish. They pitch the fish shoreward in a high arc. Naked little girls collect them and crack the spines with their teeth to kill them (page 742). Another quick bite just below the gills, and with one motion the innards are ripped out and discarded.

Then the fish are wrapped in green banana leaves and placed in hot ashes. In a short while they are cooked.

Para, an expert hunter and fisherman, frequently supplies us and our Indian friends with game and fish. We accompany him to the mouth of a small tributary, where small river turtles abound. Slowly our boat circles. Para stands in the bow, wearing only trunks and seemingly indifferent to insect bites.

A turtle pokes its head above the surface for air and immediately disappears again. Para leaps long and dives deep, staying 20 or 30 seconds under water. Then he emerges, laughing, holding an overturned turtle in the palm of his hand.

We catch several for our table. Roasted in their shells, they are a great delicacy.

We stop at a rocky islet. Ipatoto wades into the shallow water and brings back a thin rod to which a cluster of fish roe adheres. It is from a pair of cichlids, similar to sunfish, which had been standing guard over the eggs but now had fled.

Ipatoto scrapes this caviar off with his teeth and eats it.

"Try it, Haraldo," he urges. I do, and find it good.

Para collects turtle eggs, poking his fingertips into the sand to locate the nests. The eggs are eaten gladly by everyone. They are a special treat for our Erigbaagtsa friends, who have never learned to find turtle eggs.

We catch a huge black catfish. Smaller and tastier fish are plentiful; so the Indians eat only the monster's fat, throwing the rest to the vultures. They also enjoy the liquid fat of tapirs, monkeys, and other animals.

"Come, Vilma," say the women, "eat with us some of the delicious fat." My wife hardly knows how to convince her friends she couldn't possibly get the stuff down.

### "Evil Bees" Yield Good Honey

Almost every day we go out to collect wild honey. An Indian need only remember a bee tree, and he will find it in the trackless forest days and even weeks later.

These bees have no stingers. Some, however, bite with sharp mandibles. The bees often swarm by the hundreds in a victim's hair, over his whole body, and pinch him to distraction.

When the Erigbaagtsa want to smoke out

*pete brabo*—"evil bees"—the women generally stay home!

Usually the bees live in giant nests built onto the outside of large tree trunks. Joining my friends on a bee hunt, I watch them locate a nest and then help make torches of dried palm leaves tied to long sticks.

As soon as the torches are afire, the Indians run with them under the nest. The bees attack at once. They swarm around the Indians, humming all the while, and bite furiously. The Indians' skin is thicker and more resistant than ours, but still they swat furiously, and often they retreat from the scene of action.

Having felled the tree, the Indians again and again singe the nest, kill hundreds of bees, and smoke them out (page 752). Repeatedly they are put to flight by hosts of bees.

Later, at the fallen tree, all is quiet. The nest still smolders. We feast on honey, dipping the combs, which still contain larvae, into the sweet fluid, chewing the dark combs, and eating the pollen, which has a pungent taste. Finally the honeycombs are packed into clay jars or wrapped in palm leaves to be taken home.

### Medicine Aids Spider's Victim

One of the women lies in her hammock, crying and groaning loudly. Her husband squats on the ground near her. All the inhabitants of the maloca show their sympathy for her pain. They are serious and worried.

"What happened?" I ask.

"She was bitten by a *shou*."

We learn that a shou is a spider.

"Will she die?"

Ipatoto smiles. "No, but it is very painful."

None of the Indians makes a move. There is no treatment—only wordless waiting and grieving. We give the patient a painkiller. She takes it without hesitation. Soon the groans cease. The maloca resounds once more with happy laughter.

Before the Erigbaagtsa set out on their long march through forest and savanna at the beginning of the four-month dry season, to gather arrow shafts, they clear a new section of forest. They let it dry thoroughly, and set fire to it when they return in August or September, just before the start of the rains.

Flames shoot high, and the column of smoke is visible for many miles. The ashes fertilize the jungle soil for planting, which comes right after the first winter rains.

The field is cleared only superficially. Small underbrush is removed, but the big trunks of forest giants are left to char slowly, and palm trees lie strewn hit or miss (page 748). Between the fallen trees the Indians plant corn, manioc, beans, sweet potatoes, squash, peppers, cotton, and tobacco. Rubber tappers have given the Indians a few stalks of sugar cane. Bananas are also in favor.

As chieftain of the large family community, Ipatoto discusses with his men which section of the new clearing should be planted first. Then the work is tackled together, Ipatoto working as hard as the rest.

With pointed sticks the women poke holes in the soft ground. The men follow, pouring a few kernels of corn into the holes and then tamping the soil flat with a foot.

Next the men plant manioc. Three or four slips are placed horizontally in a hole, then covered. In six months everybody will be eating slender manioc roots.

### Trumpets Play for a Feast

At the sound of a deep and long-drawn-out tooting, everybody stops work. We proceed to the maloca and take our places on the rectangle of logs on the ground—our club. The women hand us large earthenware jars of sweet corn mush and honey water.

Tauama, the younger brother of Ipatoto, is the first to drink the honey water. He then passes the half gourd filled with the cool beverage to the others in turn.

Now there begins a strange woodwind concert. Long trumpets—simple bamboo tubes—sound off in even rhythm, short-long-long-short. Each instrument is tuned to a different key, by moving a slender bamboo pipe fitted inside the larger tube.

There is laughter and gay babble. Then everybody drinks again of the honey water and eats of the corn mush, the diners dipping mussel shells into the food.

By October the rain has set in again. It is a blessing for the seed in the ground. Corn grows quickly. In a couple of months the first green ears can be harvested. Then there will again be a trumpet concert, honey water, and corn mush sweetened with honey. There will be singing and dancing.

The rains grow heavier. Soon everything soaks through. The rivulets in the primeval forest fill up. The patter of rain is everywhere. We must be getting home.

Are these people cannibals? To us they are gentle friends.

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Black coffee or tea

(Only 240 calories)
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Sabin J. Peltier

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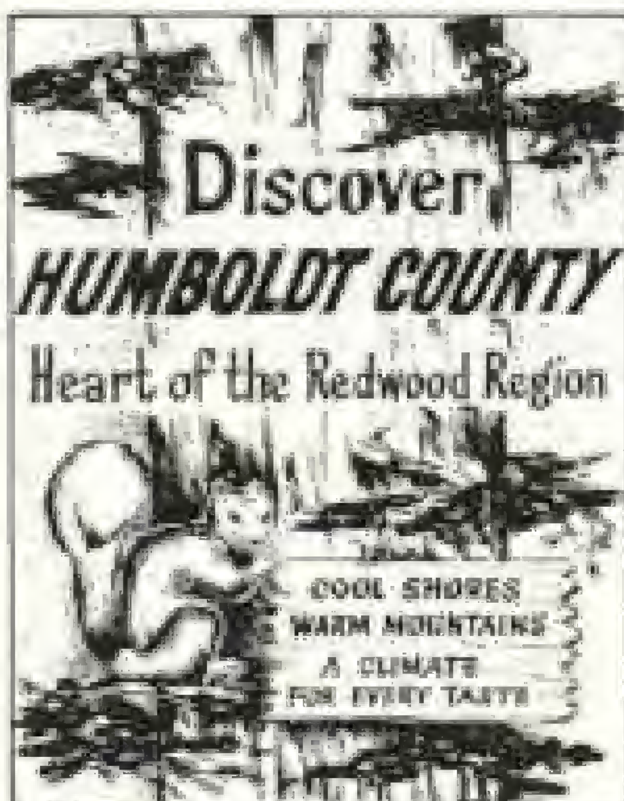


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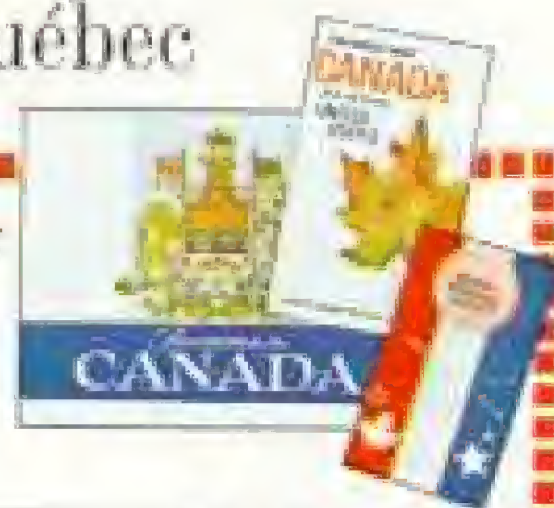


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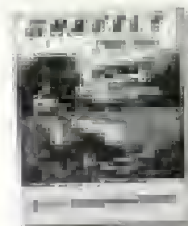


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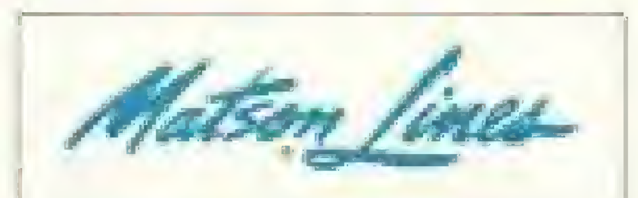

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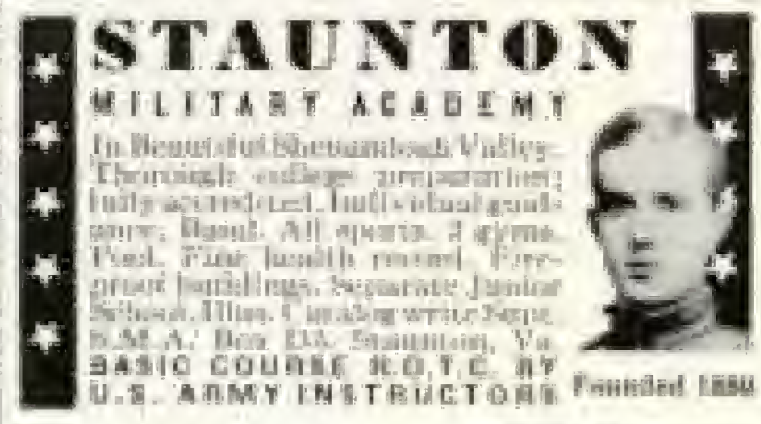


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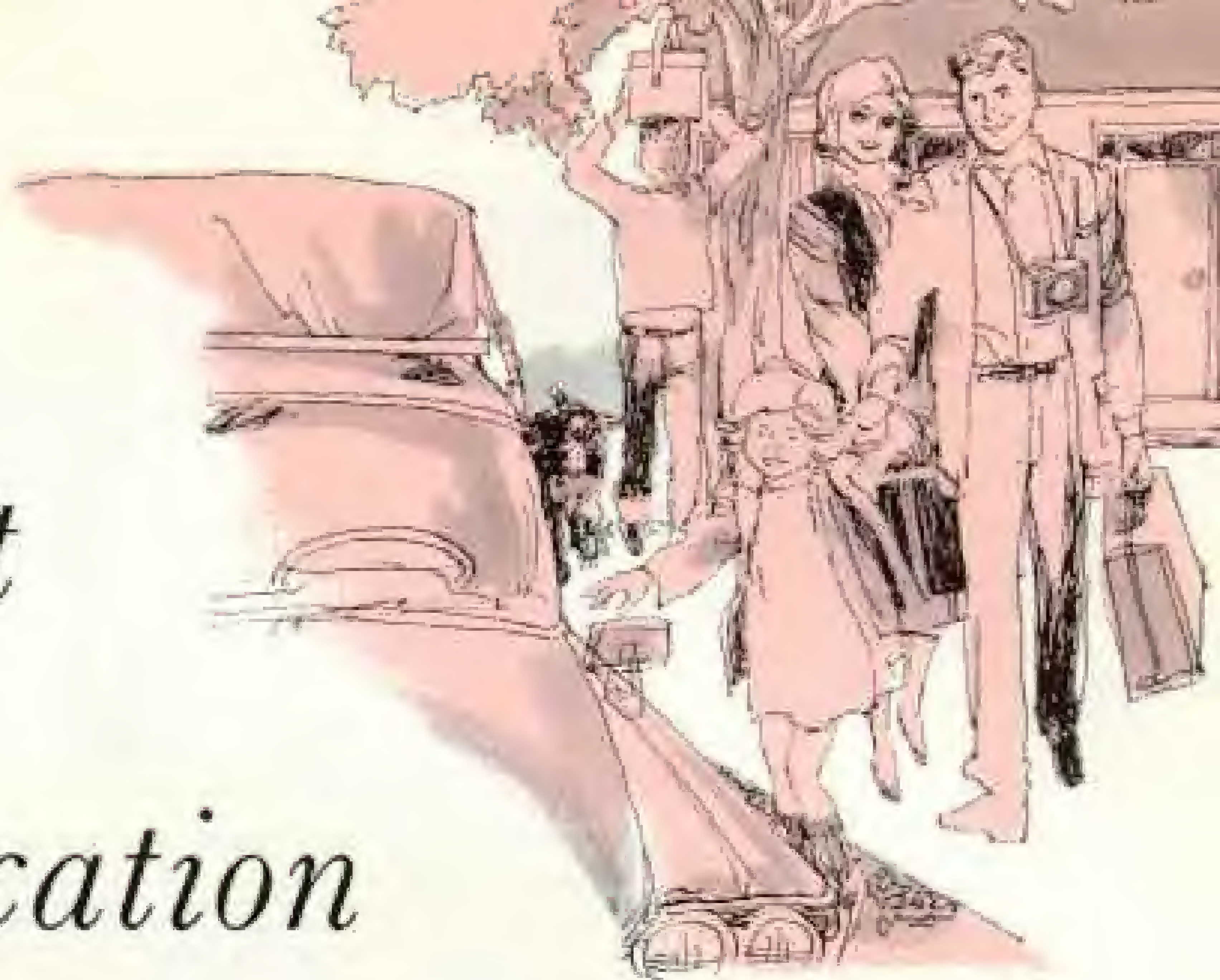

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