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NATIONAL GEOGRAPHIC



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NATIONAL GEOGRAPHIC

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National Geographic Magazine

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◀ COVER: Hand-woven shawl protects an Irish beauty from cold mists at Ashford Castle (page 297).



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American youths protest to British General Gage against harassment by his troops—Boston, 1769-70. Painting by F. C. John.



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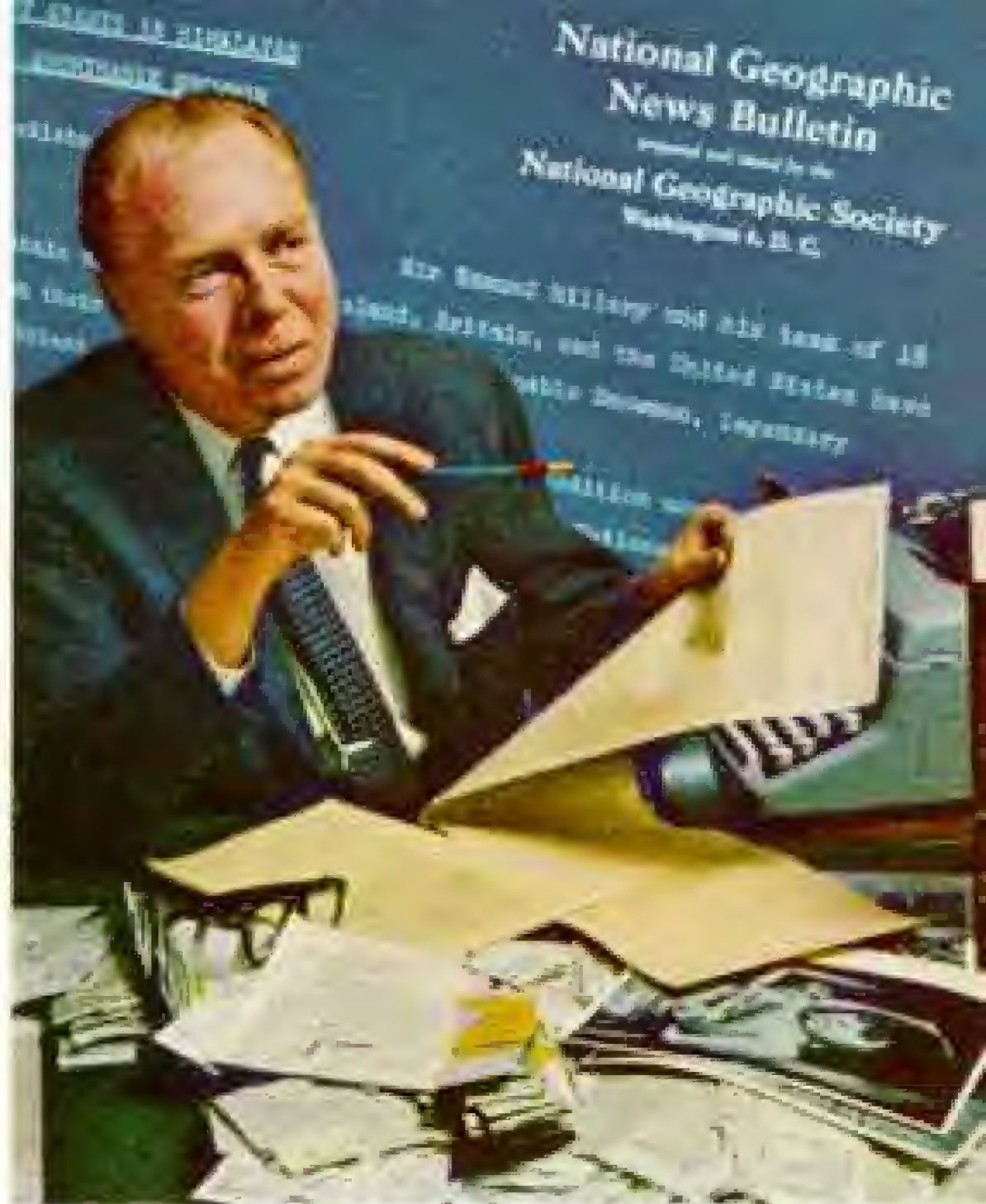
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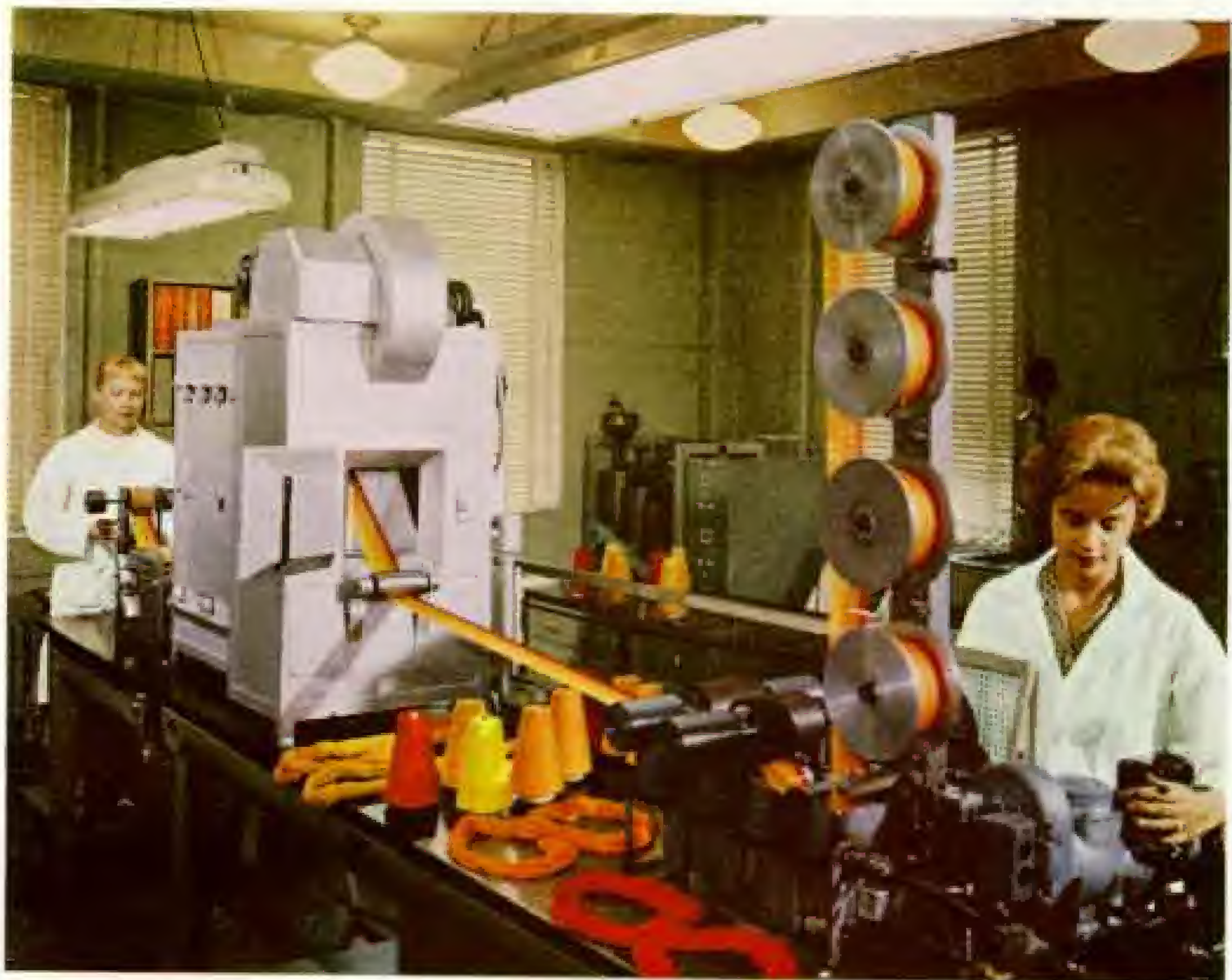


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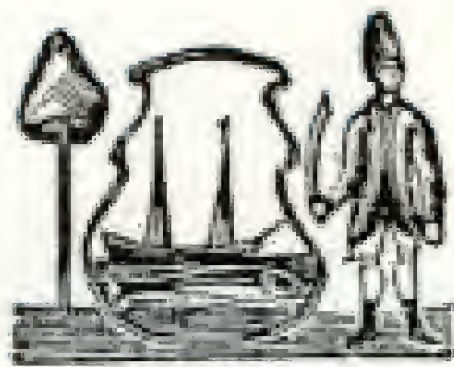
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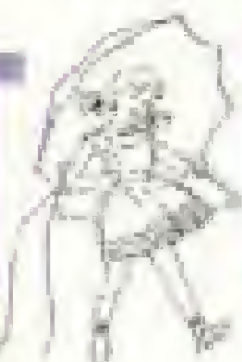
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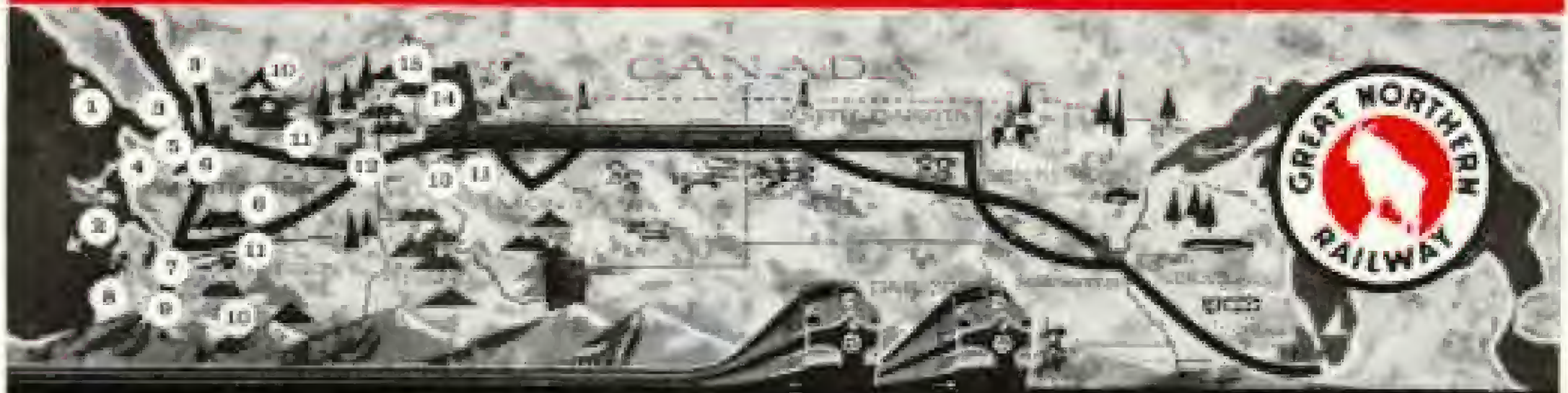
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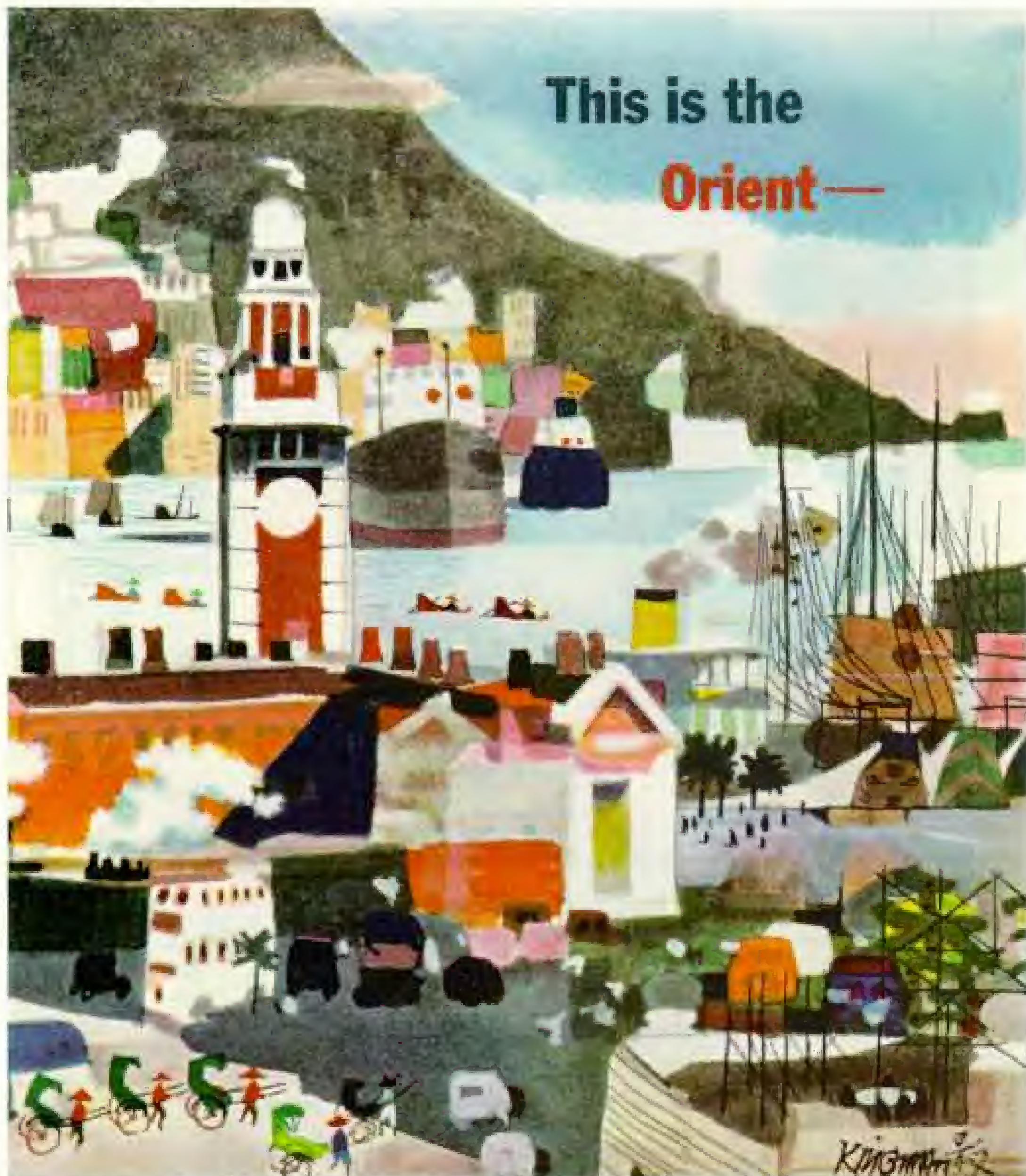
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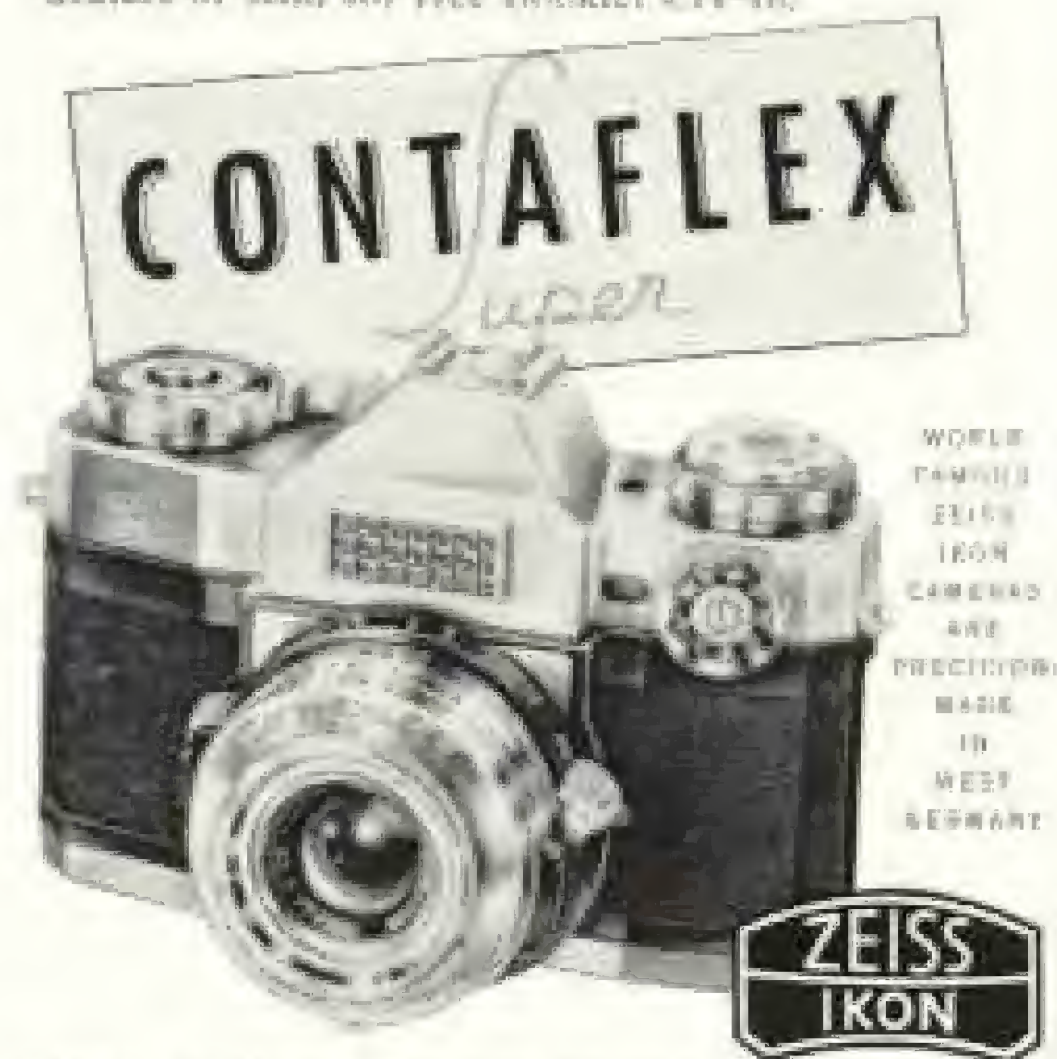


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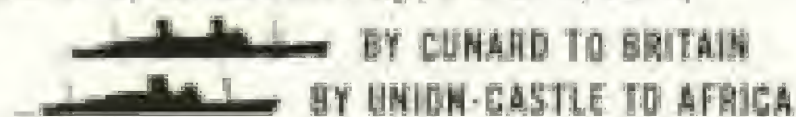


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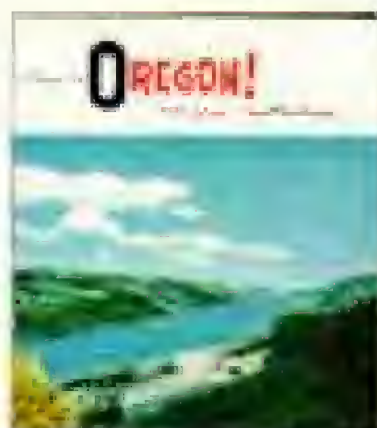


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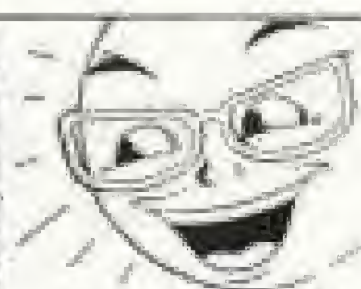
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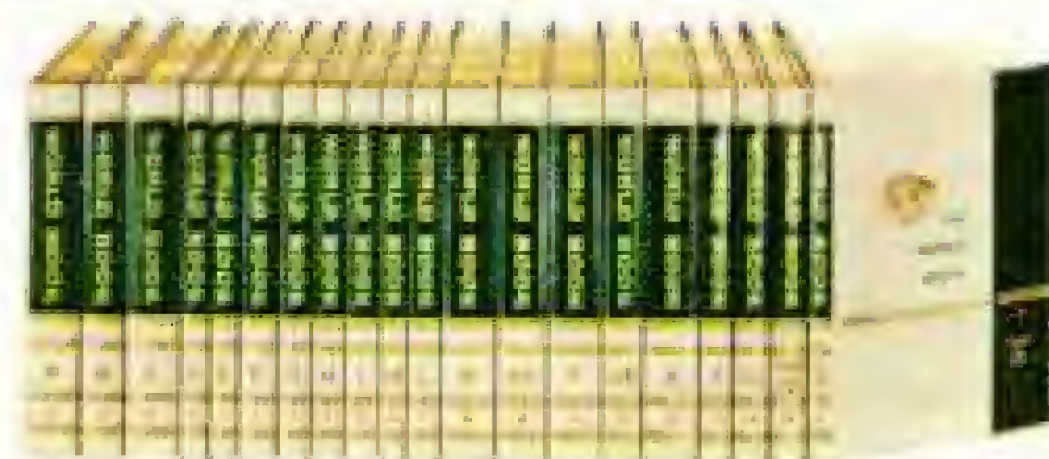
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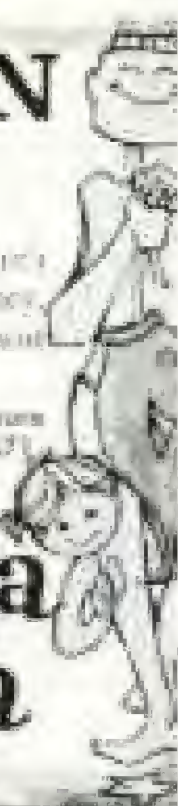
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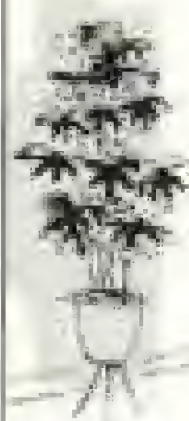
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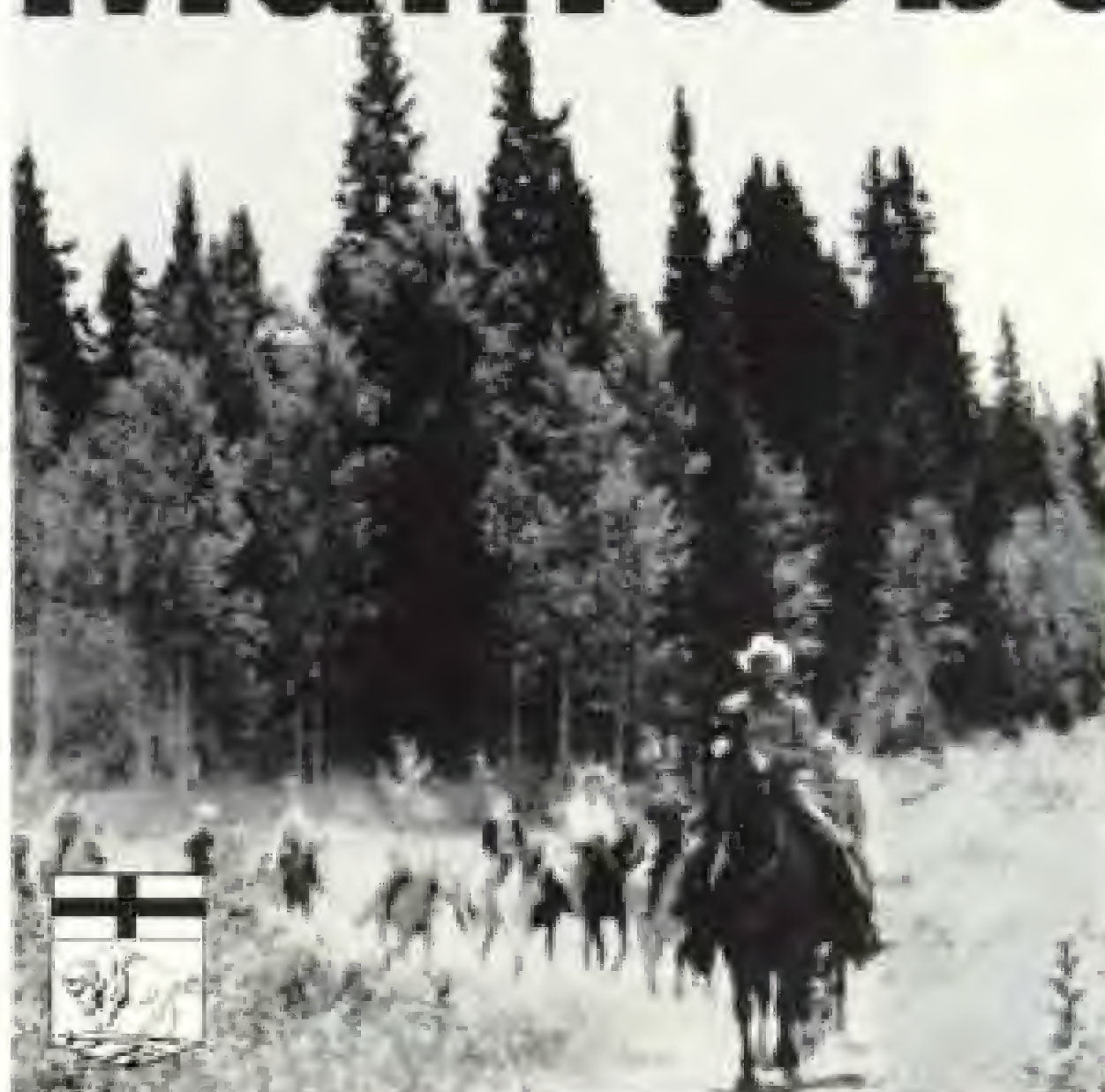
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FATIGUE—A FRIEND IN DISGUISE

Nobody welcomes fatigue. Yet, it can be a friend in disguise. Without a sense of fatigue, we would often push ourselves beyond our endurance—and the diagnosis of certain diseases, of which fatigue is an early symptom, might be long delayed.

There are many kinds and many causes of fatigue. For example, there's simple physical fatigue which you feel after a strenuous "work-out." You rest or get a good night's sleep—and it vanishes.

Fatigue may also be caused by low blood sugar—especially among people who eat little or no breakfast. Any healthy person who "tires out" before noon should have a breakfast high in protein foods—especially meat, eggs and milk.

In contrast, there's the persistent and exhausting form of fatigue that's entirely unrelated to physical effort or diet. This is nervous or emotional fatigue

brought on by anxiety, tension or boredom.

If you are persistently tired, take a look at your way of life. How much exercise do you get? Physical activity is often the one thing most needed to overcome emotional fatigue.

When fatigue persists, you should consult your physician. A check-up will reveal whether there's any disease to account for your tiredness. Or a frank talk about your worries may help untangle the emotional knots that make you "tired all the time." Whatever the cause, fatigue shouldn't be ignored.

Remember: for the most common forms of fatigue, "tonics" are seldom, if ever, of any value. Avoid self-medication. If fatigue doesn't disappear after sleep or rest, it should, like any other symptom of physical or mental distress, be investigated by your physician.

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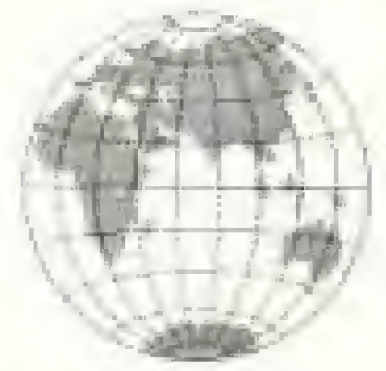
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VOL. 119, No. 3 MARCH, 1961



THE MAGIC ROAD ROUND Ireland

By H. V. MORTON

*Illustrations by National Geographic
photographer ROBERT F. SISSON*

THE DUBLIN BOAT left England sharp at ten on a fine warm night in May, and as it eased out into the Mersey, I joined the other passengers at the rails to watch the receding lights of Liverpool.

We were a varied crowd. There were priests, nuns, hikers, cyclists, fishermen with rods and baskets—for the English papers were running stories of tremendous hatches of Irish May fly—and a few Americans, brimming over with family pride, who told all and sundry that their ancestors had come from Kerry or Donegal.

Most engaging of all, and most numerous, were the Irish men and girls who were returning home on holiday from jobs in England. Here, clad in Sunday best, was a cheer-

ful collection of barmen, hotel porters, chambermaids, married couples, seamstresses, agricultural laborers, and what have you, all assembled in the gently vibrating saloon and laughing with Irish high spirits at the prospect of home.

Ireland's Sweet Scent Greeted Visitors

I spoke to a lad from Tipperary who told me with pride that he was earning \$45 a week in the Ford factory at Dagenham, Essex; and to another, from Cork, who said he was a bus conductor in London.

"Ah, but it's in ould Ireland I'd be if I could get the money!" the latter added. "But there's no chance of it. How could ye expect to find the root of all evil in holy Ireland?"

In the morning I glanced from my cabin porthole and saw that we were steaming up the River Liffey right into the heart of Dublin.

Up on deck I scanned the gracious and dignified city, bathed in morning sun. A breeze off the land brought the scent of Ireland, indescribably earthy, sweet, and nostalgic—the scent of rain-wet fields and peat

The Author: H. V. Morton has written more than 25 books, which admirably portray his native Britain, much of Europe, and the lands of the Bible. To NATIONAL GEOGRAPHIC he has contributed well-remembered articles on the London of Queen Elizabeth II, England's Lake District, and the Pyrenees. He now lives in South Africa.

smoke and flowers. After a glance at the famous Custom House, the succession of bridges, Nelson's Pillar rising above O'Connell Street (page 298), and the lovely outline of the Dublin Hills, I went below again to eat bacon and eggs at the same table with one of the Americans. He was a lawyer from Philadelphia and mentioned that he was accompanied by his Cadillac:

"Evidently your first visit," I remarked.

"Why, yes," he replied. "But why do you say evidently?"

"If you were familiar with the Irish country roads," I told him, "you might have brought something smaller!"

Cyclists Swirl Along Dublin Streets

So I stepped into Dublin again for the first time in many a year.

On the drive to my hotel I noticed that the last tramcars had vanished from the streets, but the exquisite Georgian buildings were as I remembered them from a much earlier visit. The windowless façade of the Bank of Ireland—the massive and classical Parliament House of the 18th century—still stood facing Trinity College across College Green, and I thought that a more dignified architectural group does not exist. More than ever these buildings seemed to be a couple of old aristocrats pausing to pass the time of day and exchange a pinch of snuff.

The morning streets were filled with thousands of tinkling cyclists, and the green buses came swinging along between the Georgian façades, taking people to work in shops and offices.

Just as the prevailing colors of London are black, white, and red—the black and white of rain-washed Portland stone and the red of postboxes, mail vans, and telephone kiosks—so the colors of Dublin are black, white, and green: the black and white of 18th-century brick and stone, and the green of postboxes, mail vans, and telephone kiosks.

Stone fences line green meadows like veins on a time-worn hand. Salt breezes from the Atlantic sweep across the hills and vales of Connemara, where sheep graze tufted slopes. Such is the face of western Ireland, a lovely but lonely land. Like most of the Irish Republic today, it sees many of its people depart. For more than a century job-poor Ireland has been waving goodbye to sons and daughters bound for foreign shores, and her population has shrunk alarmingly.

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Wherever the English would paint an object red, the Irish have painted it green. There was even a telegram in a green envelope waiting for me at the Shelbourne Hotel. Indeed a very emerald isle!

I was given a large 18th-century bedroom, brought up to date with a built-in radio. I rang the bell and asked the maid if I might have a larger writing table.

"Shure and why not, if ye're after wanting ut?" she replied; and in a few moments she and the valet bumped in with a Sheraton table worth at least \$750.

While waiting for a telephone call, I paged idly through the telephone directory—a most revealing book. This single 611-page volume serves the entire Republic; only one in about every thirty persons has a telephone. Dublin alone occupies more than half of those pages, suggesting that an undue proportion of the country's vitality is centralized around the capital.

I also noticed that while most Irishmen spell their names in the usual way, a few spell them in Gaelic and insist that they be printed in Gaelic. MacCarthy becomes MacCarthaigh, Murphy is O Murchadha, and Fitzpatrick is quite unrecognizable as MacGiolla Phadraig.

I walked to a bank and saw street names both in beautiful Gaelic script and in English. But I did not hear one word of Irish in Dublin, although Irish has been compulsory in the schools for almost forty years and most adults must have some knowledge of it.

My traveler's checks were cashed in a mixed wad of Irish and English pound notes, with some silver, also Irish and English. English money circulates everywhere in Ireland, and large Dublin shops accept United States and Canadian dollars.

Dublin Echoes the Georgian Era

In the weeks that followed, I sank back into the delicious restfulness of Irish life, and the spell that Dublin puts upon her visitors soon vanquished me. The city shares with Edinburgh the distinction of being the most pleasing survival of the 18th century in the British Isles—architecturally, and in its attitude to life.

Dublin is still in touch with the country, as all capitals were two centuries ago. No one would be surprised to see horsemen and women, booted and spurred, taking tea in the city's best hotels, while the hall porter

takes care of a couple of gun dogs. To find anything like Dublin, you would have to return to the age of Johnson and Boswell.

Time is not a tyrant in Ireland; indeed, hurry and hustle only rouse mild amusement. There was never yet a true son of Dublin, rushing to keep an appointment, who was in too great a hurry to stop and enjoy half an hour's streetside conversation.

The incessant spate of talk, all of it delightful and some of it witty, immediately impresses the stranger. Was there ever such a city of talkers? I was reminded of the story about a barrister who went to console the widow of an Irish president. He spoke for an hour without a break and without giving her a chance even for a sigh; and then, coming out, he remarked: "A nice chatty little woman." Every visitor to Dublin has met that barrister.

Irish Kindliness Is Beguiling

Behind this volubility lie a warmth and kindness which are perhaps Ireland's chief attraction. No one can dislike the Irish when they are out to please and beguile. Their uninhibited friendliness is inspired by a sense of the dignity of humankind. Every man, though they may dislike him and all he stands for, is, after all, a man and a brother.

One of my favorite Irish stories is told by the writer Lynn Doyle.

Two men were lying behind a hedge, waiting to shoot their landlord.

"I wonder what's keepin' him," said the first. "He's late this evenin'."

"He's late, shurely," said the second. "I hope nothin' has happened to the poor ould gentleman."

Delightedly I explored the antique shops and secondhand bookstalls of Dublin's quaysides, where the salt air sweeps into the city. The gulls swooped over the river, and white clouds towered high above the Four Courts.

At Trinity College I stood amazed before the beauty of the library staircase and the Long Room to which it ascends. Here you may pull aside a little green curtain and see one of Ireland's greatest treasures, the ancient Book of Kells. It has been called the most beautiful book in the world (pages 304-5).

In the National Museum I saw those exquisite relics of Celtic Christianity: the Cross of Cong, the Tara Brooch, the Ardagh Chalice, and the Bell and Bell Shrine of St. Patrick. These treasured objects take the mind

(Continued on page 301)



REPRODUCED BY DAVID DOUGLAS DUNNEN © NATIONAL GEOGRAPHIC SOCIETY

Colleen in green exemplifies two of Ireland's prides, beautiful women and handsome woolens. Misty towers of Ashford Castle provide the backdrop for a visiting Dublin beauty. This stately manor house of the Guinness family, now a hotel, stands in County Mayo lakeland, which offers fine fishing and hunting.





Rush Hour in Dublin Crowds O'Connell Street, Boulevard of Statues

No other city of the Republic approaches Dublin in size or importance; Ireland's capital is business metropolis, trading port, and holiday center rolled into one. Steeped in history, both tragic and glorious, the city spreads over the broad valley of the dark-hued Liffey. Its name derives from two Gaelic words, *dubh* and *linn*, meaning black pool.

O'Connell Bridge, broader than it is long, spans the Liffey in the heart of the city. Bridge and street honor Daniel O'Connell, the hero of Irish nationalism in the first half of the 19th century. O'Connell in bronze stands atop the monument just beyond the bridge. Two blocks north, lofty Nelson's Pillar supports a figure of England's naval hero.

Traffic keeps left, as in England. Streams of cyclists lend a continental air. Flags of Irish provinces fly from the corners of the bridge; Munster's shows at the left, Ulster's diagonally opposite.

White gloves and luminous arm bands protect a Civic Guard, as the Irish call their police, directing Dublin traffic on a cloudy day. Bronze angel guards the O'Connell Monument.

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Thrill-of-a-lifetime ride on an elephant takes youngsters for a tour of the zoo in Phoenix Park, a vast expanse of lawns, lakes, and gardens that Dubliners affectionately call "our lung."

Famed for its success in breeding and rearing lions, the zoo once shipped cubs to circuses all over Europe.



"Blazing" a cask in the Guinness Brewery, a cooper holds the open-ended barrel over the flames to burn out impurities. He tilts the cask, which will hold 67 gallons, to create a stronger draft. One of the world's largest breweries, the Guinness plant in Dublin produces stout, a malt beverage that ranks among Ireland's best-known exports.

PHOTO COURTESY OF THE GUINNESS BREWERY

back to the Golden Age of Ireland, twelve centuries ago, when Irish missionaries helped Western culture survive Europe's Dark Age.

An archeologist was examining Western Europe's largest collection of gold ornaments worn in the Bronze Age, 2000-500 B.C. He told me that in those remote times Ireland exported gold to the Continent.

"Where did they mine it?" I asked.

"It was alluvial gold," he replied, "found in certain streams in Wicklow. There is still gold in the Wicklow Mountains, but only in small and uncommercial quantities."

Heraldic Museum Tells Who Lived Where

I strolled to Dublin Castle, which, until the establishment of the Free State in 1922, was the seat of the English lords lieutenant and the barracks of the garrison. Government offices occupy it now, but the beautiful throne room and glittering state apartments are kept much as they were in the old days.

Facing these apartments is the Heraldic Museum, housed in the old Office of Arms—now called the Genealogical Office. Here in a colorful room I saw banners, heralds' tabards, and armorial crests, and overheard three matrons from the United States earnestly consulting one of the officials: "Well, grandma always said the MacNamaras came from County Clare. . . . Can you tell us where the MacSweeneys came from?"

The official led his visitors to a genealogical map of medieval Ireland, useful for Irish-Americans who wish to trace their ancestors. At a glance they can spot the counties where certain surnames are found, though of course many Irish families were displaced at the time of the Anglo-Norman invasion.

Thus the O'Byrnes and the O'Tooles came originally from Kildare. The O'Mahoneys hailed from Cork, and the great families of Kerry were the O'Sullivans, the O'Donoghues, the MacCarthys, and the MacGillycuddys.

Upstairs, in a book-lined room, sat a man who might have been a barrister in chambers. He was the assistant to the Chief Herald. He told me that the Genealogical Office deals with thousands of inquiries a year, many from Irish-Americans.

For a fee the office will assign a researcher to answer family inquiries. If basic arms exist for a clan or family, a bearer of that surname may buy a hand-painted illustration of them. I thought the best buy was one of the armorial bookplates, drawn only for persons

entitled to use them, for \$12, or, if very elaborate, \$21.

On sunny mornings during my stay in Dublin, I often took a bus from the Shelbourne Hotel to the famous Phoenix Park. It covers 1,760 acres, nearly five times the size of London's Hyde Park. It is undulating and as green as one expects Ireland to be; and two places in it particularly interested me.

One of them is the zoo (opposite); the other is the presidential residence, formerly the Viceregal Lodge, where Eamon de Valera, born 78 years ago in New York, lives quietly, the head of the state he did so much to create. He meets few people nowadays, and suffers from failing eyesight. The residence is long, low, and white with a pillared portico.

While I was walking down Grafton Street one morning, past the fine shops where women visitors were buying Irish linen and hunting Queen Anne teapots, my eye caught a travel agency list of daily coach trips from Dublin: the Mourne Mountains, Armagh, Carlingford Peninsula, the Hill of Tara, Glendalough. What a great deal of Ireland one may see in comfort from Dublin, returning in time for dinner (map, following pages).

Bus Conductor Entertains Passengers

I thought it would be fun to go to Glendalough; and this I shall always remember as the best 12 shillings' worth in Ireland. (A shilling equals 14 cents.)

While our coach rolled through Dublin, a loud-speaker crackled and we became aware of our conductor, Danny.

In that house, he pointed, Oscar Wilde was born. As we passed through Dún Laoghaire, he showed us the Martello tower which James Joyce described in *Ulysses*. Farther on we saw the cottage where George Bernard Shaw lived as a boy.

Danny's jokes soon had all 34 passengers in fits of laughter, and every laugh encouraged him further. What Irishman can resist an appreciative audience?

"D'ye see the white cabin by the lake?" boomed Danny. "Well, who used to live there but poor ould Pat O'Connor, God rest his soul, dead of the dhrink. Aye, he was a terrible dhrinker and a warnin' to all."

"Well, one day Pat was strollin' by the lake there wid one eye on the shebeen, when who should he meet but the village priest."

"'Good mornin', Pat,' said his Riverence."

(Continued on page 304)





IRELAND



IRELAND

STANDARD MILES
Map by
G. W. Bailey, G. H. Emerson, and J. W. Lohrer
© National Geographic Society 6

'It's a terrible evil life ye lead, rollin' round the countryside and unable to find the key-hole of yer door at night!'

"'Father,' said Pat, 'there's a question I'd be askin' ye. I've been readin' the newspaper and I wonder if ye could tell me what lumbago is.'

"'It's a fearful disease, Pat,' said the priest, 'and it comes to men like yerself who lead evil lives.'

"'Well, father, that's a mighty strange thing,' said Pat, 'for the paper says that the bishop himself is nearly dead of it!'

Then Danny began to sing:

*Kathleen Mavourneen, the grey dawn
is breaking,*

*The horn of the hunter is heard on the
hill...*

Soon all the passengers were singing, too. An old man across the aisle from me, the picture of a retired British colonel, said, "By gad, sir, I haven't heard that song since my dear wife sang it ages ago."

So, completely enslaved by Danny, we arrived at Glendalough, which is, I think,

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Portrait of St. Matthew in the Book of Kells, often described as the world's most beautiful book, demonstrates the painstaking artistry of ninth-century monks in the Monastery of Kells. In bold, printlike handwriting, the 340-page manuscript contains the first four books of the New Testament.

Trinity College Library in Dublin displays the magnificent book in its Long Room. Other treasures among its 900,000 volumes and 3,000 manuscripts include four Shakespeare folios and one of the three known copies of the word-book of Handel's *Messiah*, printed for the original performance in Dublin in 1742.

Early this year the Book of Kells was exhibited at the Royal Academy in London, the first time the cherished four-volume work has been shown outside Ireland.

Trinity coed, cloaked in her undergraduate gown, strolls Front Square. On examination days a bell in the distant campanile rings out across the Irish capital.

ILLUSTRATIONS AND DESIGN COURTESY LIBRARIES OF TRINITY COLLEGE, DUBLIN. NATIONAL GEOGRAPHIC STAFF © 2012







one of the most peaceful places on earth. Two lakes, Upper and Lower, reflect mountains and woodland, and upon the edge of the lower lake stand the remains of little stone churches and other buildings which formed a monastic settlement about thirteen centuries ago. It was a community comparable to those of the Egyptian Thebaid, where Christian monasticism originated. It even possessed an Irish St. Anthony, in St. Kevin, whose legend it is that he pushed his temptress—a lovely girl named Kathleen, of course—into the lake.

Danny took his flock to the wishing stone, while some wandered along the lakeside by themselves and saw their first round tower, and a fine example, too. Most archeologists

now agree that these structures, which stand like giant candlesticks all over Ireland, were used by the monks as belfries, watchtowers, and strongholds to safeguard church treasures during Viking attacks (page 326).

After lunch we spent the afternoon in these perfect surroundings, then took our places in the coach; and, to more songs and stories from Danny, we arrived back in Dublin as the evening crowds were crossing O'Connell Bridge. I never saw a coachload of people contribute with greater pleasure than when the hat went round for Danny!

The time came to tear myself away from the charm of Dublin and take the road round Ireland. I left on a sunny May morning in a



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On a Winter Morn Hunters and Hounds Set Out for the Chase

For centuries, the fields of Ireland have echoed to the horn of the huntsman and the cry of the pack. Horses are a national pride, and Irishmen take to the saddle at an early age. From November to April pink coats color the countryside, as riders on sure-footed mounts follow baying foxhounds.

During Dublin's week-long horse show each August, an average of 30,000 visitors a day flock to the bloodstock sales and jumping events.

Ireland's National Stud in County Kildare, heart of the horse-breeding country, has sired some of racing's finest Thoroughbreds.

hired car. The golden gorse was aflame on the Curragh, where sheep were cropping the emerald grass as they have done since the days of St. Bridget in the sixth century. I saw the empty stands of the racecourse, which every June are filled by those who come from far and near to see the Irish Derby; and soon I was riding through the little town of Kildare.

National Stud Displays Japanese Garden

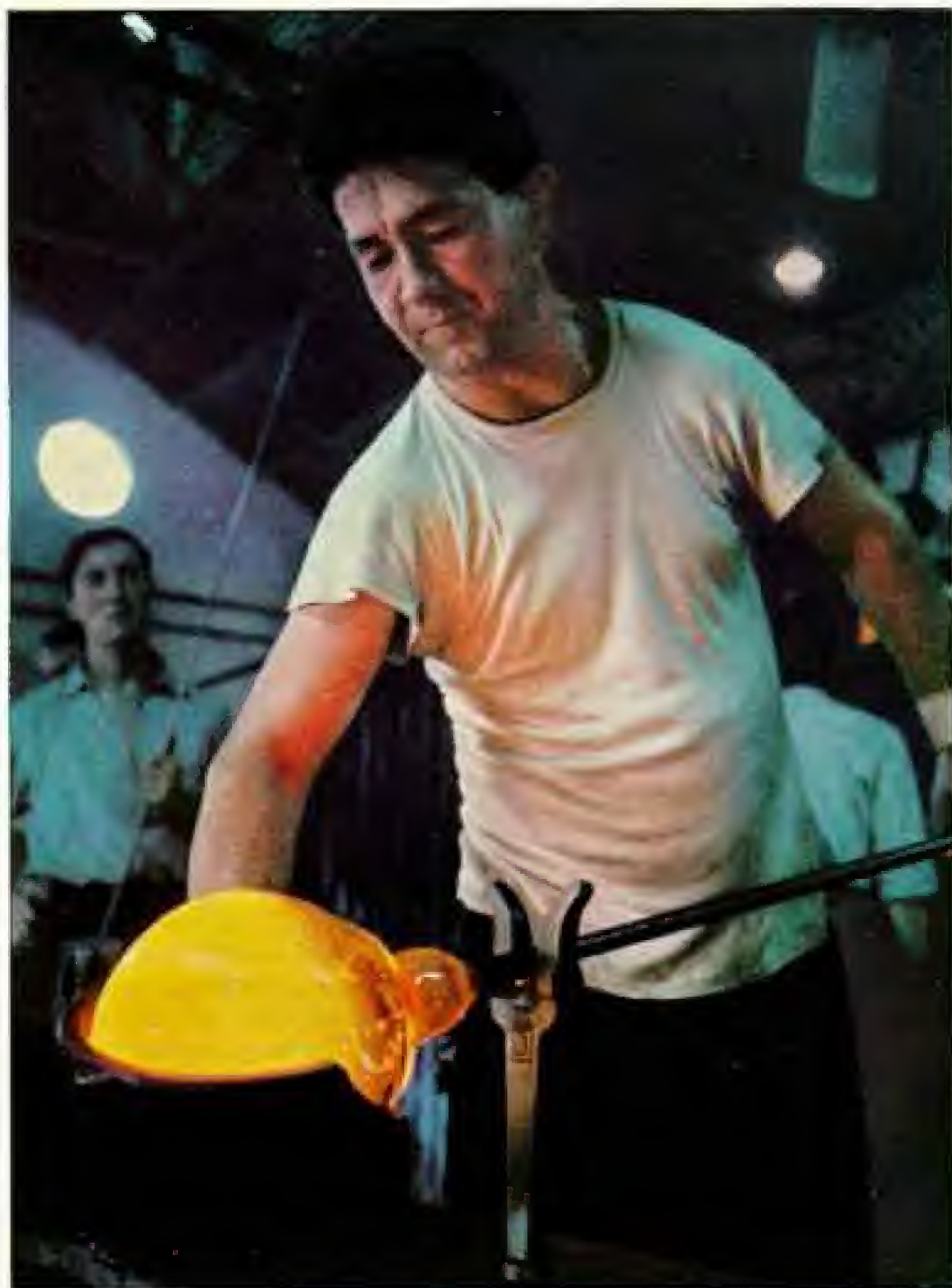
On the outskirts I came to the National Stud, which breeds and trains some of the world's finest race horses.* The manager, Mr. David Hyde, produced the prize stallion for my inspection, a splendid high-spirited bay named Vimy, which cost 105,000 pounds.

His stud fee is 300 guineas—315 pounds. (A pound equals \$2.80.)

Thousands of people come to the National Stud every year to see, not the horses, but a remarkable Japanese garden. It was designed by Lord Wavertree, the founder of the stud, with the help of two gardeners from Japan, Eida and his son Minoru. Thousands of pounds were spent to bring hundreds of dwarf trees and tons of gray rock from Japan.

"The garden took four years to make," said Mr. Hyde. "I have heard that Lord Wavertree, who died in 1933, told the story of his own life in these paths."

*See "Dublin's Historic Horse Show," by Maynard Owen Williams, NATIONAL GEOGRAPHIC, July, 1933.



AN ESTABLISHED TRADE AND AN OCCUPATION © NATIONAL GEOGRAPHIC SOCIETY

Vase takes shape from a fiery blob in Waterford's glass factory. Dazzling cut glass, ranging from eggcups to chandeliers, has carried Waterford's name around the world.

Crippling excise taxes shut down the Waterford Glass Works in 1851 and kept it closed for nearly a century. Revived in 1947, the plant thrives anew.

Gleaming cut crystal of decanter and engraved sports trophy attests the craftsmanship of Waterford artisans. Tools have changed little from those used a hundred years ago, except that cutting wheels now operate by electricity instead of by hand treadles. Skilled cutters apply the decorations—diamond cuts, hobnail cuts, flute cuts—that give Waterford crystal its celebrated elegance. Engravers, "sculptors on glass," still work entirely freehand.

The visitor enters by the Gate of Oblivion and comes to the Cave of Birth. A winding path symbolizes childhood, and a tunnel leads from darkness into light—from Ignorance into the Unfolding of Knowledge—then to the Hill of Learning.

The pilgrim encounters many aspects of life: the narrow and unswerving Path of Austere Living; the Bridge of Matrimony and the Honeymoon Path; the Wishing Well; the Hill of Ambition; the Bridge of the Span of Life; the Hill of Mourning; the Gate of Eternity, which is the way to Paradise.

Power Plant Runs on Peat

I crossed into County Leix, and just outside Port Laoighise (pronounced Port Leesha) I saw what, to me, is typical of Ireland: a man with a donkey, cutting turf.

He stood on a melancholy stretch of bogland, wielding the peat-cutting spade called

a slane. After each thrust he tossed a brick-like wedge of chocolate turf to his young son, who loaded it in a two-wheeled donkey cart. When the cart was full, it was taken some distance away and the turfs were neatly put out in rows to dry in the wind.

The peat cutter told me that he had rented a perch of bog—approximately 30 square yards—from the local council, and had to cut the turf within the year. He said it went down 12 feet but the first few feet were "white turf" and no good for burning. Under this he got the good black stuff.

This was the bog of Clonsast, southern extremity of Ireland's great central Bog of Allen. Not far off, at Portarlinton, I found a modern power station that burns peat to produce electricity.

The manager showed me the huge furnaces and the turbine room, and then we went up to the roof and looked down over



the dreary brown bog where mechanical cutters were at work. Ireland's lack of coal makes it profitable to exploit the bogland, about one-seventh of the country's total area.

"This station was the first in Ireland to use turf," said the manager. "It was opened in 1950. We use about 180,000 tons a year."

I asked for a closer look at the turf-cutting machinery. So we set off on a light electric railway that bumped over the bog. Ramparts of drying turf covered the landscape for miles. We came to a fantastic machine on caterpillar treads, slowly devouring the bog. It digs, macerates, and spreads the turf, cutting it into bricks that dry for several months. The 40-ton machine groaned forward like some prehistoric monster (page 317).

It is difficult to keep pace with the furnaces. I was told, and during the 18-week cutting season the work goes on at night.

Tweed-gray Ruins Crown Cashel

I was driving through County Tipperary when, in a small town that had neither hotel nor restaurant, I was suddenly smitten by hunger. I went to a little general store whose ceiling was festooned with tin buckets for sale and whose shelves were an incredible assortment of food, tobacco, and patent medicine. In an alcove off the shop I was given ham between great wedges of delicious Irish bread and butter.

As I ate, I could see and hear a succession of Mrs. Murphys coming in to buy a bit of cheese, while little Moira and young Paddy stood on tiptoe and shyly asked for a pennyworth of sweets. A donkey cart passed, and somewhere in the silence of the afternoon a convent bell was ringing. I asked the grocer if he would direct me to Cashel.

"Begorr and I will," he said, coming out to the door. "And good luck to ye!"

I crossed the hills and came at last to one—the Rock of Cashel, tall and detached—where I saw mounted against the sky the tweed-gray ruins of Cashel of the Kings. From afar it all looked like one of the last temples of romance.

I climbed the hill and found the ruins of a castle, a cathedral, and a round tower, one of the few in Ireland which retain their stone caps. Mr. Joseph Minogue, the guide at Cashel for more than 30 years, was chasing small boys who had climbed the walls and were flinging pebbles down on tourists.

"Ye young divils!" he shouted, waving his stick. "Wait till I get ye!"

Disregarding a stone which missed him by inches, he continued to tell the visitors about Brian Boru, tenth-century king of Munster, who held Cashel; and of Gerald, Earl of Kildare, who burned down the cathedral in 1495 and gave as his excuse that "he thought the archbishop was in it."

Mr. Minogue led us to Cormac's Chapel, the most exquisite Romanesque church in Ireland. Then he took us up into the tower of the cathedral and pointed to the gap in Devilsbit Mountain, twenty miles to the north (map, page 302). The story goes, said he, that Satan once took a bite, which was the Rock of Cashel.

"But he bit off more than he could carry," laughed Mr. Minogue, "so he spat it out here

PHOTOGRAPH BY NATIONAL GEOGRAPHIC PHOTOGRAPHER



Brasses blare loud and clear as junior bandmen, all intent, entertain at a festival in Cork.

Eight-handed reel performed on the green in Blarney demands footwork fast and fancy. Young dancers wear short cloaks called brats.

The Irish jigs, reels, and hornpipes emphasize neatness and precision. Such intricate routines may have been introduced by itinerant dancing masters in the late 18th century.

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PHOTO BY G. S. G. & S. G. & S. G.





STUDIOS © NATIONAL GEOGRAPHIC SOCIETY

as he flew back to his home—in England!”

I went on to Cork and stayed several days, wallowing in the local charm (it is only five miles from Blarney!) and wondering how I had got along all my life without such blandishments.

After Dublin, Cork is the largest city in the Republic of Ireland; it has a population of some 80,000, and much industry. Spread out busily on both banks of the River Lee are a Ford factory, a Dunlop tire factory, woolen mills, distilleries, breweries, tanneries, and bacon-curing plants.

Money and Men Leave Ireland's Shore

I met many businessmen eager to discuss Ireland's economic problems. All agreed that the country's lack of raw materials makes it an uneconomic unit. All approved the Irish Government's sustained effort to attract foreign capital and establish new industries

to increase employment. Yet many Irishmen have preferred to invest outside of Ireland, especially in Britain.

And not only money has been drained from this green and lovely island. Each year some 40,000 Irish men and women—one in 70 of the Republic's people—go abroad, chiefly to find jobs. Since the potato famines of the 1840's the population has dropped from six and a half million to less than three million; some six million Irishmen have emigrated, to the everlasting enrichment of lands as distant as Australia and the United States.

But at least one executive gave grounds for optimism. He was a member of *Bord Fáilte Éireann*, the Irish Tourist Board, and he said that tourists are Ireland's greatest money-maker. While live cattle exports amount to some 30 million pounds annually, visitors bring in about 35 million pounds, and the amount is rising every year. Britain

To kiss the Blarney Stone, a visitor bends backward and downward, a dizzying 53 feet above green lawn. Tradition says the ritual endows the pilgrim with the gift of blarney.

More than a century ago a poet-priest of Cork wrote:

*There is a stone there,
That whoever kisses,
Oh! he never misses
To grow eloquent.*

With lips pressed against the stone, thousands have paid homage to the talker in Blarney Castle near the town of Cork.

Lofly battlements overhang the keep of venerable Blarney Castle in the wooded Muskerry Hills. Built by Cormac (the Strong) Mac Carthy in 1446, the citadel withstood several sieges. A slot in the catwalk above the top window marks the site of the Blarney Stone.

sends approximately 40 percent of the tourists, and some 70,000 — about 4 percent — come from the United States.

From Cork I went to Blarney, the charming village five miles away, which is noted for its tweeds and woolen socks and, of course, for the Blarney Stone.

The shell of the old castle was hidden by woods as I approached, but soon I saw the ramparts above the trees. After climbing 120 spiral steps to the top, I was rewarded by a superb view over the countryside.

Quite close was the modern Blarney Castle, the residence of the Blarney Stone's owner, Mrs. Jack Hillyard.

No one knows how the Blarney Stone got its reputation. It is said, however, that in the time of Elizabeth I, the lord of Blarney was an expert in pleasant speeches and evasion.

One day the Queen, angered by his excuses, cried, "What? More Blarney!" and so gave a new word to the language. The custom of kissing the stone was unknown before the 18th century (opposite).

The famous block of limestone, about four feet long and a foot wide, is let into the battlements just below foot level. Immediately in front of it lies an open gap, framing a dizzy view of the treetops below. Visitors used to be held over this gap while they edged forward to kiss the stone. Now the gap is guarded by iron bars.

I watched a group of visitors perform this ritual. Their friends held on to their feet and





Jaunting car jogs along a rhododendron-lined lane skirting the storied Lakes of Killarney in pastoral County Kerry. "There is no magic like that of Ireland. There are no skies like Irish skies," wrote native son George Bernard Shaw.

Gap of Dunloe, a narrow, boulder-strewn gorge, offers glimpses of wild and unspoiled beauty at every turn. Here Whitsunday traffic—ponies and pedestrians—wends through the four-mile-long defile, which separates the Purple Mountains and the craggy crowns of Macgillycuddy's Reeks.

knees as they lay on their backs and squirmed outward until lips were close to the stone. Countless visitors would not consider a trip to Ireland complete unless they could say, "I've kissed the Blarney Stone," and even the Irish, who already have their share of fair words, follow the custom.

Some days later, when I took the road to Bantry Bay and Killarney, I rejoiced at the emptiness of the Irish roads.* In these days one finds rare pleasure in driving mile after mile without meeting another car. This is a powerful reason to visit Ireland in May and June, before the summer coach traffic begins.

I was soon running down to Bantry Bay, where the Atlantic sweeps into an estuary 18

*See "I Walked Some Irish Miles," by Dorothea Sheats Jones, NATIONAL GEOGRAPHIC, May, 1951.



miles long and 4 miles wide. The world's largest ships could anchor here in safety.

Then on to Kenmare, where I ate sandwiches in an old hotel whose walls were at least three feet thick. Through the kitchen door I watched three strapping country girls with their sleeves rolled up, bustling about amidst appetizing steams from an old-fashioned coal range. It was like a sketch by Thomas Rowlandson.

I plodded up Windy Gap in second gear and stopped enchanted at Lady's View, with the Lakes of Killarney spread out below, flanked by the 3,000-foot mountains of Macgillycuddy's Reeks. It was a sunny, windy day with plenty of high gold cloud, and Upper Lake was cobalt blue.

While drinking in the beauty, I heard a frantic klaxon of a car, and I thought that someone was nervous. The horn came near-

er, then a shining Cadillac nosed round the corner and stopped. A man got out.

"That sure is a dandy view!" he said.

We laughed and shook hands. He was the American lawyer I had met at breakfast as the boat came up the Liffey.

"You were dead right about a big car on these roads," he laughed. "Still, I've come through unscathed—so far!"

I dipped down to Killarney along lanes embanked by stone walls turned velvet with moss and ferns. Trees arched overhead and sunlight glinted upon hedges of fuchsia and six-foot-high foxgloves.

Here I saw Ireland's unique horse-drawn jaunting cars—often called sidecars—bowling along the roads, the passengers facing outward while the drivers cracked their whips (opposite).

The little town, its shopwindows full of





ASSISTANCE OF BEATLE! BARRY-GILLETTE LANEY, AND NATIONAL GEOGRAPHIC PHOTOGRAPHER GERRY F. SIMON © N.G.S.

Bent under a creel of peat, a girl of Inishere trudges homeward. Musically named Inishmore, Inishmaan, and Inishere — *inish* means island — comprise the Arans, bleak rocks jutting from the sea at the mouth of Galway Bay. Home of 1,700 fisherfolk, the islets have little soil and no peat. A boat from Galway left the fuel on the beach.

Mechanical turf cutter rolls through the Bog of Allen. Slicing peat from a 9-foot-deep trench behind the yellow cab, the machine feeds the sod into a macerator, then pumps it out onto the 60-yard-long spreader arm, which deposits row upon row at regular intervals. Trailing disks slice the sod into bricks. Dried, the turf fuels power stations at nearby Portarlinton and Allenwood.



bog-oak souvenirs, models of jaunting cars, and leprechaun dolls, stood frankly wooing the tourist, its buildings limewashed in pastel shades of blue, pink, and green.

During a week in Killarney, I had only three fine days. The rest was wind and rain. I felt sorry for the tourists who had come by the "Radio Train" from Dublin, expecting to see Ireland's most famous beauty spot at its best. They huddled round the hotel fire as the rain lashed the windows.

But when the sun shone, I went out into a transformed world. I rode through the Gap of Dunloe on a patient pony and heard a man with a bugle awaken the echoes; and I listened to boatmen on the lake tell stories of ghosts and leprechauns.

Sprites Live On in Irish Minds

A woman who hoped to pull the leg of a boatman asked, with a solemn face, "Can you tell me how I could see a leprechaun?" Quick as lightning came the reply: "If ye'll sit on a stone lookin' just as pretty as ye do this minute, shure ye'll see one and no mistake at all, at all!"

At dusk I rowed to the magic isle of Innisfallen in Lower Lake, where an old abbey from the age of the saints stands amid lush vegetation. In the enchanted silence I found it easy to understand why this part of the Emerald Isle is so full of fairy tales.

I shall always remember Pat O'Connor, who runs a taxi in Killarney and also six jaunting cars in the season. A great fisherman, he always takes his rod with him in the car, and if his passenger lingers near a stream or a lough, Pat is in action at once.

He introduced me to his friend John Tarrant, who builds jaunting cars for export

to the United States. Tarrant also refurbishes others for local resale.

"But the jaunting car is vanishing fast," said John. "There are only about a hundred at work in Killarney."

I asked Pat one day if the countryfolk were as superstitious as they used to be.

"Aye," he replied; "it'd take more than the electric light and the wireless to make some who live away out in the west disbelieve in the banshee and suchlike."

"I remember being sent with a friend of mine and a tractor to plough up some land in Kerry. There was a mound on top of a hill with a tree on it, and I flattened it. That night it was black looks I got from everyone."

"'For mercy's sake, whatever have I done?' I asked my friend.

"'Do ye not know,' he said to me, 'that ye've ploughed up the fairies' fort, and they say it's bad luck ye bring with ye this night? Ye'd best pack your traps and get out o' this!' And that's what I did."

I left Killarney in a burst of fine weather and circled the Ring of Kerry, the picturesque coastline of the Iveragh Peninsula, and ad-

Monks of Melleray Converted Barren Moor to Fertile Farm

White-clad priests and brown-robed lay brothers work side by side in the shadow of the Knockmealdown Mountains. Pledged to silence, they lead disciplined, secluded lives. Rising at 2 a.m., they meditate and pray until midday; then toil until dusk in fields and workshops to supply virtually all their needs. Founded in 1833 by Trappists expelled from Brittany, Mount Melleray Abbey opens its door to all strangers. No plea for food or lodging goes unheeded.



mired the cottages that stand above rocky bays whose yellow weed moves in the slow swell of the Atlantic. On the outskirts of a village, I paused to watch a thatcher at work, putting a bright new roof on a cottage. His name was Tom Conway, and he turned on his ladder and spoke to me.

"A hundred years ago," he remarked, "a thatcher was thought more of than . . . than the President of America! Now they're goin' to other jobs, and I'm the only one left for miles."

Pride of Ireland: a Great Airport

The wild, bleak landscape continued until the hills fell away beyond Newcastle West; then the road ran through pleasant green country to the ancient city of Limerick. As Georgian as Dublin, Limerick's modern sector was laid out nearly 200 years ago.

Waters of the Shannon, Ireland's longest river, are diverted above Limerick to supply Ardnacrusha Power Station, the first of Ireland's hydroelectric schemes. It came into operation in 1929. Mr. George E. Russell, Mayor of Limerick, took me to see the im-

pressive headrace, with its salmon run. We inspected the huge generators and drove on to the pride of Ireland, Shannon Airport.

"The Gateway to Europe," as the airport is called, employs 1,800 people round the clock, and its most popular feature is the duty-free shop. This is an inadequate word to describe that soft-carpeted store with its numerous showcases and its air of temptation. And to some, of course, no visit to the airport would be complete without a glass of that drink called Irish coffee. That's a mixture of coffee and Irish whiskey with heavy cream on top, invented for transatlantic passengers as a welcome to Ireland.

The shop is cleverly designed to remove the returning traveler's last dollar, and the salesgirls are chosen for their beautiful Irish eyes and their coaxing voices. They move among the tweeds, the *Rue de la Paix* scent, and the duty-free German cameras like the daughters of kings.

What a contrast it was, in a day or two, to remember this luxury shop, "the Shopwindow of Ireland," as I entered the wild and beautiful west whose luxuries are dreams

ENTRICHORE FROM FREE LARGE PHOTOGRAPHERS BUILT © NATIONAL GEOGRAPHIC SOCIETY





and whose gold lies at the rainbow's end. Galway is the door to this enchanted Ireland, where the conical peaks of the Twelve Bens look down upon the blue loughs and the gray stone lacework in Connemara.

Here is the district that appeals to me more than any other in Ireland. Here is the wild and lonely Ireland of the exiles' dreams, where the white thatched cabins stand by the lakes and above the seashore; where the mountains turn grape blue in the evening,

while the Atlantic whispers up the estuaries and the sun sinks in the direction of America.

Columbus Legend Lingers in Galway

I stood on Galway bridge to watch the big salmon, gill to gill and fresh run from the sea, crowding up the river to Lough Corrib, and I walked the streets of this town that is still faintly foreign—Galway was once full of rich Spanish merchants.

From the lips of a Galway man in St.



Nesting gannets whiten the black heights of Little Skellig, the tip of a drowned mountain off the Kerry coast. Puffins, petrels, razor-bills, and kittiwakes also breed on the rocky island.

Stone-slab staircase on Great Skellig climbs past fog-shrouded pinnacles to a monastery perched high above the Atlantic (page 327). Long abandoned but well preserved, the hermitage dates at least from the ninth century. These visitors to the isle cross Christ's Saddle, a rare stretch of nearly level ground.



Nicholas Church I heard the story, so cherished in Ireland, that Columbus had worshiped here before sailing for the New World. The tradition persists that one of *Santa Maria's* crew was a man from Galway.

Northwest of Galway the road twists beside lough, river, and estuary, and rocky fields tilt against the sky (page 295).



I marveled at the few yards of potatoes growing at steep angles amid loose stone walls that ramble up and down the hills.

In the shops of Connemara all the notices were in Gaelic, and I heard the children speaking Gaelic on their way from school. When I stopped to ask them something, they were too shy to reply or they ran away like deer. And what beautiful children have been born in this harsh land! I admired their clear eyes, their rosy faces, their sturdy legs, their dirty little bare feet.

But where were the bare-legged colleens in their red petticoats whom I remember in Connemara, seated sideways on the backs of donkeys? They are no longer there. The red petticoat, which once gave such a marvelous touch of color to this gray country, has all but gone; I saw only one, drying on a stone wall.

I was shocked by the many deserted and roofless crofts. But the donkey with its panniers of turf is still a feature of the land, as is the woman, young or old, bent beneath a burden of peat (page 316).

Through this beautiful but lonely countryside I traveled to a remarkable hotel, Ashford Castle at Cong. Years ago it was one of the country homes of the famous Guinness family of brewers. The castle is a splendid example of pre-income-tax "millionaire's Gothic."

(Continued on page 326)

Shark hunters of Achill Island net a 4-ton, 25-foot basking shark, so named for its habit of basking at the surface. Each spring Achill fishermen capture hundreds of these sharks for the commercial oil yielded by their livers.

One crewman stands ready to gaff the fish with a homemade spear. The three partners work cautiously, for one blow from the thrashing tail could wreck their skill.

Quarry in tow, the men row home in their curragh—a keelless craft, ribbed in wood, covered with tarred canvas, and propelled by bladeless oars. The frail boat weighs about a thirtieth of the shark, which may produce a thousand pounds of oil.



PHOTOGRAPHS BY NATIONAL GEOGRAPHIC PHOTOGRAPHER ROBERT T. BISHOP © 1951





THE IRELANDER © NATIONAL GEOGRAPHIC SOCIETY



Blossoms so freshly cut they still glisten with dew tempt early-morning shoppers at a Galway street stand. Irishmen justly boast of their lush grass. Their flowers, often grown in gardens won from rock, merit equal praise.

Plump goose clutched in her fingers, boxed chicken at her feet, a farmwife awaits customers in Galway's town market.



BY CAPTIONER BY ROBERT F. STEED © NATIONAL GEOGRAPHIC SOCIETY

Portrait of patience, a donkey munches hay while eyeing the more inviting flowers close by. His owner sells vegetables in the streets of Galway. "Drowsiest, most magical, most Irish, of towns," writer Donn Byrne called Galway. Its architecture reflects the influence of early Spanish merchants who traded here.



Citadels of refuge in times of Viking raids, slender round towers built in the Middle Ages still spike the Irish landscape. Fire and storm have damaged many of the stone spires. This landmark in County Kilkenny has lost its conical cap.

Beehive cells in the Skellig monastery cling to a ridge 600 feet above the sea. Erected without mortar centuries ago, they still defy Atlantic gales. Steeped in an aura of prayer and penance, the settlement has been acclaimed the "most western of Christ's fortresses in the ancient world."

Approaching across a battle-mented bridge, I almost expected a trumpeter to announce my arrival.

The hotel was full of anglers and their wives, and it was the custom to lay out the day's catch of trout and salmon in the hall for everyone to admire. About 7 p.m. we all assembled to see the fish; some of the guests assured us that they could tell by the spots and color of the trout in what part of the lake they had been caught.



Before dinner the guests gathered at a stone fireplace so vast that a roasting ox would have looked rather small in it. In the old days the castle and the estate saw the owner only twice or three times a year, when lords and ladies and occasional royalty came, with their valets and maids, to catch salmon or to shoot game birds.

While at Ashford Castle, I heard that the shark fishing season was in full swing off Achill Island. This is one of the few places in the world where the huge basking sharks, which migrate round Ireland from late March through June, are fished commercially; so off

I sped to Achill. The island—a bleak, mountainous mass thrust out into the Atlantic from the coast of County Mayo—is joined to the mainland by a causeway and bridge. The “king” of Achill is Joe Sweeney, whose general store is the first object of note after you cross the causeway. He also is the leading shark fisherman.

“We catch the sharks for their livers,” he told me. “One liver sometimes gives us half a ton of oil. The largest sharks are 30 feet long. They are harmless, though a blow from a tail can wreck a boat. We catch about 800 a year.”



Whoa, pig! "Hold this animal and, whatever you do, don't let him loose," the owner instructed his helper when they arrived in Castle-Island, County Kerry, on Fair Day. Now the fat porker seeks freedom, but its guardian—outweighed and off balance—refuses to loosen his hold.

Throughout Ireland sellers and buyers meet on Fair Day in a clash of wit and will over the exchange of livestock and produce.

Road marker printed in both Gaelic and English points the way to Killarney.



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As I approached Achill Head, the western extremity of the island, the wind brought an appalling smell from sharks rotting near the headquarters of the shark fishery in the little stone harbor of Keel. This smell was to haunt me for weeks, to lie around in my clothes and to leap out of suitcases when I had forgotten it. (Since then, I have heard, the fishermen have taken pity on visitors by hauling the carcasses back to sea.) But the hotel at Achill Head was delightful. There was salmon trout for breakfast and the menu would not have disgraced the Ritz.

One morning I went down to the smelly harbor and descended a greasy iron ladder into a drifter that mercifully soon put out to the fishing grounds three miles away. There we saw three currachs—the fishermen's boats—falling and rising on the swell. Their crews watched the cork floats of six nets, each 100 feet long, stretching seaward from a cliff.

As we looked, a few sharks hit the nets. A head emerged, a fin, a tail, and already the currachs had reached the nets (pages 322-3). One man in each boat was standing, grasping a pole tipped with a spear made from the leaf of an old truck spring. Soon the sea was red with blood.

The slaughter went on all afternoon. Twice I caught my breath when a curragh was nearly wrecked as a shark's thrashing tail tossed it into the air, but the men righted the boat each time and thought nothing of it.

I was struck by the changes electricity has brought to the once wild and remote island. Today electric poles and new roads cross the peat bogs. Many thatched cottages have been replaced by prim little suburban houses which look about uneasily, as if startled by the gaunt mountains and the sea.

"The majority of the people go away to England or to the States," said John McMonagle, a hotelkeeper. "There are more Achill folk in Cleveland, Ohio, than on the whole island. Still, the standard of life has improved beyond all belief since the last war. Many of those earning good money abroad send some back to the old folks."

Leaving Achill, I said to McMonagle, "I am going away to be decontaminated. This smell of shark could fire a rocket to Mars!"

"What smell?" asked McMonagle, genuinely puzzled. "I can't smell anything."

I went on to Foxford, a small town on the banks of the foaming Moy, and, as I stood on the bridge, I heard the sound of singing. There came into view that most charming of all sights in a Roman Catholic country, a procession of little girls wearing their First Communion dresses.

A nun led them through the gates of a factory beside the river, this I thought odd. Then I found that factory, church, and convent stand side by side. Here is the story.

In 1891 Foxford was one of the most distressed towns in County Mayo. One day a



Clipping sheep, a County Galway farmer shears wool for the tweed factories of Donegal, headquarters of the Irish homespun industry. This animal's fleece weighs about 10 pounds.

Primitive looms thump away in cottages all over County Donegal. Flecked with dyes—some still made with heather, lily root, and lichen—the soft, hand-woven tweeds display all the changing colors of Ireland.

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At rainbow's end, a freshly limed cottage snuggles into the Danegal countryside. Inside, a turf fire in the open hearth casts a cherry glow across the raftered ceiling. By custom, the "west room" — the one closest the fire — is reserved for the old folk.

Sister of Charity, Mother Arsenius, paused on the bridge and contemplated the surrounding poverty. And there she was struck by an idea to provide employment for the townspeople: a woolen mill.

She had no money and no knowledge of wool or weaving. To those who doubted her, she replied only, "Providence *can* provide, Providence *will* provide." And this proved true. In 1932 Mother Arsenius died, leaving behind a thriving concern which has transformed the life of the town, and today the Providence Woollen Manufactory sends its products to many countries.

I was shown the factory, with its up-to-date machinery and with a nun in every department seated at a desk beneath a shrine to Christ or the Virgin Mary. One of the sisters has managed the costing department for 50 years. The mill employs 200 men and women. On my way out I saw traveling rugs being packed for the United States.

Twweed Factory "Forty Miles Long"

Beyond Sligo, in the town of Drumcliff, I went to the Protestant churchyard to visit the grave of Ireland's greatest modern poet, William Butler Yeats. He died in France in 1939, but because of the war, it was not possible to take his remains back to Ireland until 1948.

Visitors are puzzled by his epitaph:

*Cast a cold eye
On life, on death,
Horseman, pass by!*

I drove on for 30 miles, never far from the sea. At last I came to the pleasant town of Donegal. The name suggests the song, "The Hills of Donegal," or a comfortable suit of speckled tweed; for here are the headquarters of the Irish homespun industry.

All over County Donegal you can hear hand looms thumping away in the cottages. Sometimes you see a shaggy mountain man lingering near a crossroad. If you wait, you may see a van drive up and leave the man a weaver's beam, all fitted up for work. With this, he vanishes into the hills and the van continues its journey, leaving a beam here and there all over the countryside.

These mysteries were explained to me in the tweed factory of Magee & Co. Ltd. in Donegal. "In the old days," said Mr. H. L. Temple, the managing director, "the weavers brought tweed to market in donkey carts. It varied in quality, and, of course, the weavers

had no idea of patterns or fashion. Sometimes they dampened the tweed to give it weight. To squeeze three extra yards out of it, they would tie one end to a donkey and the other to a tree and stretch it!

"About fifty years ago my father, who founded the firm, had the idea of organizing the industry without destroying its spare-time cottage character. Now we have a pilot factory that supplies 150 weavers all over County Donegal. We deliver yarn along with instructions for how many threads to the square inch, what pattern, and so forth. We say we run a factory forty miles by thirty!"

Countries vary enormously in their taste for tweed, I learned. None of the recently occupied countries of Europe will buy tweed with a green-gray look about it; it reminds them of German uniforms in World War II. The United States likes black-and-white-flecked Donegal, the original pattern. Sweden favors green, Italy dark brown, and New Zealand prefers colorful varieties. I saw some new blue-and-white patterns specially designed for the exclusive French dress houses.

One morning I went round with the van to deliver beams to weavers. I entered many a bedroom occupied by a primitive hand loom. I had a large bag of hard candy with me, and my memory is of rosy-faced, bare-legged children waving enthusiastically from cottage doors, or running to stand on rocks by the sea, or leaping like goats over the mountainside. But I saw no weavers.

"It's a fine day," explained the driver. "They're out in the bog cutting turf, or else lifting the potatoes. It's bad weather that's weaver's weather!"

St. Patrick's Purgatory Draws Pilgrims

I was now within a few miles of the sensitive Northern Ireland border. The temptation to see this much-talked-of frontier between the Catholic south and Protestant north was too much for me, and I decided to cross the border and see what life was like there. But on the way I made a detour to visit a lough in County Donegal I had always wanted to see—Lough Derg.

I found a lake surrounded by mountains, with a tiny island in its center covered with buildings, including a large Romanesque-style church. Ireland's Catholics revere it as St. Patrick's Purgatory, where, they say, he experienced a vision of the souls for whom he was interceding. For centuries it has been

one of Europe's famous places of penance. Even today, during the pilgrimage season only penitents may set foot on the island.

In the Middle Ages pilgrims spent nine days there in a dark cave and afterward told of strange visions.

An Italian wrote in 1517: "Of those who entered the Cave when I was present, two saw such fearful things that one went out of his mind. . . . Another had seen beautiful women, who had invited him to eat with them, and offered him fruit and food of all sorts. . . . The others saw and felt nothing but great cold, hunger and weakness and came out half-dead the next day."

I was taking photographs of the island, for I did not then know that it is not the thing to do, when three crowded motor coaches drew up to the lakeside. Out stepped pilgrims, the majority women and most of them young. A motorboat sped across from the island, and into it they crowded. More coaches arrived, and a queue formed at the landing stage.

A woman on her second pilgrimage told me that the pilgrims take off their shoes and stockings and remain barefoot for their three days on the island. They eat once a day: dry oatcakes or bread and black tea. They spend their time in prayer and barefoot circuits of many shrines. Every pilgrim spends a night in the Basilica, the modern version of the nine-day incarceration in the cave.

"How do old people manage to endure such an ordeal?" I asked.

"Oh, you'd be surprised," she replied. "Some come away feeling years younger."

"May I ask why you are going there for a second time?"

"You may. I vowed to make the pilgrimage again if my little boy recovered from pneumonia. He did recover, and here I am."

Kiosks Tell Which Country You're In

I drove to Pettigo, to cross into Northern Ireland (map, page 302).

The frontier is a wavering line with many absurdities. Donegal, though the most northerly part of Ireland, is technically in the south. The border, drawn about 40 years ago, encloses six of the nine counties of the province of Ulster: Londonderry, Antrim, Down, Armagh, Tyrone, and Fermanagh. In accordance with the wishes of a local majority, this area remained a part of the United Kingdom when the rest of Ireland achieved its independence in 1922.

I reached a striped pole across the road, a police post, and a customs shed. Officers inspected the car's papers. A customs man opened the trunk. After a few miles I came to the Northern Ireland customs and police, where the same thing happened.

Everything appeared the same over the border except that the police wore the dark-green uniform of the Royal Ulster Constabulary and the postboxes and telephone booths were red instead of green. One sure way to tell on which side of the frontier you happen to be is to look at the telephone kiosks or the postboxes.

Ireland's Loss: the World's Gain

I left Northern Ireland at Clones and when I reached Cavan, I decided to go straight through to Dublin, 67 miles away. But I stopped at Kells to admire the round tower and the Celtic cross, and wonder where in that little town an unknown scribe had sat so long ago at work on the Book of Kells.

Seventeen miles farther on, I came to the Hill of Tara, famous in Irish history, legend, and song as the "high place of kings." There is almost nothing to be seen here now but some mounds on the hill where recent excavations definitely established the site of the royal city. But there is the legend-laden Stone of Destiny on which the kings were crowned. If the stone accepted a new king, it uttered a cry of approval.

Nowhere is the Celtic twilight deeper than on this eminence where Cormac MacAirt, a legendary Irish king, held his court before the breakup of the Roman Empire.

I reached Dublin that afternoon, and my run round Ireland was complete. It is a journey I recommend to any traveler.

What is its greatest attraction?

I would say the Irish themselves. Joyful and melancholy by turn, they exhibit in both moods a warmth one does not forget. In all their attitudes they exhibit the Celts' revolt against the despotism of fact, and their land is like them: melancholy in the mists that sweep across it, laughing and gay in the sunlight that turns the mountains purple.


But beautiful as the land is, it does not support all its children. This fact lies behind all the Irish laughter and all the tears. Only a singularly insensitive traveler could remain unconscious of the tragedy which, to the benefit of other lands, has dispersed an ardent and attractive race about the world.



SCOTTISH PHOTO BY NATIONAL GEOGRAPHIC PHOTOGRAPHY SOCIETY © N.G.S.

Woman of Achill Island, guiding a peat-laden donkey, hikes across a plain where stony outcrops thrust through a thin skin of grass. Achill demands so much of those who would gain a living there that many young islanders seek jobs abroad. Today, Achill men say, more of their people live in Cleveland, Ohio, than at home.





Washington Wilderness, the North Cascades

By EDWARDS PARK

Photographs by KATHLEEN REVIS

National Geographic Staff

THE FOREST SERVICE plane tilted a wing toward a glacier, banked, and slid over a granite peak jutting from enfolding ice. In the clutch of a downdraft the plane sank, then fought for enough speed to skim the next ridge.

As a former fighter pilot, I am no stranger to airplanes and rough flying. Yet here I was, with a matchless view of Washington's North Cascades—"the most magnificent alpine scenery in the United States"—and all I could think of was engine failure.

With fatherly concern I looked at my 14-year-old son Andy. He pressed against a window, absorbed in his first glimpse of wilderness. Up in the copilot's seat NATIONAL GEOGRAPHIC photographer Kathleen Revis fired her Leicas. Ahead of me Dorothy Martin of the Forest Service's Washington, D. C., headquarters studied a large-scale map. To forget my misgivings, I looked over her shoulder.

An extension of California's Sierras, the North Cascades form a 90-mile-wide chaos of crests, escarpments, glaciers, and gorges

Everlasting snows of Glacier Peak overhang Image Lake; the spires of fir trees shimmer as in a mirror. Plurimigan Glacier swirls like a scarf from the neck of the 10,568-foot giant. Sierra Club members feast on a view known only to hikers and horsemen. The scene climaxed the author's pilgrimage to the wilderness.



ASCENDING BY NATIONAL GEOGRAPHIC PHOTOGRAPHER KATHLEEN BEAL WITH PHOTOGRAPHER ERIC

stumbling across the northern half of Washington. From the Canadian border to Stevens Pass, about 80 miles, not one road threads the tangle. In an area nearly the size of New Jersey, man remains an intruder. The map places this rugged heartland within three national forests—Mount Baker on the northwest, Okanogan on the east, and Wenatchee on the south (maps, pages 338 and 339).

The Forest Service supervises recreation, logging, and grazing in its domain, so that these public lands may serve "the greatest good of the greatest number in the long

run."* But it has set aside two areas in the North Cascades where chain saws and road graders may not go. One surrounds 10,568-foot Glacier Peak. The other, the 800,000-acre North Cascade Primitive Area, stretches along the Canadian border; even now it was passing beneath our wings.

Tomorrow we were to join a Forest Service pack trip setting out to cross the mountains from west to east entirely within the North Cascade Primitive Area. Later we would hike through the Glacier Peak Wilderness Area as well. (In Forest Service terminology a primitive area is the same as a wilderness area.)

That evening, after we had landed back at Bellingham, we were briefed by Harold

The Author: Edwards Park was a journalist in Australia and in his native New England before joining NATIONAL GEOGRAPHIC's Editorial Staff six years ago. A World War II fighter pilot in the southwest Pacific, he met his Australian wife in Melbourne. They live near Washington, D.C.

*See "Our Green Treasury, the National Forests," by Nathaniel T. Kenney, NATIONAL GEOGRAPHIC, September, 1956.



BY ALICE W. REEVE © NATIONAL GEOGRAPHIC SOCIETY

C. Chriswell, Supervisor of the Mount Baker National Forest.

"We'll say goodbye to civilization for a week," Chris said. "It won't all be comfortable. You'll get cramped legs and sore seats. But when you've finished, you'll want to do it again."

We headed for the saw-toothed horizon next morning in a cavalcade of cars. We had picked up Paul Ambrose, our cook; Fritz Moisia, Supervisor of the Okanogan Forest; and Alex Smith and Avon Denham of the Forest Service's Region 6.

Trucks stacked with massive Douglas fir logs passed us.

"Houses," Alex explained to me. "Figure 5,000 board feet of

Ice Axes Guard Climbers Against Slips on the Steep Snows of Park Creek Pass

Hidden beyond highways and foothills, the northern crest of the Cascades stands like a fortress, its towers gleaming with glaciers, its moats dark with forests. "The mountains . . . have the roar of torrents and avalanches in their throats," wrote Supreme Court Justice William O. Douglas in his book *Of Men and Mountains*. Yet serenity abides in flowery meadows, unruffled tarns, and whispering firs and spruces.

Indians stood in awe of the high heartland, most homesteaders bypassed it, and miners met defeat in their search for gold. So the land remains almost unknown and untouched. These hikers explore Buckner Mountain.

Ice bridge arches the North Fork of Bridge Creek. Goode Mountain looms in the distance.

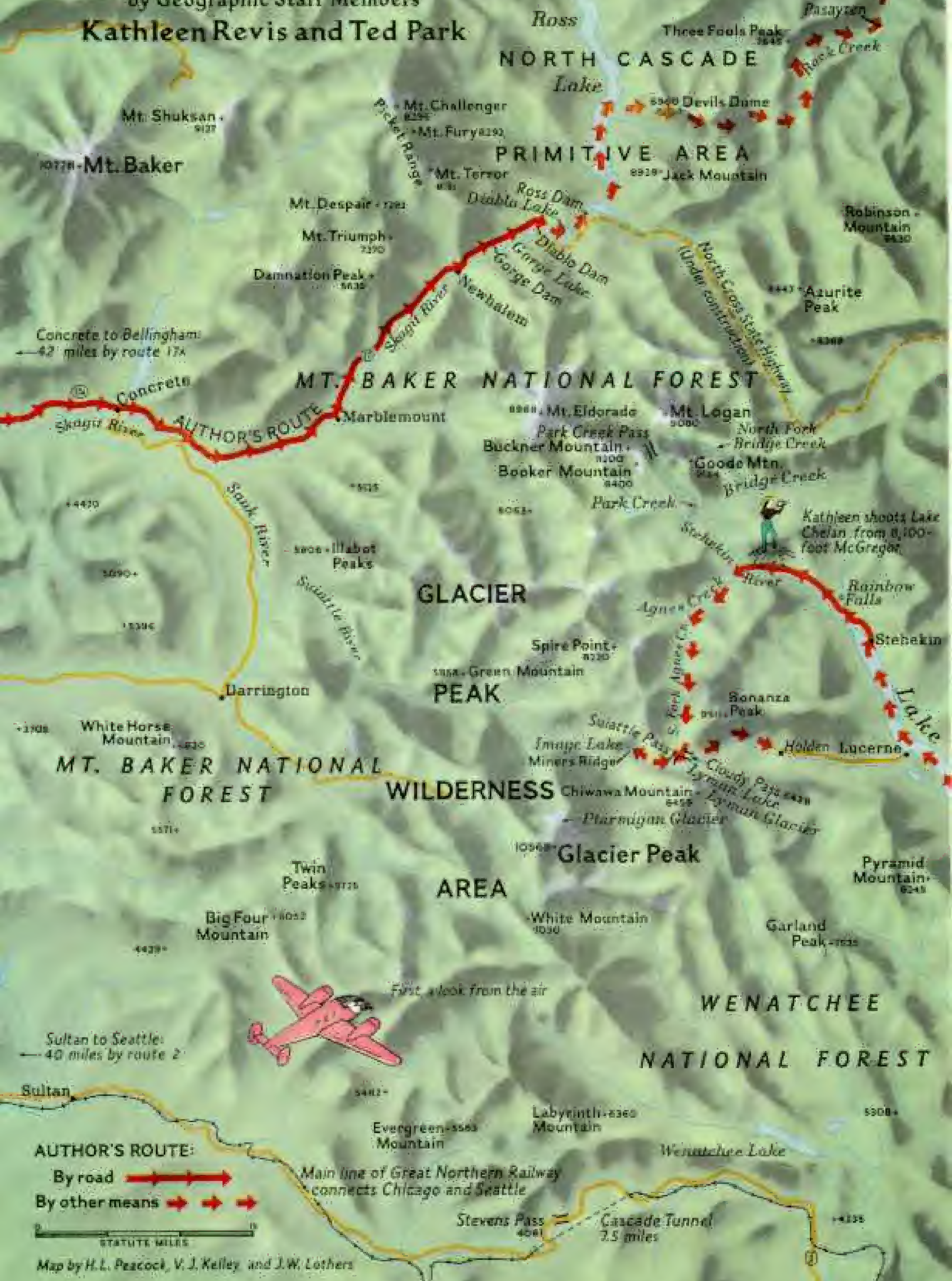


A Wilderness Excursion Through the North Cascades

BRITISH COLUMBIA
WASHINGTON

by Geographic Staff Members

Kathleen Revis and Ted Park



AUTHOR'S ROUTE:
By road
By other means

Map by H. L. Peacock, V. J. Kelley, and J. W. Lothers

Concrete to Bellingham:
— 42 miles by route 174

Sultan to Seattle:
— 40 miles by route 2

Kathleen shoots Lake
Chelan from 8,100-
foot McGregor.

First look from the air

Main line of Great Northern Railway
connects Chicago and Seattle

Cascade Tunnel
2.5 miles



lumber on each truck, and 10,000 board feet to build a house, and you've got a house for every two truckloads."

I had seen logging on the west side of the mountains in the region Chris called "Tar-heelia," because its North Carolina settlers cling to their accent and their Appalachian Mountain lore. I had met some of these softly drawling mountain people and knew how proud they were of their skill at the tricky business of logging on steep slopes — and how dependent on the money it brought.

"A fourth of the gross receipts from national forests," Alex said, "goes to counties where the forests lie. It's like paying rent."

Peaks Seem Higher Than They Are

At the foot of Diablo Dam, our road ended. We drove onto a car lift, were hoisted to the top of the dam, and then shifted our gear to a waiting launch that was to take us farther upstream. Narrowing fast, the dam's reservoir snaked between sheer slopes. I had to crane my neck to make out the peaks. Andy pointed out one monster, heavy with glaciers, through a gap between near summits.



"That mountain must be 15,000 feet high," he reckoned.

Chris laughed. "Jack Mountain. It's about 9,000. The North Cascades fool people because they rise straight up from low valleys. Right here, we're only about 1,000 feet above sea level."

The launch nosed ashore close under 540-foot Ross Dam. Switchbacking up the maintenance road in a Jeep, we transferred to another boat on Ross Lake. The waters of this 20-mile-long reservoir activate the Ross Dam hydroelectric power plant that develops 360,000 kilowatts for Seattle.

Ross Lake serves as a gateway to the wilderness. Mountain trails take off from its shores, and at one trail head we met our pack horses. They had come overland to await the floating corral that we towed (opposite). They stepped daintily aboard the clumsy wooden raft, led by the chief packer, Guy Imus, and his helper, Dinty Bigger.

Westerners come in all sizes; wranglers seem to favor extremes. Dinty, built "like eight feet of cable," towered above Guy, a nugget of a man with a face that cracked when he smiled.

We looked the two over, but not as carefully as we studied the horses. Men we could al-

ways get along with. But horses? On other pack trips, if anyone's horse reared on a cliff's edge, or rolled with his saddle on, it was mine. If any rider got thrown, trod on, or bitten, it was I. So I scanned the remuda suspiciously.

One Roman-nosed gelding spent the raft voyage with ears laid back and rear hoofs cocked. He was marvelously quick to kick or bite any other horse that came within range.

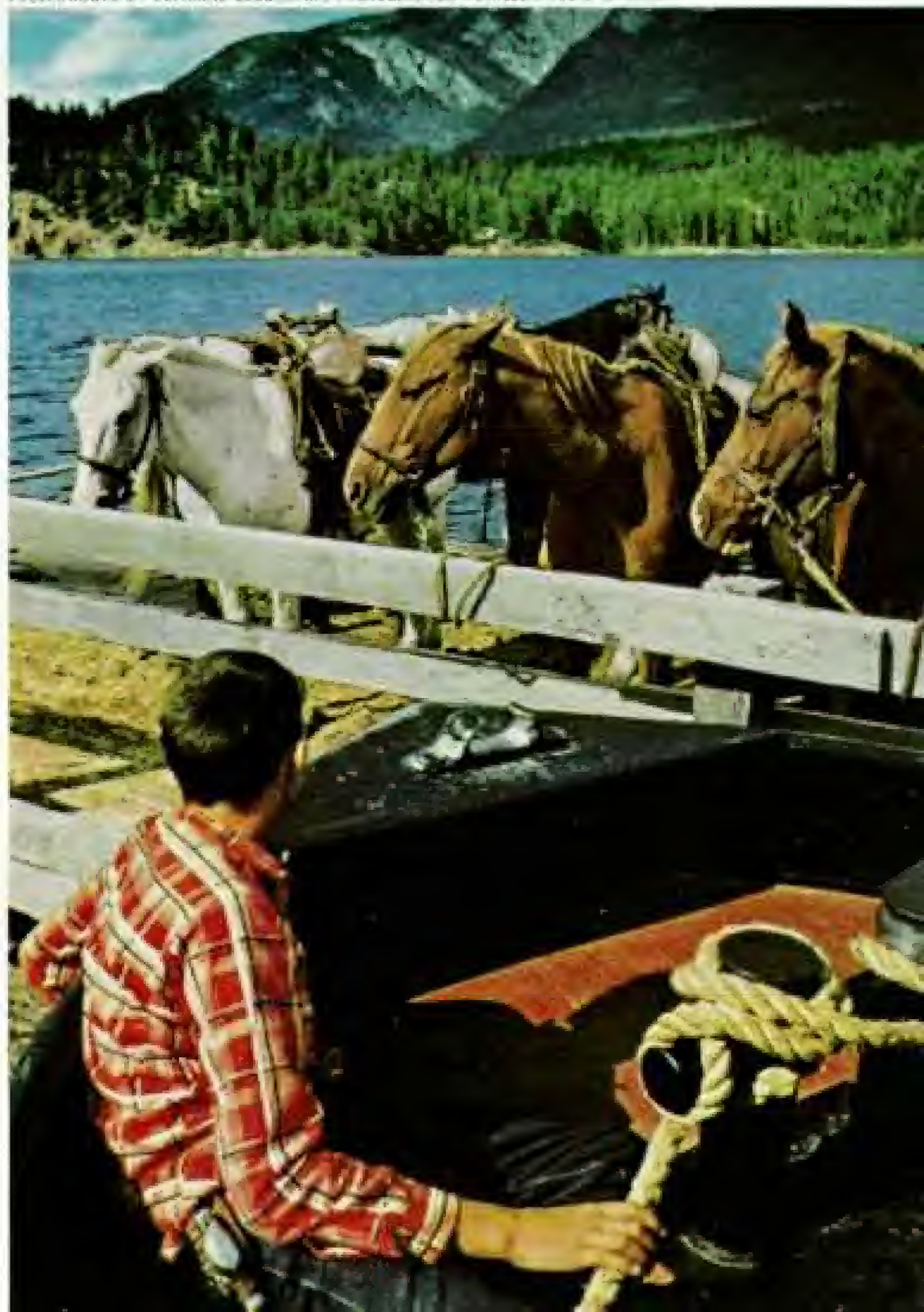
"There's a real mean one, Dad," said Andy. "Bet you a dime you draw him."

Andy won the bet. When we landed at the head of Devils Dome Trail, Guy pointed the gelding out to me.

"That'll be yours. His name is Warrior."

Fatalistically, I saddled up, mounted, and clopped over lakeside stones to the trail's first steep pitch. Warrior moved strongly, surging uphill, trying to pass everyone, snapping at

PHOTOGRAPHS BY NATIONAL GEOGRAPHIC PHOTOGRAPHER RAYLEEN BEVIS © N.G.S.



Long blue ribbon of Ross Lake opens the way to the North Cascade Primitive Area, 800,000 undeveloped acres protected by the United States Forest Service. This reservoir on the Skagit River gives access to wilderness trails. Author's party rides the launch to Devils Dome Trail, hay and a floating corral for the horses (opposite) make up the tow.

Ponies sail to work across Ross Lake. Warrior (center) bullied other horses but liked men (page 348).



whatever rump blocked his progress. When the trail leveled, he broke into a long, comfortable trot. A touch of my heel produced a gallop. I conceded that whether or not the beast finally killed me, at least he could move.

We reached a pass high above the lake and dismounted to make camp. I hitched Warrior to a tree and tentatively scratched the white blaze on his forehead. Ears nicely forward, he rubbed his cheek on my jacket. I stroked his soft nose. He lipped my fingers, without a hint of teeth. So started my first, and presumably only, love affair with a horse.

Guy had an explanation. "That Warrior," he said as we wolfed fried chicken that night, "he's a pet. Used to belong to a 12-year-old girl. He hates horses, but he sure likes people. I figure he thinks he *is* one."

Up early and on the trail, we got our first powerful dose of Cascades magic. Picture our path clinging to the side of a long, high ridge, clumped with alpine fir. We cross a steep-pitched meadow, thick with heather. On one side it rises to a snow-lined crest where scudding clouds seem to stub their toes. On the other, it drops three or four thou-



Illustration © National Geographic Society

sand feet to the valley floor. And then the opposite wall soars upward, giant trees thinning to scrub and berrybushes striding up to high grassy bowls.

Here snow defies the summer sun except to feed a fragile waterfall. Above the cirques twist the glaciers, their tails buried in crumbling shale, their distant heads reaching up to granite cliffs. These culminate in the pure peaks, some needle sharp, some sheathed in ice. Beyond this range is another, and yet another, and beyond them, still more.

"Names tell a lot about these mountains,"



Curiosity ruling out fear, a mountain goat surveys intruders as they cross its domain. The Nation's largest herds survive in the northern Cascades. Retreating to the highest pinnacles in summer, they see men so seldom that they seem to regard them as friends. Washington State permits controlled hunting of goats and other big-game animals in its national forests.

Pool of snow melt refreshes horses on the Devils Dome Trail below Jack Mountain.

"This is country for unhurried travel," writes Justice Douglas. "The wonders are too startling for those in a hurry. One who mounts a ridge needs to sit there for some hours, attentive and relaxed. Then the beauties of this creation are absorbed and become a part of him. . . . There are some secrets . . . that require patience to discover," he adds in *My Wilderness: The Pacific West*.

said Chris. "Take Challenger, Fury, and Terror in the Picket Range. And then there's Triumph, Despair, and Damnation."

We learned quickly that no Cascades ridge lasted long enough to suit us. The first long whaleback ended in a valley, and down we went, horses sashaying as they spread their feet to check the descent, leather creaking, saddlebags flopping.

Into the trees we filed, where silver firs five feet in diameter walled the trail. Hoofs thudded on centuries-old forest duff. Our eyes relaxed from the glare of the mountain



sun. We sniffed the pungency of fresh seedlings and rotting blowdowns—life and death rolled into one aroma. We forded the inevitable stream, numbingly cold, and the horses groaned and blew as they lunged upward to the cool heights of another ridge.

Andy, on small white Sparky, trotted everywhere. He'd hook a leg around his saddle horn whenever we paused.

"That's a bad habit," Avon told him. "Back in Colorado, if a boy did that, his daddy'd slap the horse and leave the kid sitting on air."

False Teeth Bite a Bronco Buster

As shadows lengthened, we topped a rise and switchbacked down to a grassy cirque cupped under a wall of Devils Dome. Our campsite at last. Kathleen Revis spurred ahead on her little cougar-starred gelding, Skookum, to make a picture. And because it had been a long day and the turf looked inviting, we all kicked into a gallop and thundered toward Kathleen, hoofs drumming, sod flying, and Dorothy Martin clutching at her hat.

ILLUSTRATION © NATIONAL GEOGRAPHIC SOCIETY



Around the campfire that evening, talk swung to hard riding. Dinty remembered a rodeo performer friend of his. "He went to the Pendleton Roundup one year and got stuck with a real mean bronc. To be on the safe side, he took his false teeth out and stuck them in his hip pocket. But that cayuse flung him around so bad he was bit somethin' fierce—clear through his Levi's."

Paul produced a reflector oven, and we dined heartily on thick steaks and delicious blueberry muffins. Night darkened the valleys while the high peaks still trapped the sun's last rays. It seemed impossible that on this same planet there were cities and traffic and overpopulation. A black-tailed deer wandered down the slope to investigate us. The horses grazed beside a pool of snow melt. Some wore bells that tinkled eerily as we curled in our sleeping bags and let our muscles loosen and sleep stalk us.

Then it rained.

Fortunately, Andy and I had rigged a fly for shelter, and we promptly crawled under it. The experienced mem-

bers of the group suffered more. "Overconfidence," Avon said.

It rained all the next day. We huddled in our ponchos, lurching along misty ridges and through dripping stands of spruce and fir. "Typical Mount Baker weather," Fritz gloated to Chris. "Wait until we get over the divide into the Okanogan—nice and dry, there. Too dry," he added thoughtfully.

Traversing a soggy meadow, I glanced uphill and saw something move. I reined in Warrior and suddenly realized that I was looking at the back of a bear, pulling berry-bushes toward him with a sweep of his paws. I fumbled for my camera, but Warrior scented the animal and blasted off.

On a high meadow, just under the divide, we rigged our canvas fly. No sooner was it in

US GOVERNMENT NATIONAL GEOGRAPHIC SOCIETY



Aromas Tantalize Campers on Devils Dome

In a land where the eye reaches out to sky-probing summits, where the ear hears rustling wind and rushing water, where the air diffuses the perfume of spicy evergreens, man feels disembodied, as free as a spirit. At the end of the day's journey, however, he turns gratefully to the comforts of camp.

Here author Edwards Park (lower left) sprawls on the ground while blueberry muffins brown in the reflector oven. Dorothy Martin of the United States Forest Service and cook Paul Ambrose sit behind him.

At upper left, Mr. Park's son Andy tests an appetizing muffin hot from the pan.

Sizzling steaks dished up by Mr. Ambrose crowd the plates of Andy Park and Avon Denham of the Forest Service.



Morning's golden light outlines man and beast with radiance. Tethered at a grassy campsite, the horse begins his day with oats offered by wrangler Guy Imus.

Grazing a sky-high range, beef cattle gain as much as three pounds a day. Every other summer some 500 yearlings roam this stony pasture near Bunker Hill. Sharp hoofs tend to cause erosion, so cattle are barred from the area in odd years to give the ground a chance to recover.

place than the clouds rolled away like a curtain, and miles of remote mountains, freshly washed and gleaming in the low sun, took their bow. Below us, wisps of fog canopied valleys and the distant chorus of a hundred freshets drifted up.

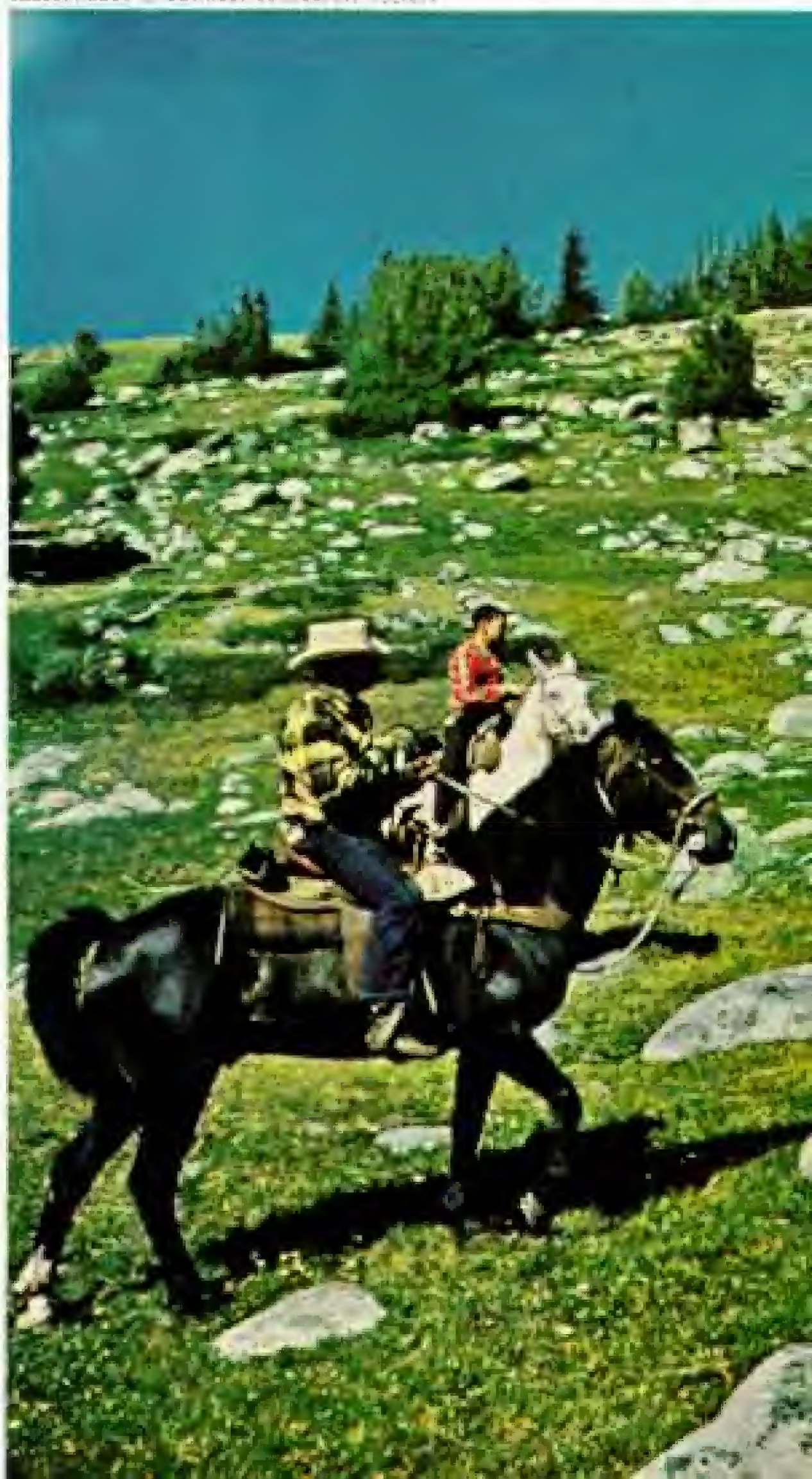
The last thing I expected to meet just then was a Vassar girl. She was Anne Drumbheller, who with her husband Tom and daughter rode out of the clouds, driving a pack horse and searching for 2,500 sheep. Not that they were actually lost.

"It's just that this is big country," Tom explained as he dined with us that evening.

Son of a Washington sheep owner, Tom had gone east to school before taking over the family ranch at Ephrata in the dry country east of the Cascades.

Thanks to a Forest Service permit, Tom

PHOTOGRAPHS BY NATIONAL GEOGRAPHIC SOCIETY



has an allotment of high grazing land inside the primitive area where he can summer his flocks. Guarded by a couple of sheepherders and their dogs, the sheep roam range as open as in the Wild West days.

"If I had to keep my lambs at home during the summer," Tom told me, "they'd probably market at about 80 pounds apiece. After grazing in these mountains, they'll average close to 100 pounds."

"They should be somewhere along Rock Creek," Mrs. Drumheller said. "Anyway, looking for them gives us a chance to get into the hills."

We were headed for Rock Creek valley ourselves, so the Drumhellers rode with us next morning. We climbed the snow-clad hump of the main divide of the North Cascades and there said goodbye to the Mount Baker National Forest.

"From now on, we'll be in the Okanogan

Forest," Chris said. "Fritz is the boss here, so he'll have to answer all your questions."

On one side the ridge rose steeply to the near-vertical cliffs of Three Fools Peak. On the other it dropped straight to a flat valley floor where mighty trees looked like toys. Ahead lay the talus slope of Three Fools, a viciously steep expanse of loose shale.

Shale Nearly Causes Tragedy

We headed into it. Immediately we were in trouble. Sliding scree covered the last vestiges of a path (page 349). The horses felt their way gingerly. I tried not to look down as dislodged rocks tumbled to the distant valley. Alex's horse struck a patch of rolling stones and started to go down. Desperately, Alex reached out for the uphill slope and seemed almost to heave Spooker back on his feet as a shower of scree rattled down the mountain.

Tight-lipped, we drew rein to dismount. I



thought of what Andy's mother would say if she could see us now. But I was the one who needed a guardian. As I swung to the ground, smooth shale slid from under my feet and I shot under Warrior's belly. There was nothing between me and the valley but a half-mile glissade of rock shingle.

Then a powerful jerk on my left arm halted me. I still held the reins, and Warrior stood fast.

Somehow we led the horses across that talus, and then the Drumhellers broke away to search for their sheep. We held to Rock Creek Trail, looking out at the broad valley below. The opposite slope bore raw scars where huge slices of soil, loosened by rain, snow, or ice, had torn loose and thundered down, uprooting acres of ancient trees and carrying them along.

"Slides are common here," Fritz said. "Sometimes they come down so hard that they'll cross the stream at the bottom and

roll part way up the other side. Finally the bare patch reseeds itself. You wouldn't know it, but we're on an old slide right now."

As our trail dropped at the end of the ridge, we passed through a thick stand of lodgepole pine.

"This is typical Okanogan growth," Fritz said. "Lodgepole is usually the first tree to come in over a burned area. We'll see a lot more of it here on the east side – and when we get down lower, we'll run into ponderosa."

Forest Airstrip Serves Smokejumpers

Andy and I spurred ahead and burst from the forest onto a plateau. Halfway along it stood a log building. A flag drooped from a trimmed lodgepole trunk. We kicked into a gallop and drew up at what looked like civilization. "Pasayten Airport," read the sign; and the tiny rustic porch of the cabin bore the label "South Concourse."

"An airstrip for fire-fighting planes,"



FRANZ HUNTER NATIONAL GEOGRAPHIC SOCIETY

Warrior flashes a toothy grin as if begging the author for an apple

Horses gingerly pick their way down a talus slope on Three Fools Peak. Moments earlier one of the ponies tripped on rolling stones. Dismounting, Mr. Park lost his footing and slid beneath Warrior, at the mercy of an avalanche of loose shale rumbling toward the distant valley. Luckily, he held tight to the reins; Warrior, standing his ground, saved him from serious injury.





ALPENGLOW © NATIONAL GEOGRAPHIC SOCIETY

Fire fighter on practice jump parachutes to a landing at forest-rimmed Pasayten airstrip. By pulling lines, he can open or close the white panel to control speed and direction of fall.

Chris said. "Officially, it's closed now. But light planes can still land here if they have to. We want the *GEOGRAPHIC* to see some of our smokejumpers in action, so we're spending the night here."

We wallowed in luxury at Pasayten airport, for the fire guard had ample room for us to sit inside his station and put down one of Paul's finest meals. Warm and comfortable, we relaxed and talked.

Alpenglow Inspires Mountain Man

"Do you remember Harold Engles?" Alex asked.

Chris nodded. "He used to help park cars in the ski areas on Mount Hood. Sometimes he'd pick them up by the rear end and carry them sideways.

"I went into these mountains with him once and he walked the legs off me all day—him with his hundred-pound pack. When we finally started to make camp, he said he wanted to see the alpenglow on Glacier Peak.

"'Only two and a half miles up the mountain,' Harold says, 'you get a fine view of Glacier. Coming?'

"I begged out. Harold went up the slope at a dead run and was back in camp in just an hour, not even breathing hard."

"Wore speakers all the time, too," Alex added. "He'd climb anything in them. But he'd never step on a wildflower, or an insect, even. He'd almost break his neck to keep from walking on an ant."

Tobacco smoke and the scent of coffee filled the cabin. I turned to look out the window behind me. The stars seemed to crackle in the black night.

Fritz was smiling around his cigarette. "There was the man they called 'Iron-pants,'" he mused. "He'd carry a fierce load on his back. One time when he was headed up for a 9,000-foot lookout with a cook stove lashed to his pack frame, someone asked him if it was heavy. 'Not the stove,' he says. 'But the sack of flour in the oven is sure getting me down.'"

A plane snarled over us as morning's sun painted its wings. Dropping deep between the enclosing hills, it made a long pass down the length of the strip, and from its open door two streamers fluttered earthward, to show the strength and direction of ground wind. On the next pass, two figures hurtled from the door. Orange-and-white parachutes exploded above them, and they sank gradually toward us,



bulky in canvas coveralls. As the plane roared away, we could hear the jumpers calling back and forth — voices eerily suspended in mid-air — to avoid floating into each other (opposite).

They somersaulted on the strip, dumped the air from their chutes, and stripped off their gear. The plane circled to drop two packs of fire-fighting equipment by parachute.

Smokejumpers can fight a forest fire within minutes of its discovery. Later, when we visited their base at Intercity Airport, half-way between Winthrop and Twisp, we watched the jumpers going through their physical training period (below) — “happy hour,” they call it. They looked like a football squad of tanned, beefy youngsters as they swung along a horizontal ladder, climbed ropes, jumped, and rolled.

“Most are college kids,” said Francis Luf-

Simulating a treetop landing, a Forest Service smokejumper swings from a rafter. His padded suit absorbs the shock of crashes into branches. From a leg pocket the jumper extracts a 100-foot nylon line and lowers himself to the ground.

Exercise on the “torture rack” keeps smokejumpers in top condition. These young men, mostly college students, maintain a 24-hour alert in summer. Flying only minutes after the alarm sounds, they jump into smoking forests. Fire-fighting equipment floats down behind.





kin, chief instructor. "Funny thing, few of them join the paratroops when they enter the armed service. And few paratroopers join us after they've finished their hitch."

A smokejumper's canvas suit is specially designed for landing in high trees. Padding and heavy webbing protect his body; a strong-meshed mask and football helmet guard his face and head. One young man slung himself from a spike, 20 feet off the floor of the parachute packing hangar, to demonstrate how he would let himself down from a high tree. A long ribbon of nylon tucked in his knee pocket did the trick. He looped it through rings on his suit, took a turn around the rafter, then released his parachute pack and lowered himself to the ground.

From Pusayten airport we veered northeast toward Canada and camped near Bunker Hill, site of one of the great fires still re-fought wherever Cascades foresters gather. In 1945, 97 Army paratroopers and 10 smoke-

jumpers were dropped to fight this battle of Bunker Hill. All supplies came by air.

Nature has begun to reforest the burn. Yet here, as in so many places, the wilderness gives with one hand and takes away with another. We rode through acres of newly dead trees, some standing, some crisscrossed along the ridges.

"Bugs," Alex said. "In this case it's probably the mountain pine beetle."

"Here's a real fire hazard," Avon added. "Lightning strikes here, and whoosh!"

"Why not clear the trees?" Andy asked.

"Primitive area, remember? That means no roads and no logging. This is one of the dangers we're willing to face to keep true wilderness."

Youth Keeps a Lonely Vigil

Atop Bunker Hill we met a Forest Service fire lookout, an 18-year-old high school boy. He had been living in seclusion for a month and was glad to see us. Airdropped lumber for a new lookout structure was stacked near the summit; meanwhile the boy kept house in a tent-roofed shelter. I noticed that his bunk was neatly made, his dishes washed, his clothes hung up.

"Look down the north slope," Andy said. "That must be the Canadian border." Sure enough, a straight swath through the trees close under us marked the international line.

We crossed broad natural pastures and dropped into glens purple with lupine. Avon kept an eye peeled for cattle, for 500 head of



Plying Lake Chelan, the diesel ferry *Lady of the Lake* docks at Twentyfive Mile Creek (upper) to transport Sierra Club members to Stehekin (lower). During a 4½-hour voyage on the fordlike lake, passengers see foothills give way to peaks, some soaring 7,000 feet from water's edge.

At the end of the line, riders pile into an open bus for a dirt-road trip to Rainbow Falls and a campsite beyond. McGregor Mountain (right) walls the canyon (page 353). Distant trees grow on silt deposited by the Stehekin River.

Herefords grazed here. Late in the day we spotted a small bunch, high on a pass, and next day met their owner (page 347).

He was Victor Lesamiz, a Basque, who, like so many of his countrymen, had left the Pyrenees to herd sheep in the American Northwest. He did well, married a Washington girl, and now is the patriarch of a cattle ranch where his son and sons-in-law ride herd with an airplane.

Like Tom Drumheller, Victor holds a Forest Service permit to graze his herd on this high summer range.

"I hope I never see roads built into this area," Mrs. Lesamiz said. "It's as primitive now as it was when I first came here with my husband in 1918."

Chris nodded. "This region is reserved for campers and hikers—and your mob of cattle. Let's see what they're eating these days."

On the cold, windy crest of Bald Mountain I watched Alex and Avon search the short, wild grass until they discovered three stakes

marking a straight line about 100 feet long.

"This is a transect," Alex said. "A few years ago we recorded exactly what plants were growing along this line. Now Avon and I will see if there's any improvement."

They stretched a tape measure along the stakes, then Avon set a small brass ring on the ground precisely at each foot.

Fritz knelt down and scrutinized every growing thing within the one-inch circles.

"Brome . . . fescue . . . mountain timothy," he announced.

Alex looked at his typed record. "Bare soil before," he said.

Paint Can Creates a Blue-nosed Bear

In the bitter evening cold, we trotted down the bare finger of Bald Mountain to a vacant cabin at Spanish Camp, so named because Basque shepherds used to live in the area.

We found the interior streaked with blue paint. A bear had once broken in and chewed open a pressurized can of paint. "I bet he turned himself inside out getting out of here," Avon remarked. "Probably the only blue-nosed bear in the Cascades."

Disclaiming the cabin, we slept outside, listening to the murmur of Spanish Creek, where Andy had caught eight rainbow trout for the next day's breakfast. In the morning we found that snow had kissed the hulking shoulder of Remmel Mountain and dusted our sleeping bags. We stamped our feet to keep warm, and saddled up with stiff fingers.

On the brink of the Stehekin valley, William King begins a tortuous descent from the top of McGregor Mountain. From the rim's loftiest pinnacle to lake bottom, the land drops 9,000 feet. A glacier carved the awesome trough, then dammed one end, giving birth to distant Lake Chelan.

Debris from a demolished observation tower litters the foreground. Operating the station in the 1940's, Ella E. Clark described her lonely life in "Forest Lookout," NATIONAL GEOGRAPHIC, July, 1946.

Mountain-climbing puppy takes a back seat and rides to the summit of McGregor Mountain. Photographer Kathleen Revis climbed 6,000 feet to get these pictures.

WOODCHUCKS © NATIONAL GEOGRAPHIC SOCIETY







CONCEPTS © NATIONAL GEOGRAPHIC SOCIETY

Helicopter takes supplies to copper prospectors on roadless Miners Ridge

But our trail led down and down into warming valleys and dusty ponderosa forests beside Andrews Creek, and we gladly shed our heavy jackets.

Warrior wanted to go, so I took the lead in hopes of seeing the bear whose fresh tracks marked the trail. "Maybe the blue-nosed one," Andy suggested.

Given his head, Warrior galloped briefly, then came down with a case of nerves. Every bush concealed an enemy, every shadow was a ghost. He quivered, snorted, and finally gave up his leadership, gratefully, to Kathleen's Skookum.

Sea Once Covered Cascades

We rode on 15 miles to a dirt road with a pair of Forest Service cars parked beside it. After so long in the wilderness, the sight of autos seemed strangely unfamiliar.

When I said goodbye to Warrior, he tried to unzip my jacket, looking for the apple I usually kept for him. He watched me reproachfully as I climbed into one of the cars. But the last I saw of him, he was happily biting Cricket, and I knew he'd forget me before I forgot him.

We had accomplished our first objective: We had crossed the North Cascades. But always, from our saddles, we had looked south

to the jagged summits that crowd the horizon around Glacier Peak.

Here lay Valhalla, and so far we had only skimmed its outskirts. Now we would plunge straight into it.

Eons of violence shaped the Cascades. Once an ocean trough, the land lifted, sank again in local depressions, and finally hoisted up its folding crust. Granite crests remained after erosion cleaned away older rocks.

Volcanic action heaved up the mighty summits that punctuate the entire range — Lassen and Shasta in California; Three Sisters, Jefferson, and Hood in Oregon; and Adams, Rainier, Glacier Peak, St. Helens, and Baker in Washington.

Then, during the Ice Age, glaciers carved both the granite peaks and the volcanoes. And in the North Cascades hundreds of glaciers remain.

Kathleen and I had read all we could about the Glacier Peak region, but we were scarcely prepared for the gateway to the area — Lake Chelan.

From Chelan, a prosperous apple-orchard town on the east side of the range, this dark-blue ribbon, never more than a mile and a half wide, weaves 50 miles into the heart of the high mountains. Some 1,500 feet deep, the lake lies in a glacial trench. Its bottom, in

places, rests 400 feet below sea level. Its banks soar upward to form the flanks of 8,000-foot mountains (page 355).

No roads link Chelan with the little community of Stehekin at the lake's head, but a diesel ferry, *Lady of the Lake*, makes the round trip every summer day. We boarded her at Twentyfive Mile Creek, the end of the road from Chelan (page 352).

Broom Shoos Bears From Berry Patch

With us, crowding aboard the vessel, came 66 members of the Sierra Club—men, women, and children—bound for a high trip in the Glacier Peak area. The club, founded by John Muir in the 1890's, with about 16,000 members from every corner of the country, is one of the largest organizations in the United States dedicated to preserving wilderness and scenic areas. Kathleen, Andy, and I joined this expedition.

Bucking a headwind, the vessel plowed steadily through choppy water as flanking hills grew to mighty crags. We eased toward shore at Canoe Creek, aiming for a tiny dock where an elderly, straight-backed woman waited for us. Behind her, in a sunny clearing, stood a log cabin.

As we nosed in to the dock, our mate leaned from the gunwale with a couple of letters. She took them, waved, and we veered away.

"Mrs. Pilz lives there all alone," the skipper told me. "Used to shoot bears when they raided her berry patch, but they got too heavy for her to move away. Now she shoos them off with a broom. Quite a girl. We're about the only people she sees."

By the time the boat drew in at Stehekin, the big peaks had enfolded us. We disembarked,

shifted our dunnage to an antique bus, and jolted 12 miles along the roaring Stehekin River to a campsite in tall woods.

With practiced speed the Sierra Club members pitched tents, sorted pack frames, duffel bags, and ice axes, fetched water, and blew up air mattresses. Al Caldwell, the club cook, conjured delicious smells from a set of army vats. When the chow line formed, I had a chance to survey my companions.

Most were ordinary vacationers—elderly couples, students, entire families bent on roughing it. I couldn't tell a business magnate from a schoolteacher, since all wore a variegated uniform of patched pants and weather-beaten parkas.

Test drilling for copper, men live in tents on isolated Miners Ridge. Cloud hovers low in this view from a helicopter.

PHOTOGRAPH BY NATIONAL GEOGRAPHIC PHOTOGRAPHER RANDY PHILLIPS © 1983





But the hard core of dedicated mountaineers stood out.* All shared a look of iron-legged vigor. A noticeable glint came to their eyes when they peered through the hemlocks at the rocky shoulders of McGregor Mountain, overlooking the camp.

"We're all a little insane," one of the climbers confessed to me. "But we like it!"

The mountaineers got their chance to tackle McGregor, and Kathleen, infected with their enthusiasm, joined them (page 355).

Andy went fishing. I shinnied up to a ledge with Al Schmitz, the trip leader, to get the lay of the land.

Far below my perch the Stehekin River winked in the sunlight. Agnes Creek met it near our campsite (map, page 338).

"We'll follow the South Fork of the Agnes," Al said. "The valleys are corridors to the

* "Sierra High Trip," by David R. Brower, *NATIONAL GEOGRAPHIC*, June, 1954, describes a mountain trek by members of the Sierra Club.



PHOTOGRAPH © NATIONAL GEOGRAPHIC SOCIETY

Pink Heather Blooms in the Mists of Cloudy Pass

Loading donkeys with tents, tools, and food, these Forest Service employees bade good-bye to cities early in the summer. Following trails, they built bridges, cleared fallen trees, and diverted streams that threatened to wash away paths. Here they climb through patches of plants called heathers for their resemblance to Scotland's familiar flowers. True heathers do not grow wild in the United States.

Peak lies just about there. When you've crossed Suiattle Pass and seen it from Image Lake, you will never forget it."

Andy and I will always remember with pleasure the trail up Agnes Creek through miles of climax forest — mighty hemlocks, Englemann spruce with cones like orange fingers, Alaskan cedar with drooping branches. We hiked up Agnes Creek with Dr. Edgar Wayburn, a director and vice president of the Sierra Club, and his dark-haired, blue-eyed wife Peggy. She gave Andy a running botany lesson that was worth at least a month in school.

"Hemlocks often seed on decomposing trunks," she told him. "See that group of young ones standing in a straight line? See how their

high country. Usually they end at a ridge. You climb over the pass, and there you are in another watershed, another corridor.

"Agnes corridor leads past that huge white mountain, Bonanza Peak, and ends at two passes. We'll camp across Cloudy Pass. But if the weather holds, we'll make trips across Suiattle Pass and fill our eyes with Glacier Peak."

Pointing to the southwest, where nearer mountains blocked the view, he said, "Glacier

roots come high off the ground? That's where an old tree fell and 'gave birth' to a new family."

"What's that tree?"

"A true fir. You can tell by the way the cones stand up like candles. They don't do that on Douglas fir, which isn't a true fir but a separate species."

We camped among hemlocks and cedars, silver firs, and western white pine. The Agnes churned past our tents, its level rising with



ENCOURAGED BY KATHLEEN PRATT (RIGHT)



each day's snow melt and ebbing when night's frost touched the high slopes of its watershed.

After a strenuous day of bushwhacking through tangled willow and alder on an overhanging mountain flank, I badly needed a bath. I found a secluded water hole, stripped to my shorts, and plunged in. The freezing water struck with such a shock that I seemed to feel searing heat. I emerged gasping, lobster red, and exhilarated.

Industry Threatens the Cascades

Later, as we sat around the glowing campfire, Ed Wayburn talked about the history of this Glacier Peak country.

"Twenty years ago," he said, "the Forest Service planned an area of more than 1,200 square miles where logging and road building would be forbidden. But the service feels heavy pressures from local developers. So this wilderness area is just about half the size originally planned." He looked around at the great hemlocks glinting in the firelight. "There are a lot of spots like this, outside the



Dancers Sing and Sway Beside a Roaring Campfire

Each night Sierra Club members gathered to discuss conservation; song and frolic followed. Confined to their tent by a rainy day, the three young girls at left rehearsed a buck and wing for the evening's entertainment.

Small camper at lower left devotes a drizzly afternoon to reading in her tent.

Plate-sized pancakes greet the author at the head of the chow line. "Men campers," he says, "fell into two groups, the shaven and unshaven. After some misgivings, I entered a beard-growing contest. But the best I could do only gave me the shadowy look of a desperado."

FOREST PEAK, NATIONAL GEOGRAPHIC STATE © N. G. S.

boundaries of the wilderness area, that could become acres of stumps or a hole where a mine had been."

Andy and I stood "bear watch" one night along Agnes Creek. The rest of the party had moved camp across Cloudy Pass, but some supplies had to wait for a second trip. We would guard them from raiding bears.

Few People See True Wilderness

Alone, we roamed the area, exploring dens where snow lingered among wildflowers.

The stillness of the wilderness washed over us. We became attuned to the voices of nature: the twitter of pine siskins darting about the mossy trunk of a fallen hemlock, the plop of a trout, the distant crackle of a dead branch.

I thought back to what Dr. Richard E. McArdle, Chief of the United States Forest Service, had told me about the Glacier Peak Wilderness Area.

"The Forest Service has set aside 14½ million acres for wilderness use," he said. "Various groups have criticized our wilderness



policy. But we assess National Forest land—its timber and other resources against its value as wilderness—before making a decision. At Glacier Peak we've established a wilderness area where it is most valuable as wilderness."

In September, 1960, Dr. McArdle designated the final boundaries of the Glacier Peak Wilderness Area to include 458,505 acres of scenic splendor, maintained by the Department of Agriculture for the benefit of hikers, campers, mountaineers, and other devotees of the rugged life.

Yet ever since the establishment of Mount Rainier National Park in 1899 there has been talk of setting up a Cascades National Park. This might comprise the entire sweep of wild alpine country from Stevens Pass (where U. S. Route 2 crosses the mountains) to the Canadian border, enfolding both the Glacier Peak

region and the North Cascade Primitive Area.

In 1937 when Department of the Interior officials studied the area, the Park Service reported: "Such a Cascades park will outrank in its scenic, recreational, and wildlife values any existing national park and any other possibility for such a park within the United States. . . ."

Whatever the future of this piece of country, Andy and I felt that for the moment it all belonged to us. We tried to behave like old-time mountain men camping along the Yellowstone.

Toward evening we rigged an intricate bear alarm—a series of cans, buckets, and tin plates, poised against a tight-strung rope so they would tumble with a clatter if anything brushed past. While getting supper, we inadvertently knocked over our own booby traps several times. I loaded my camera, and we arranged a lighting system that would give us a picture if we were raided.

Tin Cans Sound an Alarm

In the middle of the night there was a crash I exploded from my sleeping bag, grabbing my camera with one hand and Andy with the other.

"Wha'samatter?"

"The lights! Quick!" I hissed.

"What lights? Oh! The lights. . . Lessee, now, where'd I put that. . . Ah!"

They came on. Not a sign of life. A wandering deer, I surmised, probably half a mile away by this time. "Heck with it," Andy sleepily joked. "Let 'em eat it all."

Ray Courtney and Jack White, the two



Cameras loaded for action, GEOGRAPHIC photographer Revis breakfasts on the run. Although delighting in mountain outings, Miss Revis found her assignment to the rugged Cascades was anything but carefree. She rode a plane that played tag with peaks, bumped in a helicopter through banks of fog, and spent long hours in the saddle. Walking vertical miles, she carried her share of camping equipment, plus many extra pounds of photographic gear.

Impaled on rocky teeth, Lyman Glacier hangs above the lake it feeds. In the past century, the river of ice has lost 3,000 feet in length. The lake takes its milky hue from glacier-ground rock-suspended in the water.





ANTHONY W. BROWN / JOURNAL OF THE NATIONAL GEOGRAPHIC SOCIETY

Antlers in velvet, male deer crowd a rocky perch where they scrambled after sighting geologist Dwight F. Crowder. By late August the furry covering will have been rubbed away in anticipation of the mating season's fierce battles. In winter the animals forsake the heights for gentler temperatures in the valleys.



Alpine buttercup (left) and bleeding heart brighten many wilderness paths.



packers, arrived next morning with horses for us. We rode through forest so lofty and magnificent that it was like a nave of a great cathedral. Then we mounted high meadows, soggy with snow melt, and, looking behind, saw the entire Agnes corridor stretching straightaway to distant summits.

We wound up Cloudy Pass and, magically, a vast white monster of a mountain rose from the Suiatele watershed to greet us, snow-covered and agleam in the westering sun.

"Glacier Peak!" Ray called from the head of the pack string. "Wait until you see it from Image Lake!"

We crossed smooth snow on Cloudy Pass and dropped into a huge cirque ringed with peaks. Steep meadows swept down to forest, and at the bottom of the bowl Lyman Lake spread below the seamed face of Lyman Glacier (page 363).

No sooner had we settled in camp than the weather turned rainy and foggy, and I felt growing doubts as to whether we would ever reach Image Lake.

"We want only half the hikers to visit Image at a time," Al Schmitz said. There would be little left of its delicate plant life, he pointed out, if we tramped over it in a body.

Kathleen made the trip and came back aglow. "Wait until you see..." she began enthusiastically.

"I know," I told her. "I'm waiting."

Marmots Whistle at Visitors

Meanwhile, our campsite north of Lyman Lake became a second home. We climbed through mists to tiny lawn-like alcoves hanging high on massive mountain shoulders. Mountain goats had been there just before us; their tracks were clearly visible. Below, along the high slopes of the meadowland, fat marmots whistled at us from their stony burrows.

At long last we awoke to a clear sky, and someone shouted, "Image Lake weather!"

Andy and I set off with a few others, across Suiatele Pass to Miners Ridge.

As its name implies, Miners Ridge has undergone 60 years of sporadic prospecting. Now a little tent village has mushroomed on its slope, where



ILLUSTRATION © NATIONAL GEOGRAPHIC SOCIETY

Walking into wonder, hikers glimpse the majesty of Glacier Peak. Each packs about 25 pounds of food and equipment for a night at Image Lake. Trip leaders considered the lake's surrounding plant life so "fragile" that the 60 campers visited the area in two groups.



Glacier Peak, queen of the Cascades, bathes in the gold of sunrise; her reflected glow

bearded young men of the Bear Creek Mining Company live, their needs supplied by helicopter (pages 356 and 357).

Mr. C. H. Burgess, President of the company—a subsidiary of Kennecott Copper—told me that if enough copper was found to warrant production, an access road would eventually have to be built along the Suiattle River. And a mining town.

I had visited one such place, Holden, on the outskirts of this wilderness. Today it is a ghost town. Television antennas still sprout from the battered roofs of its silent cottages. Stop signs punctuate its empty streets. Six hundred people lived in Holden, employed

by the Howe Sound Mining Company. Then, in 1957, the copper played out, everyone moved away, and the town died.

Last fall the mining company made a gift of Holden to the Lutheran Bible Institute of Seattle, which plans to make a national youth camp out of it. Walking through the town, Andy and I explored the hut that the Holden Boy Scout Troop had barely finished before they left. In the brand-new recreation building we found bowling alleys complete with pins and balls. We even bowled a game.

We met teen-age Janet Adams sitting on the post office steps. She said she had lived here all her first 15 years.



ARRANGED BY NATIONAL GEOGRAPHIC PHOTOGRAPHER KEITHLEIGH BOYD © N.G.P.

awakens the dark waters of Image Lake

"I loved it here," she said. "We live down in Cashmere, southwest of Chelan, now. But every so often I take the *Lady of the Lake* up to Lucerne and then ride the old bus back to Holden, just to see it again."

Thinking about Janet and her ghost town, I wondered aloud to Andy if the settlement that might appear one day on Miners Ridge could look forward to the same uncertain future—doomed even before it was built to live only as long as its ore deposits. Chances are, we agreed, it would come and go like Holden, for no mine lasts forever.

I learned that if a mining company holds patented claims in a protected area, the

Forest Service cannot legally deny it a way to get in to them.

We said goodbye to the prospectors and switchbacked high up on Miners Ridge. The trail clung to the steep side of this sun-washed whaleback, then mounted a gap in the smooth summit and swung down the other side.

Through soft grass and pink heather patched with snow we had descended into a natural amphitheater. At its bottom, fringed with evergreens, spread a sparkling sheet of water, Image Lake. The amphitheater's open side faced the valley, an abrupt drop to the foaming Suiattle, 3,300 feet below.

With a gasp we stopped in our tracks. The view had an impact that staggered us. Rising directly across the valley in all her majesty, the queen of the Cascades, Glacier Peak, seemed to fill the sky. She towered breath-takingly above her underlying peaks, wearing waterfalls like necklaces and robes of virgin snow and ice like ermines, facing us haughtily as if we were scarcely worthy of presentation at her court (pages 334-5).

That night we sat in an awed little group, crowded together for warmth, and watched the sinking sun paint this monarch with gold, scarlet, and finally purple. I glanced at Andy sitting soberly beside me, and for one of those moments that come too seldom to a father I saw a boy

already part man, his clothes too small, his muscles hard as rocks, and his mind filled and refreshed with wonders he had never known existed.

Next morning before sunrise we made our way around Image Lake to watch the peak's brightening reflection in the dawn-still water. The first gleam of sunlight put a flush on the queen's face—and the lake caught fire. Then a trout jumped, a morning breeze ruffled the water, and the show was over (above).

Yet never really over. For as long as the North Cascades stand, Glacier Peak and Image Lake will act out their sunrise drama before other audiences lucky enough to see it.

We Drove Panama's Darién Gap

ARTICLE AND PHOTOGRAPHS BY KIP ROSS, Foreign Editorial Staff

IT WAS a modest concrete marker, the kind you might see in any town square. One side said "Panama," the other "Colombia." To the fourteen of us in that haze-filled jungle clearing, however, it was a milepost between worlds.

After a hundred days' battle by Jeep and Land-Rover through one of the world's most punishing jungles, we had driven the first vehicles across Panama's Darién Gap—that last defiant stretch of wilderness separating

the continents of North and South America.

Gaunt, unshaven men in mud-caked shoes and tattered khakis leaped and howled about the monument like an Indian war party. Horns blared and caps sailed into the air. The dream of an unbroken 19,000-mile highway from Circle, Alaska, to Puerto Montt, Chile, had been brought a long, hard step closer to fulfillment.

That conquest began, one might say, when

(Continued on page 373)

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Map by V. J. Kelley and H. L. Peacock



Ship halts cars at Miraflores Locks near the Pacific end of the Panama Canal. Five miles away, the Pan American Highway leaps the Canal by ferry, pending completion of a bridge in 1962. Until then, this span offers the only all-land route to Panama City. The view looks northwest.

Man makes Panama a crossroads. Having linked the oceans, he seeks to join continents with a road through the jungle-locked Darién Gap, first crossed in motor vehicles by the author's party.



UNITED PRESS INTERNATIONAL

Two flags fly side by side in recognition of Panama's titular sovereignty over the U.S.-controlled Canal Zone. Several thousand Panamanians and U.S. citizens attended the flag-raising ceremony last September 21 in Shaler Triangle, which borders Panama City. The twin poles stand before the Tivoli, a hotel rushed to completion for President Theodore Roosevelt's visit in 1906. T. R. took pride in the fact that his administration got the big ditch under way.

Panama City, originally founded by conquistadors four centuries ago, transhipped Peru's treasures to Spain and suffered pirate attacks. Completion of the Pan American Highway will bring motorists of two continents to its streets.

Palms fringe the tile roofs of Bella Vista; this new residential district faces the commercial waterfront across an arm of the Gulf of Panamá. Public buses, which Panamanians call *chivas*—nanny goats—rumble to a stop on Via España.

ENTRANCES BY PHILIP SMITH, REPRODUCED BY THE NEW YORK PUBLIC LIBRARY







the automobile came of age. Since the first Pan American Highway Congress met in Buenos Aires in 1925, the nations of the Americas have devoted their vision, their engineering skill, and their money to the completion of a great hemispheric road system.

Statesmen and farsighted citizens in all of these countries have recognized the need for an unbroken land link between the continents—a tangible avenue of understanding, of commerce, and of mutual defense. To the United States it means an opportunity to strengthen its traditional bonds of friendship with Latin American neighbors.

Darién a Barrier for Centuries

Today the Pan American Highway winds north to south through most of the Western Hemisphere (maps, page 369). Some stretches in Costa Rica and western Panama are still difficult or impassable for ordinary automobiles, especially in the rainy season. But as far south as Chepo, Panama, the road exists in one form or another.

Then the motorist or armchair traveler tracing the adventurous highway south on a map finds that it disappears entirely. At Chepo, just beyond the Panama Canal, it breaks off abruptly, to resume 596 miles away, in Colombia. Why the gap?

Since the days of the conquistadors this eastern section of the Isthmus of Panama has been known as the Darién, an Indian term for the region around the present Gulf of Urabá. Packed with incredibly dense vegetation, threaded with rivers and streams, and once thought to harbor head-hunting Indians as well as poisonous snakes, the so-called Darién Gap has long frustrated every attempt to travel the full length of the Pan American Highway. Machines and men, even those on horseback, have had to ferry by sea around this wilderness barrier.

When I learned in January of last year that an expedition sponsored by the Pan American Highway Congress was planned to make the first vehicular crossing of this forbidding region, I jumped at the chance to accompany it as a representative of the National Geographic Society.

The two cars of the Trans-Darién Expedition had already started the trip when I arrived in Panama City. One was a Jeep pickup truck, the other a British Land-Rover. They had gotten as far as the Ipeti River, 75 air miles to the east.

But I quickly joined forces with a member of the expedition—Otis Imboden, an American from Memphis, Tennessee (page 377). Serving as historian and general jungle expert for the Congress's Darién Subcommittee, he had returned to the city for supplies.

As soon as he had stocked up, we set out to catch up with the others. At the last minute we were joined by Miss Ilse Abshagen, a correspondent for European newspapers.

"The Darién Gap officially begins at Chepo, 35 air miles east of Panama City," Otis explained. "From there to the Colombian border it's only about 150 air miles, but much farther when you have to fight your way through the jungle. Men on foot have blazed a trail. Now we have to prove their choice by car. Catching up by land would be a slow business," he added. "We'll take to the rivers, and overtake the party in three days."

Outboard Powers Primitive Canoe

So my motor trip through the Darién started by water. From a concrete landing stage near Chepo on the Mamoni River, we loaded our ruthlessly reduced gear into a native piragua, a needlelike 35-foot canoe hollowed from a log. Wiry Eugenio Ávila, our combination helmsman and cook, spun the powerful outboard motor, and we were off into the Darién. Before us, the green walls of the jungle hedged in the river.

The Darién is one of the world's rainiest regions, and we had timed our trip for the dry season; only then could the cars go through. But the dry season made water travel more difficult. We soon turned into the Bayano, one of the larger rivers. Its dry banks jeered at us, grinning through mustaches of driftwood left by previous high water. We had to get out and shove. The drought had shoaled every rapid to a rattle.

The Bayano wound through an Indian reservation, and canoes carrying colorfully

Shower Drenches the Trans-Darién Expedition in El Real, a Town on Stilts

Traveling in dry months, the party gets a sample of the approaching rainy season that causes El Real folk to build homes high. With only 71 miles to go, the expedition's Jeep pauses for an oil check, its headlights reflecting in a puddle.

dressed Cuna Indians plied between riverbank villages.

The Cunas of the Darién are part of the same Chibchan tribe as the San Blas Indians, many of whom now live on islands off the Caribbean coast of Panama. Still fiercely independent, the Cunas build villages of windowless *chozas*, or thatched huts. Few marry outside the village; the result is an inbred race—short, large-headed, and thick-necked—with the world's highest incidence of albinos.

Cuna Chief Forbids Cameras

On our second day upstream we stopped at a Cuna village to pay our respects to the *cacique*, or chief. He wore an old black felt hat festooned with chicken and turkey feathers, an electric-blue shirt, and a pair of baggy pants. He greeted us amicably enough, but his face turned stern when he saw that I had a camera.

"We don't like those machines," he declared in broken Spanish. "You may visit the village, but taking pictures is not allowed!"

Regrettably, I stowed my Leica. Cuna women, wearing gold rings in noses and ears and gaudy patchwork blouses, are the most colorful throughout the Darién. But they all dived for doorways at sight of us.

Alternately cruising and dragging the *pi-ragua* through shallows, we basked in Panama's brilliant tropical sunshine. High overhead, monkeys swung from tree to tree. Once Otis pointed out a gray-green sloth that hung like a bundle of dead leaves. Banana-billed toucans and brilliant parrots flitted among the branches.

Beyond the riverbanks, the jungle broods by day. But, like a gigantic black panther, it wakes up screaming. Bull-throated howler monkeys challenge from upper branches until the forest booms. Tropical cousins of our whippoorwills wail mournfully. Crickets, hundreds of them, shrill in rising crescendo. Just when eardrums nearly split, tiny tree frogs set the air vibrating like ten thousand electric hammers in high staccato. Suddenly, inexplicably, dead silence. Approaching dawn has put the jungle to rest.

Chocó Indian bathes daughter in a sparkling stream, their tub in the Darién

PHOTOGRAPHS BY NATIONAL GEOGRAPHIC SOCIETY



As we slipped through one quiet reach of the Bayano, I saw a set of eyes and nostrils near the bank—an alligator-like cayman. Standing up, I balanced carefully to take a picture. Just then Eugenio, the steersman, swerved to avoid a sunken rock. I seemed to hang for hours spread-eagled in mid-air before I hit the water, holding the precious camera high. Alas, my relief at feeling the bottom under my feet was short lived.

"*Lagarto!*" yelled the boatman. Alligator! Dignity forgotten, I beat all records, high-stepping for the bank. Howls of laughter followed me. The boatman had called me alligator! Dripping and somewhat less than heroic, I clambered back into the piragua. From then on I was known to Eugenio as *Lagarto*.

The "three-day" trip up the shallow river had taken us five when we glimpsed the lanterns of the expedition, camped along the bank.

There were brief introductions. I met Richard Bevir, of Toronto, Canada, and Terence Whitfield, of Sydney, Australia—the crew of the Land-Rover. These two had driven all the way from Toronto, timing their arrival in Panama to join the breakthrough caravan. Ultimately

Almost on its nose, the expedition's Land-Rover brakes on a precipitous path hacked out of the jungle. Careless steering can cause the front wheels to cramp in mud and topple the car end over end. Man on the trail shouts advice to the driver.

The expedition conquered some 65° slopes. "Sometimes we just shut our eyes and hoped for the best," says author Ross, who made this picture from the opposite face of the ravine.

68 SEPTEMBER © NATIONAL GEOGRAPHIC SOCIETY



they became the first to drive a car over the Pan American Highway from North to South America.

Then there was Amado Araúz, the expedition's cartographer, and his wife Dr. Reina Torres de Araúz, one of Panama's distinguished anthropologists. She had joined the party to study Indians. And finally there was our crew of nine Panamanian woodsmen.

The Colombian border lay 112 air miles away, through some of the world's thickest jungle. No one knew how far our tortuous

route would take us, following the path cut by advance exploration teams. Four weeks of our precious share of the dry season had already passed; we could count on only 60 days more. There was no time to lose.

According to a well-proved system, our woodsmen ranged ahead, chopping and slashing a way for the cars. Where ravines sliced across the path, axes felled trees for makeshift bridges. Behind the advance crew, outriders on the front fenders kept an eye out for small stumps or hidden holes in the leaf-



strewn floor of the jungle. Sharp spikes could slash a tire; camouflaged holes could swallow a wheel and break a spring or axle. The out-riders clung with one hand, signaling with the other for a stop.

Log Bridge Collapses Under Jeep

Both cars inched along in four-wheel drive, sometimes dropping to "low-low" where the going got especially tough.

The Jeep pickup truck led, its greater width and heavier load of supplies testing

the way. Otis and Amado spelled each other at wheel and fender. Dick Bevir and Terry Whitfield took turns driving the Land-Rover.

The very first day, I got a sharp lesson in the hazards of jungle travel—and the need to be alert. Our scouts had built a skeleton bridge across a ravine by lashing pairs of palm logs together in a double track. From the opposite bank, Otis guided the Jeep — with Amado at the wheel and Reina clinging to the piled supplies on top—onto the makeshift span. Behind, I directed the Land-



PHOTOGRAPHS BY DICK BEVIR, TERRY WHITFIELD AND OTIS IMBODEN

Paya River shallows slow a piragua carrying the expedition's jungle expert, Otis Imboden.

Dugout flotilla holds leaf-shaded plantains and bananas. Chocó Indians have paddled the cargo down the Tuira River to put it aboard a coastal freighter. Many buy outboard motors with their earnings. Darién travelers have reported the unlikely sight of all-but-naked Chocós stopping on a gravel bar to make carburetor repairs.



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Taut winch cables and tense muscles inch the Land-Rover up a ridge

Rover to follow cautiously. Slowly the heavily laden Jeep inched its way along the logs.

C-r-e-a-k! A log sagged on the right. The other, unable to support the car, gave way.

Crack! Both logs snapped in quick succession. Reina, using the swaying supplies as a springboard, leaped clear just as the Jeep toppled.

"Cut the switch!" Otis shouted to Amado in the cab. Spilled gasoline could turn the Jeep into a funeral pyre.

Crash! Full on its right side, the car hit the bottom of the ditch. Pots, pans, gasoline drums, groceries, hammocks—all our gear lay strewn in the muck (opposite).

Reina scrambled somewhat shakily from her landing place in the creek bed and helped her husband climb out of the Jeep. Amado

stood up and inspected himself. Nothing broken. "Switch off," he grinned at Otis.

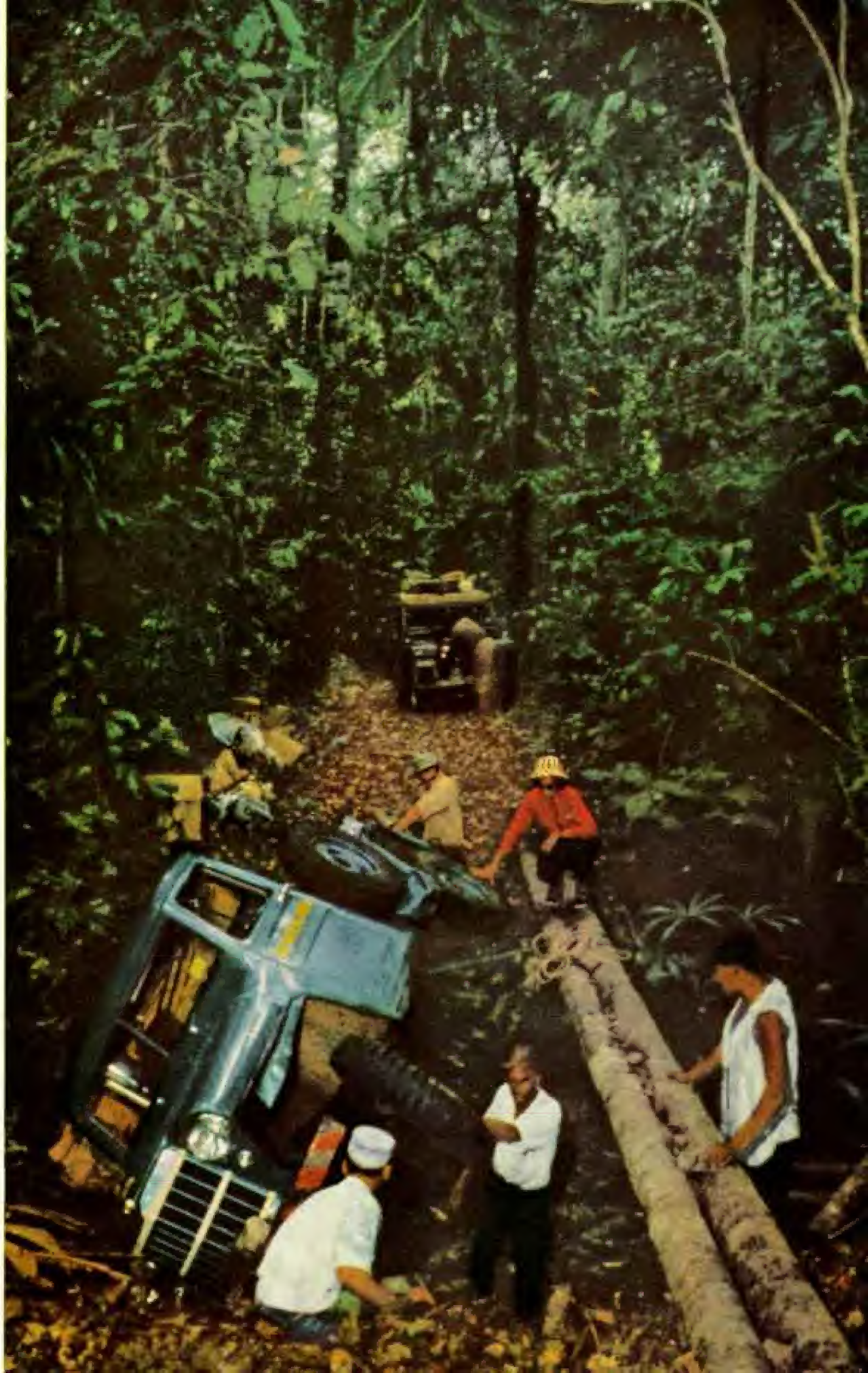
Tension gave way to relief. "That's the fastest ten feet we've made so far," Terry said dryly.

Soon a steel cable-and-pulley rig was hitched to a tree close by. The Land-Rover, using the winch drum on its front, took up the slack. The Jeep groaned and came upright, with no more apparent harm than crushed fenders. Using its own winch, the Jeep then hauled itself out of the ravine. It was ready to push on.

Days stretched into a week, then two, as we ground along, each yard of jungle presenting problems: fallen trees, ravines to bridge or to nose into and winch out of on the other side. Some days we made three or four miles;

Snap! Palm logs give way and the Jeep topples into a ravine. Women members of the expedition—German-born journalist Ibe Abshagen (in red blouse), and Panamanian anthropologist Reina Torres de Araúz—watch men struggle to right the vehicle.

BY ENFACHOWEE © NATIONAL GEOGRAPHIC SOCIETY





Children of the Jungle



TROPICAL COLOR brightens the world of Negro, Cuna, and Chocó children of the Darién. Grinning Chocó youngsters (opposite) line the log stairway to their thatched home. Boy on the bottom step wears a coating of *jagua*, a vegetable dye that the tribe uses for decoration.

At night the family turns the hewn steps to the log's underside to bar dogs and unwanted callers.

Hibiscus adorns the hair of the Negro girl (above, left). Cuna mother with nose ring combs her child's hair. A Chocó lass plays with her pet parrot.

Slaves arrived in the Darién a century before they were brought to Virginia. Cunas and Chocós fled before the advancing white man and never fully yielded to his rule.



others, we were lucky to make half a mile. It seemed inconceivable that one day sleek, low-slung passenger cars would whiz over this tangled terrain at highway speed.

Gradually I came to know our crew of nine choppers—a cheerful, hard-working band of mixed races and complexions.

Sotero Montenegro's height and clear blue eyes proclaimed his Spanish blood, as compared to little brown-eyed Gilberto Osorio, a Cuna Indian. Cristóbal Chen, the youngest member, reflected mixed Spanish and Chinese parentage; some of the crew were pure Negro. All spoke the slurred, drawling Spanish dialect of the Darién.

The expedition cook was a pure Cuna Indian who had spent nearly two years in kitchens of the United States Air Force in the Canal Zone. His name? Tony Smith!

Most Indians, I found, refuse to reveal their native names for fear the knowledge will give others power over them. For practical purposes, they choose a common Spanish form, Alberto or Juan. But our cheerful pot-walloper, in love with the United States he'd heard so much about, adopted a typical GI name.

His Americanism knew no bounds. For example, the jungle occasionally irritated his nose. In my honor he turned a sneeze into a word and came out every time with a lusty "Washington!"

Wild Pig Varies Rice Routine

At each midday stop, the men cleared a space for Tony. Supplementing his campfire with a portable kerosene stove, he boiled a huge pot of rice, flavored with a variety of sauces. For dinner, rice again, sometimes garnished with canned pork and beans, corned beef, or tuna. But when one of the advance men was lucky enough to shoot a peccary, or wild pig, we had a change. Tony made the most of such windfalls.

We dipped drinking water from rivers and streams, and flavored it hideously with purifying halogen tablets. Coffee made a more pleasant thirst quencher. Like a true Army cook, Tony made gallons of it.

We had pushed our way through 30 miles of tight-packed jungle before I truly realized

its vastness. Like a man on a hilltop who feels his own insignificance beneath a starry sky, I stood on a ridge with Dick and Terry looking out on the Darién.

Mile after mile of green spread before us, each tree a universe of vegetation, each branch a brawling galaxy, each leaf a planet bursting with life. In the face of such vastness, man comes to know his place in the jungle—his insignificance. I wondered, then, at the stout spirit of the Spanish explorers. Balboa had hacked his way across this Darién, not knowing what hazards lay ahead, to sight the Pacific on September 25, 1513.

Tiny Hitchhikers Make Life Miserable

Absently, I scratched myself. Ticks, chiggers, spiders, ants, mosquitoes, gnats, and flies—every kind of biting, stinging thing swarmed around us. All apparently were hungry. How satisfying the Spanish word for such pests—*bichos*! And I was filled again with admiration for those tough little men from Spain, clad in rusting steel corselets, who fought their way through the Darién.

Dick Bevir echoed my thoughts. "My idea of agony is a conquistador with a tin suit full of chiggers," he remarked.

"Yes," added Terry. "What price a can opener then!"

We wore only shirts and trousers, for the jungle is hot. Even so, we got a taste of the conquistadors' ordeal. Temperatures averaged between 90° and 100° by day, with humidity to match. Salty sweat, trickling down in rivulets, set every insect bite aflame; each stop for lunch or dinner found us daubing ourselves with ointments.

During the day, the noise of our chopping and our engines seemed to scare all animals into the bush, but, each evening when we stopped to camp, we had to be wary of night-prowling snakes—coral snakes, the fer-de-lance, and the bushmaster. All three rank among the world's most deadly reptiles.

For sleeping, the Army jungle hammock answered every need, with its rain-proof roof and its netted sides a protection against insects. One evening, twenty feet from me, Amado was slinging his hammock amid

Sprite in a Fairyland Forest, a Cuna Boy Plays Among Elephant Ears

One of several plants with the same common name, *Alocasia macrorrhiza* was transplanted to Central American gardens from tropical Asia. Soon the plant went native, spreading into Mexico and South America. Indians use the huge leaves as rain capes.



Jungle breakfast finds expedition members walled in by the dense undergrowth. Sunbeams filter in like light through a cathedral window.

Giggling girl carries baby *saino*, a domesticated peccary, as her city sister might hold a lap dog. Silver coins, heavy as chain mail, spangle her bosom. The banana and plantain trade of recent years has brought modest wealth to the Chocós, and many display it around the necks of their women.

Custom among the Chocós dictates that an engaged man must meet his future father-in-law in sham battle to prove his superiority. A laughing, friendly crowd sometimes ends the fray by tossing both bridegroom and father-in-law into a river.



heavy brush when he heard an odd squeaking. Flicking on his flashlight, he saw a bushmaster swallowing a frog, almost at his feet!

He snatched up his machete and hacked at the deadly snake, trying to cut it in two. But his hammock hung too close; it hindered his blow. He stood frozen, with the bushmaster merely pinned beneath his machete.

In a flash the viper spat out the frog and strove to reach Amado, only two feet away.

"*Culebra!*" he called. "Snake! Help!"

I got there first, but my six-inch blade was too short. Terry raced up, lunged with his



BY ESTHER OWEN (ABOVE) AND KENNETH OWEN © NATIONAL GEOGRAPHIC SOCIETY

longer knife, and speared the bushmaster through the head. I crawled back into my hammock, but not to sleep.

Yaviza Sees Its First Automobiles

Several rivers too deep to ford now blocked our route. It cost us precious days to work around their headwaters and up the rugged ridge beyond.

Finally we dropped into the valley of the Tuira, longest river of the region. Up to now we had roughly paralleled its chief tributary, the Chucunaque, which flows along the Isth-

mus until it meets the Tuira. Near their confluence, the towns of Yaviza, Pinogana, and El Real form a triangle (map, page 369).

I was astonished to learn that Balboa built a shipyard near here, in the heart of the Isthmus of Panama. Pacific tides hereabouts sweep some 80 miles upriver from the sea.

Descriptions of the shipyard site fit present-day Yaviza. Our caravan roared into the town in a driving tropical rainstorm, an ominous reminder that the wet season was pressing at our heels.

With a population of perhaps 700—mostly

Negro, with a lingering trace of Spanish blood, and two Chinese storekeepers—Yaviza had never seen an automobile on either of its two dirt streets. Old people and children swarmed over the cars, peering into the cabs, clambering onto the tops (page 388). When the engines coughed to life, the timid scampered. A few Chocó Indians who happened into town stood stolidly at a safe distance, but when we drove down to their element—the river—they trailed along with interest.

Cars Ferried Across Rain-swollen Rivers

After nearly two months of jungle driving, we suddenly found our way barred by the Chucunaque and the Tuira, both high with recent rains. While the Indians and all Yaviza lined the banks, we used a scow lashed to a powered piragua to ferry each car across the Chucunaque to a narrow neck of land. A mile and a half of comparatively easy travel separated us from the Tuira, which we crossed to Pinogana. Pinogana connects by a short length of genuine road with El Real, the principal river port of the Darién.

"Our highway builders will face a tough problem with these rivers," Otis told me. "Both carry much of the runoff from the spine of the Isthmus, and both reach flood stages during the rainy season. Tides make things even worse. At El Real they run as high as 18 feet. When tide meets flood, the turmoil is terrific. Any road will have to silt its way across this basin."

El Real, which means the Royal, lived up to its name in the matter of welcome. The town's 800 people rocked the rickety thatch-and-lumber houses on their pilings. Cheers greeted the cars, flags and banners waved, and a spontaneous street dance inspired the local band.

There to greet us were Don Pablo Othón, leading citizen of Panama's Darién, and Tomás Guardia, Jr., Executive Director of the Darién Subcommittee. Guardia had flown from Panama City to join the expedition. His father, who for nearly forty years has urged a highway through the Darién, is President of the Subcommittee.

Three centuries ago, El Real was a transfer

Land-Rover splashes across the Tuira at a ford passable only in the dry season

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Silently, a Chocó Family Materializes From the Jungle

Curious about the expedition's vehicles, Chocós came to stare. "Suddenly they appeared at trailside," said the author. "When we looked again, they were gone." Women formerly wore skirts fashioned from bark; now they prefer machine-made fabrics.

point for gold mined in the area and held for shipment to Panama City, the capital. In 1680 a band of English buccaneers crossed the Darién and raided the town. Bursting out of the jungle, they killed 26 inhabitants and wounded 16 others. But they found little booty; three days before, 300 pounds of gold had sailed for Panama City. In a rage, the disappointed raiders burned the town.

That was only the beginning of trouble for El Real. Throughout the 17th, 18th, and 19th centuries, the town suffered repeated raids by pirates, insurgent Negro slaves, and Indian rebels.

The arrival of our cars foreshadowed a new era in the Darién. No wonder El Real danced in the streets! Someday the town will be on the Pan American Highway. Then instead of transshipping their bananas and plantains from piragua into slow-moving river freighters, the Chocó Indians will ship by truck, a saving of time measured in days.

At El Real we got a rest. It had now been nearly two months since the cars left Chepo,

200 miles behind us. Now we made badly needed repairs for the last quarter of our trek, between the Tuira and the Colombian border. We set out confident that we would reach the border within a fortnight. As it turned out, it took us five weeks and proved to be the most difficult section of the entire trip.

From El Real on to the border we crossed Chocó trails through gradually rising terrain. There was less scrub here, and in places the upland offered passages almost parklike.

Then we hit the ridges.

Broken Cable Threatens Disaster

As the land rose, water runoff in this rainy region had cut deep ravines, leaving a succession of steep ridges, some as sharp as 65° and 600 feet high. Tommy Guardia shook his head at the sight of them.

"There'll be a lot of cutting and filling before a road goes through here," he predicted.

To surmount each ridge, we had to use winches, looping steel cables around trees above us, then winding ourselves up in a kind



RESEARCHER © NATIONAL GEOGRAPHIC SOCIETY

First motor vehicles ever to reach Yaviza receive a gay greeting: smiles, cheers, and a welcome banner (upper left). The Jeep flies Colombian, Panamanian, U.S., and National Geographic flags. Rural folk, hungry for decorative art, often leave election posters in place long after the last vote has been counted. Expedition member Richard Bevir (right) diverts children's gaze from the photographer.

of mechanical bootstrap operation (page 378). Men on foot followed each rear wheel, carrying short logs to chock them against backward slides.

Besides being slow and sweaty work, winching was dangerous. At times almost the entire weight of the vehicle dangled precariously. A rotten tree trunk, a kink in the cable could be tragic. If the cable snapped, the taut steel snake would flail wildly, scything through anything in its path.

All went well until we were a few air miles from the border. In three relays we had hoisted the Jeep up a particularly steep ridge, using a pulley for leverage. Now it was the Land-Rover's turn, with Terry at the wheel. Up ahead Tony started to cook lunch.

Suddenly, as the Land-Rover neared the top, the pulley pin snapped with a loud report. The car, canted to the right, plunged toward Sotero, who stood behind the rear wheel. With lifesaving instinct he jumped clear. The car, with Terry helplessly strapped in the driver's seat, tumbled over and over,

70 feet down the slope, crushing everything in its path. We watched in helpless horror.

After what seemed like an eternity, the car came to rest right side up, at the bottom.

As we held our breath, the door opened slowly, and Terry stepped out. The very straps that had imprisoned him had saved him from injury.

The only casualty was a large bottle of calamine lotion in the cab, which had automatically bathed Terry's bruises on the way down. Our laughter was slightly hysterical as we surveyed him, covered with pink lotion instead of the blood we had expected.

Highway Will Cause Vast Changes

After this near-tragedy the rest of our break-through seemed routine, until that wild scene of jubilation beside the concrete border marker at Palo de las Letras.

We had reason to celebrate. We had raced the paralyzing rainy season, and we had won. Our ten-day battle with the ridges, grueling as it was, had provided invaluable informa-

tion for the highway planners. By actual count, on the entire trip we had crossed 26 rivers, plus 180 creeks and ravines, and had built 125 palm-log bridges.

It had taken the cars 101 days to grind through 271 miles from Chepo—an average of less than three hard-won jungle miles a day.

Someday cars will make the trip in hours. But before they do, bulldozers will widen the passage, graders will smooth sections, shovels will cut and fill the ridges and ravines—and a great deal of money will be required.

When it comes, a highway through the Darién will be an incalculable benefit. Colombia, on her side of the border, pushes to connect the Darién Gap with her existing highway system. Corresponding to the Darién in Panama, Colombia's vast Chocó Department awaits development. On its coast lies Solano Bay, one of the finest natural harbors on the west coast of the Americas. Now it lacks only communication with the interior.

First Spoons, Then a Road

On my final day in the jungle, I got a glimpse of the changes in store for the people of the Darién. After leaving the border, Otis and I hiked through the pure, primeval jun-

gle to the isolated Cuna village of Paya. This little settlement stands near the headwaters of the Paya River, a tributary of the Tuira.

Alfonso, head of one of the four families in the village, helped me carry my cameras and personal gear. As we climbed into the piragua for our downriver trip to civilization, I looked at Alfonso's multipatched shorts and handed him a pair of worn slacks, stiff with mud from slips and falls, yet still serviceable. While Alfonso stammered his thanks for such a magnificent gift, I turned to María, his tiny, vivacious wife.

"What can I do for you, María?" I asked. "I haven't a thing a woman could use."

Her bright little face glowed.

"Oh, señor," she sighed, "all my life I have wanted a spoon. Not a big one, you understand, but just a little spoon—to eat with."

Two days later, when I got to El Real, I found six stainless-steel spoons, wrapped them in a package, and handed them to a boatman bound for Paya.

Alfonso has his trousers now, and María has her spoons "to eat with." One day—perhaps not soon, but one day, certainly—the Darién, too, will have a gift to treasure.

It will be a road.

At trek's end, beside a border marker at Palo de las Letras, expedition members autograph the National Geographic Society flag carried by author Ross (left). Front wheels of the Jeep rest in Colombia, the rear ones in Panama.

Sotero Montenegro, Otis Imboden, Richard Bevir, and Terence Whitfield gather to sign. Man behind them is a Colombian welcomer.

Averaging less than three miles a day, odometers in the expedition's vehicles registered 271 miles on the 186-mile jungle route. Winding trails, slipping wheels, and steep slopes made the difference.

While the rest of the party turned homeward, Mr. Bevir and Mr. Whitfield pushed on to Bogotá, Colombia.



BOUCHERON © NATIONAL GEOGRAPHIC SOCIETY



Throne Above the Euphrates ARTICLE AND

I LOOKED down across the moon-bathed face of Mesopotamia to the Euphrates, gleaming like a silver serpent. The night wind moaned through the ruins of the ancient shrine that crowned Nemrud Dagh.

Above me, a row of colossal statues—the crumbled pantheon of a forgotten kingdom—loomed against the stars like shattered sentinels. Beside me, the fallen head of one deity stared sightlessly into the heavens. The classic beauty of the features reflected the glories of a lost Anatolian civilization—a civiliza-

tion now being resurrected by our spades.

When our Turkish workmen uncovered the great stone head, those staring eyes had roused some echo of ancestral paganism in their breasts.

"This god has been sleeping here for 2,000 years," the foreman told me, "and now we have disturbed his rest. Something terrible is going to happen."

Reverently they covered the stone face with a sheet.

Something did happen. The following

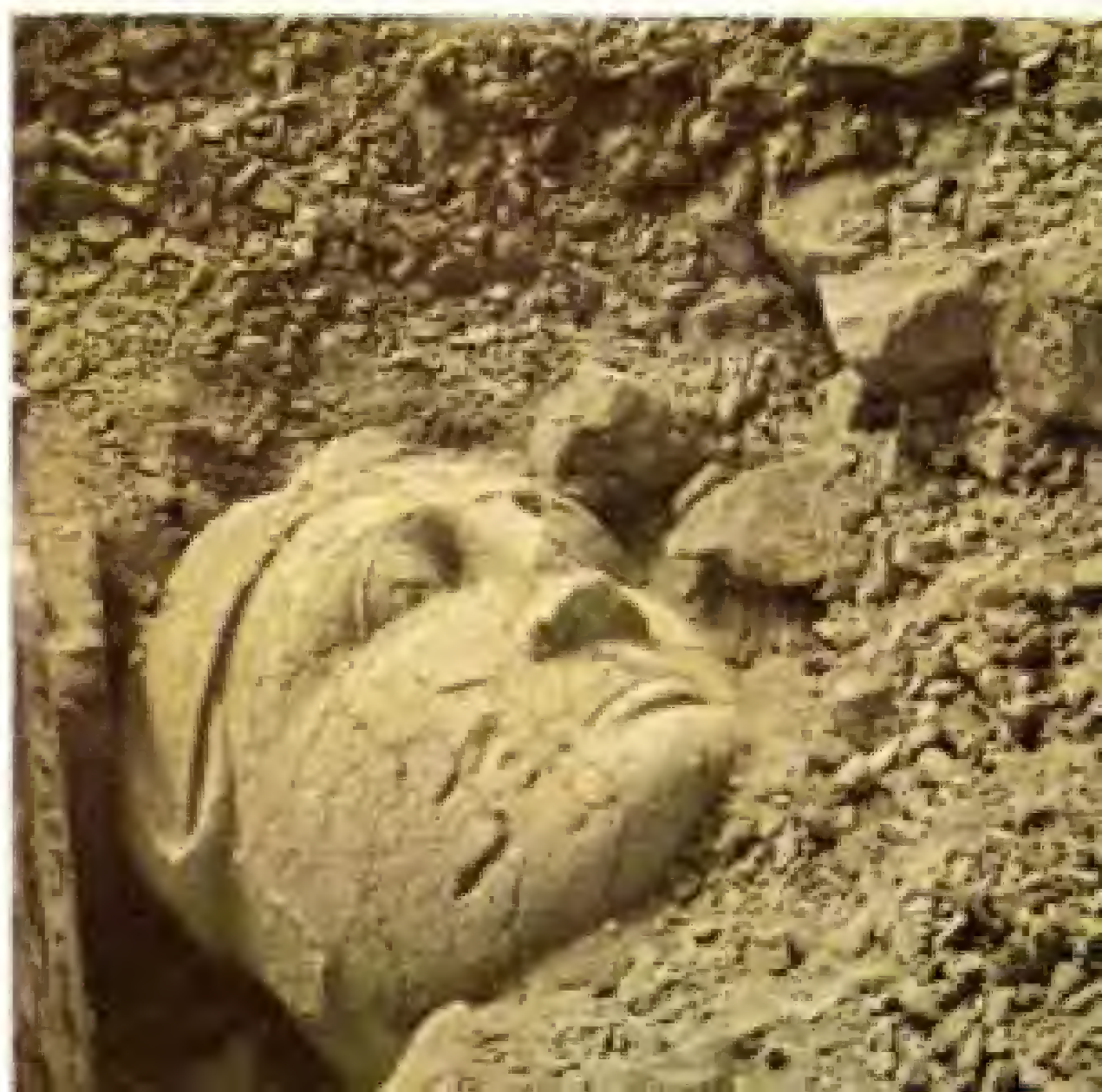


REUTERS/NATIONAL GEOGRAPHIC SOCIETY

PHOTOGRAPHS BY THERESA GOELL

Two thousand years ago an all-but-forgotten king raised this fantastic monument to himself and his gods. Now shattered by earthquake, erosion, and vandalism, the figures towered 29 feet above their dais when Antiochus I of Commagene had them erected. His 150-foot funeral cairn crowns Nemrud Dagh, in Turkey's Anti-Taurus Mountains. Somewhere in the tumulus, the author believes, lie the remains of the Anatolian ruler.

Severed for centuries, the huge head of Apollo-Mithra, a Greco-Persian deity, stares from a passage on Nemrud Dagh's East Terrace.



night a deluge of rain almost swept us from the sacred mountain. Blinded by darkness and lashed by wind, we fought a desperate battle to save ourselves from the all-engulfing torrents. Dawn found us exhausted but successful—and a bit reflective.

The shrine had been erected in the first century B.C. by Antiochus I, King of Commagene. His remains, I am convinced, lie beneath the great stone mound, or tumulus, that caps Nemrud Dagh; an inscription on the base of the colossal statues calls the site "the topmost ridge" of his kingdom, "in closest proximity to the heavenly throne . . . of Zeus."

Antiochus Considered Himself a God

This king, who regarded himself as a god, records that he "undertook to make this holy place a common throne room of all the gods." Among their brooding images he placed his own statue, together with portrait reliefs of "the heroic company of my ancestors."

Endowing the sanctuary with royal estates and staffing it with priests and musicians, he decreed "everlasting" monthly ceremonies. The tenth day commemorated his accession to the throne; the sixteenth day celebrated the king's birthday. History does not record the year of either event. But rituals, feasting, and music marked each monthly festival.

I was on Nemrud Dagh (Mount of Nimrod) that rain-swept night—and many another in five seasons of archeological adventure—because of a professor's casual suggestion during my student days. I might, he mentioned, make the mysterious monument the topic of a thesis. My first look into the subject gave me not only a temporary goal of scholarship, but the objective of 20 years' work.

In 1882 and 1883, German and Turkish archeologists had investigated Nemrud Dagh. The catalogues of their findings opened for me a new world—the lost civilization of Commagene. At the dawn of the Christian Era, the Persian East and the Hellenic West had merged with the local culture of this tiny crossroads kingdom to form a fascinating synthesis of religion, art, and architecture. I knew that I must bring the focus of modern archeology to bear upon this monument of another age.

In 1953, after 14 years of research and two preliminary visits to this sanctuary, I led an expedition to Nemrud Dagh. The 7,000-foot peak dominates the region that had once been Commagene (map, page 396).

The route from Tarsus to Nemrud Dagh winds across the parched landscape of Cilicia—a highway of history. Across its dusty plain tramped Xenophon and the heroic Greek Ten Thousand on their way to meet history and the Persians. Here St. Paul trod the weary road of missionary journeys that were to revolutionize the world.* And here, in the eleventh century, grim-faced Crusaders advanced relentlessly toward Jerusalem.

That First Crusade has left its traces around Nemrud Dagh. Baldwin of Boulogne—who later became King of Jerusalem—carved out a principality at Edessa, a bare 55 miles from the holy peak. He married the daughter of a wealthy chief and encouraged his nobles to wed local heiresses. Though this Frankish fief on the Euphrates endured but half a century, I often encountered in the vicinity of Nemrud Dagh light-haired, blue-eyed individuals who may well be descendants of the long-dead knights of the Cross.

Diggers Sizzle in 130° Heat

During the first season on Nemrud Dagh, our principal problem was adjusting to a difficult environment. A two-day journey afoot separated us from the nearest village offering supplies and a post office. From daytime highs of 130° F., the temperature on the mountain plummeted to freezing at night. Fetching a bucket of water from the closest spring required a three-hour round trip; there was not a single tree for shade, lumber, or fuel; on the unsheltered heights we were at the mercy of wind, rain, hail, and dust storms; roving bears added a final touch.

We came first to the sacred summit with modest objectives: to survey the shrine, clear the debris, and see if it warranted extensive excavations. Antiochus's craftsmen had hewn three great courts out of the rock. Upon two of them, the East and West Terraces, had stood similar arrays of statues—25 to 29 feet

*See "Jerusalem to Rome in the Path of St. Paul," by David S. Boyer, NATIONAL GEOGRAPHIC, Dec. 1956.

Dismembered Antiochus Surveys His Ruined Kingdom From the West Terrace

The monarch's noble features bear marked resemblance to the young Alexander the Great, from whom he traced descent on his mother's side. The broken headdress shows his paternal link to Persia. Lappets protect his neck against the sun.



tall—of Antiochus and his gods. Apparently the North Terrace had been unadorned save for a guardian eagle and a wall of standing slabs. The workmen had piled the rock chipped from the terraces into a 150-foot-high tumulus upon the mountain peak.

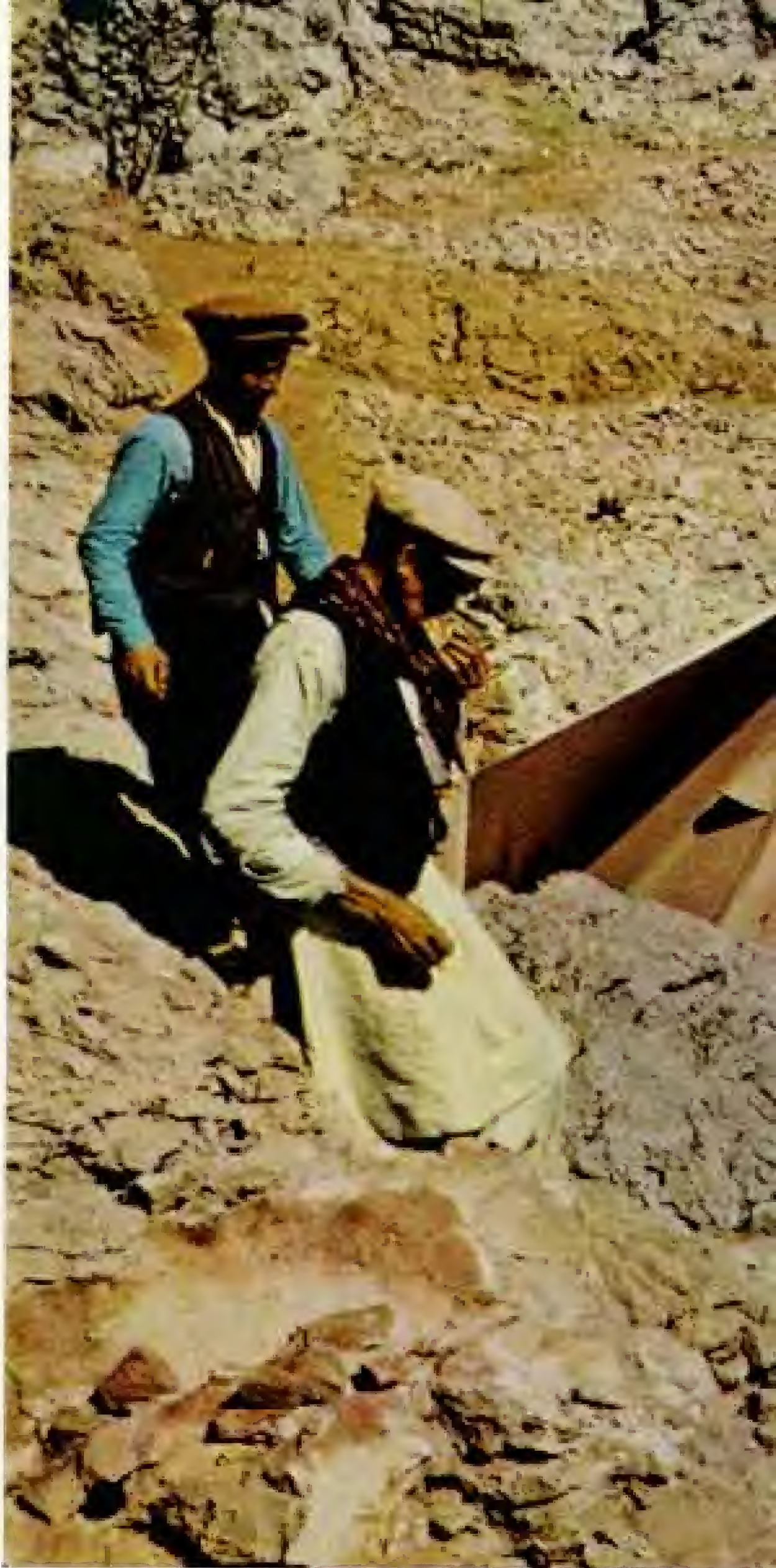
Clearing 20 feet of debris from the platform supporting the East Terrace statues proved a formidable task. The summit offered no dumping area for the stones we removed. Workmen had to carry them part way down the slope on litters fashioned from our small and precious supply of wood.

Only the Goddess Kept Her Head

That first excavation established the East Terrace with its Persian fire altar as the ceremonial center of the shrine. Looking up at Antiochus and his gods—a ruined pantheon presiding over a ruined Olympus—none of us could escape a sensation of awe. The very size of the images was overpowering; upon their platform, itself 20 feet tall, they rose as high as a five-story building (page 390).

These gods combined the deities worshiped by the king's Greek and Persian ancestors. At the south end of the platform, in ageless serenity, sat the Sun God—a fused Apollo-Mithra-Helios-Hermes; beside him, the Fortuna, or Fertility Goddess of Commagene; in the center, the "Thunder Shaker" and "Father of the Gods," Zeus-Ahuramazda; next, Antiochus; and finally at the north end, the Hero God of Strength, Herakles-Artagnes-Ares. The implacable ravages of the centuries had decapitated all but one: The goddess had kept her head.

Staring at those statues, I marveled at the engineering skill revealed by Antiochus's





EDDACHROMED BY KENNETH GOULD (ABOVE), F. R. DIERKER (BELOW), AND THERESA KOCAL © N.A.S.

Expedition members camp on the east slope of Nemrud Dagh. Cliff, cave, and rubble-banked tents shelter them against wind and dust. Dug-out in foreground serves as a surveyor's office. Here, at season's end, workers remove roof beams to preserve them for another year.

Sandstone portrait of Darius the Great, one of Antiochus's Persian ancestors, takes shape on the rock floor of the East Terrace. Technician Wilhelm Stank assembles the fragments.

A female member of the royal family reclaims her missing head. She wears the Greek veil favored by royal ladies 2,000 years ago.





Tiny Commagene straddled old trade routes between the Orient and the Western World. Zeugma-Apamea marks one of the two historic crossings of the Euphrates. Samosata, commanding the other, lies on the fringe of the Crusader country.

Early Christianity left its impact on the Hellenized cities of western Anatolia (below). St. Paul preached at Ephesus, site of one of the ancient Seven Wonders, a temple to Diana. One old tradition holds that the death and Assumption of the Virgin Mary took place at Ephesus, and not in Jerusalem.

Halicarnassus claimed another wonder: the magnificent tomb of Mausolus, an Anatolian ruler, whose name introduced the term "mausoleum."





RECONSTRUCTION BY PETER BRANCHI, NATIONAL GEOGRAPHIC STAFF © N.G.S.

Envisioned by an artist, Nemrud Dagh sanctuary stands as completed 20 centuries ago. Quarried rubble covers the mountaintop, which is believed to contain Antiochus's tomb. Carved on the spot, colossi on the East Terrace (right) face a fire altar. Processional Way leads to the West Terrace. A wall of the North Terrace rises in background.

sanctuary, and the royal wealth that made it possible. Of the Kingdom of Commagene—the Greek form of the Hittite-Assyrian name *Kummuhu*—we know little. The geographer Strabo described it as “an exceedingly fertile, though small, territory.” In 64 B.C., the Roman general Pompey entered into a treaty with Antiochus; thereafter, until its final absorption into the Roman Empire by Vespasian, A.D. 72, Commagene served as a buffer between Rome and Parthia. The capital, Samosata, 34 miles southwest of Nemrud Dagh, commanded a vital crossing of the Euphrates, and strategic military and trade routes converged upon it.

Today Nemrud Dagh commands a view of barren slopes rolling down into equally bar-

ren valleys. Centuries of drought and erosion have reduced most of this area to a treeless, depopulated wasteland. Yet, Commagene, once a renowned producer of cattle and timber, was the richest small kingdom conquered by the Romans. To restore this long-lost fertility, the Turkish Government has initiated large-scale reclamation projects, and an occasional grainfield or vineyard now brightens the upland (page 402).

Our results during that first campaign proved that, archeologically, there was work, and important work, yet to be done upon Antiochus's sanctuary. On the East Terrace, for example, the early explorers had described a monumental stairway with an altar—a feature common to Roman temples. How-



REPRODUCED BY NATURAL GEOGRAPHIC SOCIETY



Aging Antiochus and bearded Herakles flank the author at her impromptu desk on the East Terrace. Miss Goell bundles up against winds that buffet the crest of Nemrud Dagh. A graduate of Radcliffe College, she studied architecture and archeology at Cambridge University and the Institute of Fine Arts of New York University. She has participated in excavations in Jordan and Turkey and has directed the Nemrud Dagh field work since 1953.

Crowned with a symbolic tiara, Antiochus faces Apollo-Mithra on the West Terrace. The king's headgear contains a procession of lions, emblematic of power and royalty. Sun's rays assimilated from Apollo project from the crown. Similar beams radiate from the god's Phrygian cap. A dagger hangs at the king's side; scepter appears behind his shoulder. By dressing like Apollo, he declared himself the god's equal. Before death, Antiochus deified himself; he expected his soul to rise to the heavenly spheres of Zeus.

Veil and a turban of fruit adorn the three-ton head of the Fertility Goddess on the East Terrace. Limestone blocks form the figure. Lever holes below the crown enabled Commagenian workmen to set the head in place.

ever, our picks exposed not a stairway but a double podium cut in living rock.

The upper podium formed a dais running the length of the statues; here, no doubt, the priests had conducted their rituals commemorating those royal celebrations. Fragments of sandstone plaques and inscriptions indicated that the lower podium had held a wall graced by reliefs of Antiochus being greeted by his gods. In addition, our discovery of a rock core underlying the eastern base of the tumulus encouraged my belief that the king's remains lie in a hewn sepulcher beneath that unstable mass.

Our results in 1953 were promising enough to win the continued sponsorship of the American Schools of Oriental Research and the generosity of the Bollingen Foundation and the American Philosophical Society. Back we came the following year to our wind-whipped terraces to commence a full-scale excavation.

As my train sped from Istanbul toward Ankara, paralleling the fine roads Turkey has built with U. S. aid, I contrasted the relative ease of our journey with the hardships of my first visit to Nemrud Dagh in 1947. A painfully slow train carried me from Tarsus to Gölbaşı, lying on the ancient route from Malatya to Karkamiş on the Euphrates (maps, page 396). Chuting down the scale of transportation, I continued via a night truck—during summer no vehicle dared face the fierce heat of day—to Adiyaman.



ANTIOCHUS BY F. V. COLEMAN © NATIONAL GEOGRAPHIC SOCIETY

The decrepit, overloaded truck, which should have been decently interred 20 years before, shuddered along the rutted cattle track that served as a road. So violently did we careen that I gained a new appreciation of the word inscribed on the cab: *Mashallah*, "As God Wills." But, as the Turks say, "our Kismet was strong," and we reached the ancient caravan stop of Adiyaman.

Nowadays, when members of our expedition stop overnight at Adiyaman, they lodge in a remodeled caravanserai that boasts a hotel, modern shops, and truck shelter. But



when I first stayed at that caravanserai, few trucks had penetrated the isolated region. Even as in the days of Commagene, animal caravans plied their timeless traffic.

I still remember how, through the night, tethered donkeys brayed in the courtyard and camels bellowed. Long before sunrise, the shouting of men and the stamping of animals announced the hour of loading. And, beneath an inky, predawn sky, the caravans filed out to resume their treks over routes that had not changed for millenniums.

I thought of those rugged days as our expedition plunged deeper into the lost world of Commagene. Enroute to Eskikâhta, the nearest sizable village to Nemrud Dagh, my Jeep skirted the Kâhta River (the ancient *Nymphaios*) which flows into the Euphrates. Heat waves shimmered across the landscape, breath-takingly wild and savagely scarred by

nature, it called to mind the majesty of the Grand Canyon.

Soon there came into view atop a hill the mound of Karaktiç, the tomb of the royal ladies of the dynasty of Antiochus. An imposing limestone eagle — symbol of Zeus — surmounted a neo-Doric column, probably contemporary with Antiochus I. Two thousand winters had chipped the eagle's wings and blemished its eyes, but still it kept faithful vigil over the ghosts of the royal harem.

A remarkably well-preserved Roman bridge, erected during the reign of Emperor Septimius Severus, marked the junction of the routes that connected Edessa and Samosata with the passes over the Anti-Taurus to Cappadocia; it also linked Commagene with the crossings of the Euphrates.

At Eskikâhta the Processional Way to Nemrud Dagh begins. We toiled on the ex-



KERMIT GOELL

Latex Sheet Mirrors an Edict in Stone, the Longest Greek Inscription in Anatolia

Antiochus I inscribed portions of his *Nómos*, or holy law, on rocky outcroppings and slabs in several parts of Commagene.

To duplicate the inscriptions, Kermit Goell, the author's brother, used a liquid latex to make impressions. First he filled out irregularities on the surface of the rock with a plastic spray. Then he applied coats of latex and strengthened them with a criss-cross of gauze strips. Removed like an adhesive plaster, the flexible sheet bore a mirror image of the inscription.

This royal proclamation at Arsameia on the Nymphaios decrees the protection of the tomb and sanctuary of Antiochus's father, Mithradates, and the maintenance of his cult.

Materials in hand, Kermit Goell applies latex to an ancient inscription.

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EDUCATION BY P. A. DOORNEY © NATIONAL GEOGRAPHIC SOCIETY

Excavation foreman fondles a hunting rifle on an overlook facing the valley of the Káhta River. Below him lies the village of Eskikáhta, ancient starting point of processions to Nemrud Dagh. Ruined Yeni Kale, a 13th-century stronghold built by the Mamelukes, sinks its roots into the distant cliff. Whoever held this eyrie commanded the routes that traversed mountain passes and the Euphrates.

Farmers in August thresh grain at Samsat, once mighty Samosata, capital of Commagene;



hausting four-hour climb, as had the pilgrims of Antiochus's day. In the dozens of times I ascended that path, I never failed to thrill at the first close-up view of the shrine.

For much of the climb, hills mask the holy mountain. But at the shepherd settlement of Horik, Nemrud Dagh explodes above the horizon. The white cone of the tumulus seems to pierce the very heavens. Arriving once again upon the summit was for me, in a peculiar sense, like coming home.

Our five seasons of investigation have enabled us to reconstruct with a high degree of certainty the original plan of Antiochus's shrine (see painting on pages 396-7). Foremost among our sculptured finds was a colossal head of Antiochus, dug up on the West Terrace, that bore a striking resemblance to portraits of Alexander the Great (page 393).

Two great civilizations met here: The debris of the West Terrace's south wall yielded reliefs of the king's Persian forebears; the west wall had depicted his Greek ances-

tors. The Anatolian monarch exemplified the same cultural blending process that resulted in Commagene's uniquely fused gods. He claimed descent from Alexander the Great through his mother, and from the Persian Achaemenid dynasty through his father.

Lion Reveals Crucial Date

It was on the East Terrace that our picks uncovered fragments of a "Lion Horoscope," duplicate of one discovered on the West Terrace in 1882 which gained fame as the first known Greek horoscope. Modern scholarship, however, has drawn new light from this ancient assembly of stars. According to Professor Otto Neugebauer of Brown University, this relief of a stylized lion actually conveys astronomical information. Nineteen stars scattered on and near the lion's body, a crescent moon on its breast, and the conjunction of three planets identified by the Greek words for Jupiter, Mercury, and Mars give the date of July 7, 61 or 62 B.C.

as a Roman outpost facing hostile Parthia across the Euphrates, it exacted toll from caravans

PHOTOGRAPHY © NATIONAL GEOGRAPHIC SOCIETY



Gods of Commagene Bear Witness to the Passage of 20 Centuries

One of three terraces hewn from the mountain peak, the West Terrace follows the basic design of the East Terrace.

Guardian eagle at left was a familiar motif in old Anatolian and Mesopotamian art. Herakles (center) wears a Persian tiara and diadem; he and his companion Zeus have lost the tops of their headpieces.

Fruits and spokes of grain crown the Fortuna of Commagene (below, left). Apollo rests on the court. Sandstone lion guarded the deification relief on page 398.

This date gives us a vitally important focal point to which we can now relate previously undated monuments of the Hellenistic period. In all probability, it establishes the time of the founding of the sanctuary.

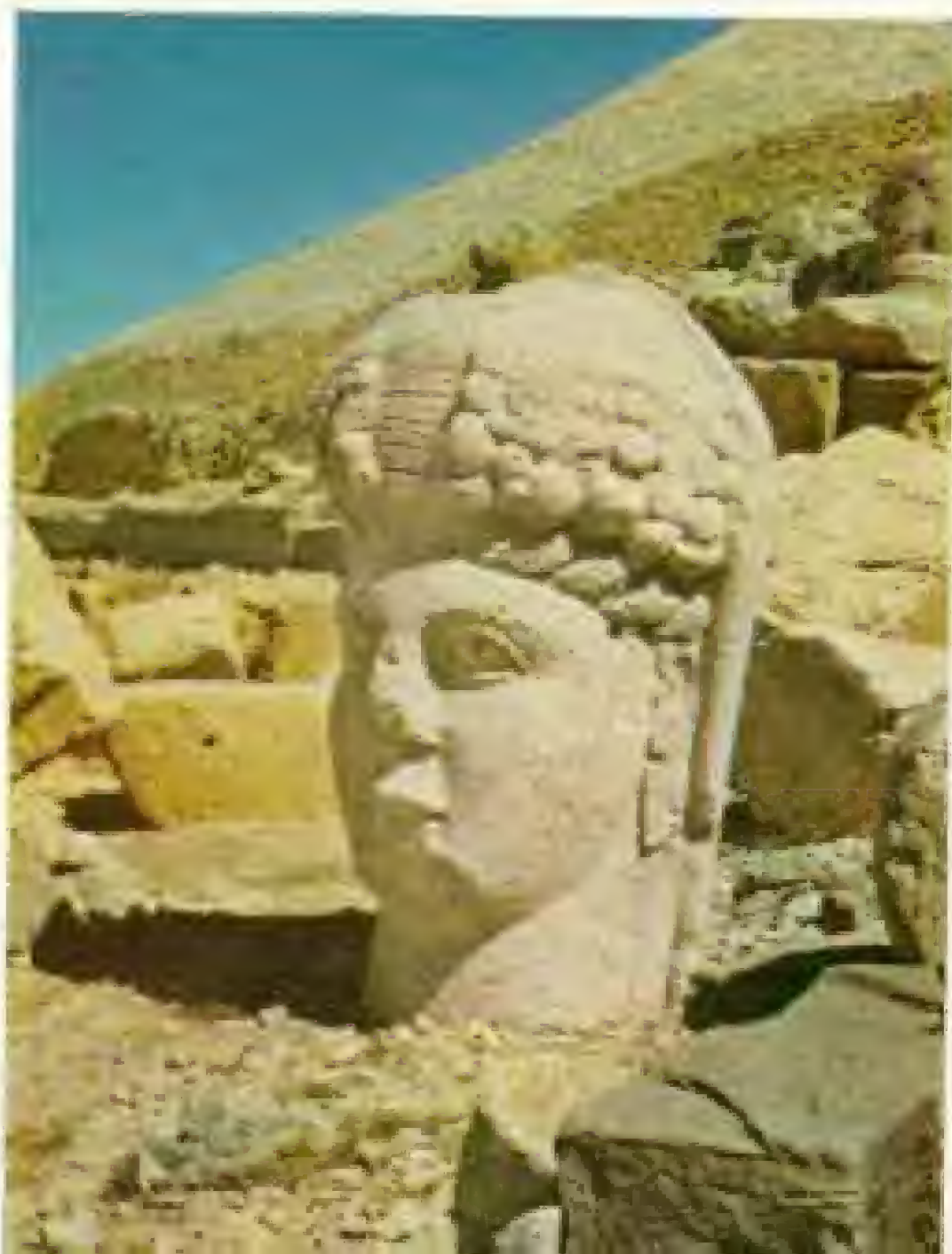
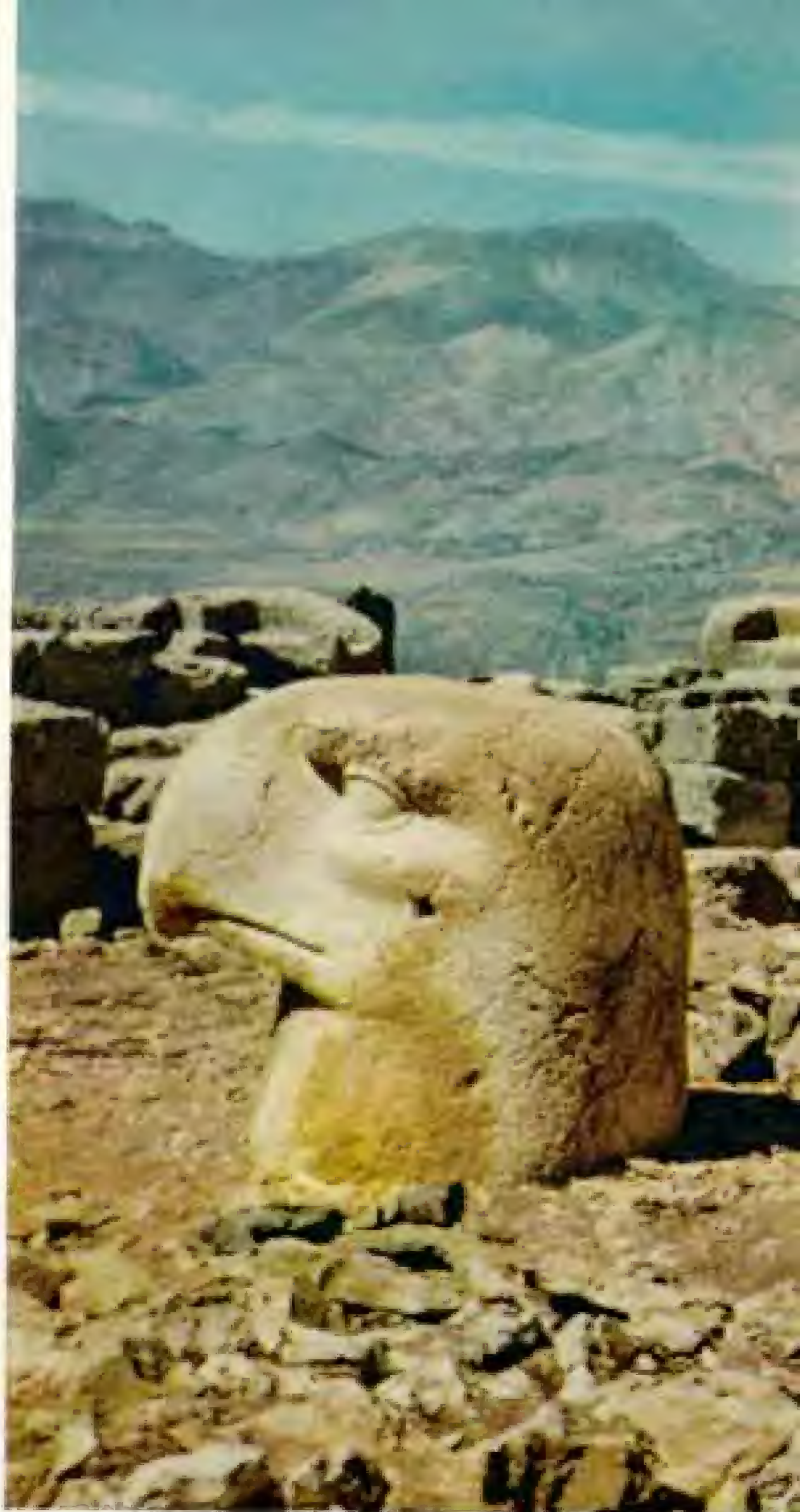
We cleared a trench to copy the inscriptions at the bases of the colossi on the East Terrace and located the rock-cut floor of the passage that had originally led to them. At its southern end we uncovered the head of Apollo-Mithra-Helios-Hermes, staring into space (page 391). This was the awesome spectacle that had heralded dire consequences to our workers.

On the north wall of the East Terrace we discovered a Greco-Persian portrait of Darius the Great; on the south wall we found the portrait of a woman, probably Antiochus's wife or mother. The singular beauty of these portraits, as well as the artistry that had shaped the immense heads of the statues, establishes this sanctuary as one of the glories of the Hellenistic world, not—as had formerly been thought—the crude product of a semibarbarian monarch.

Excavations Dissipate Mists of History

One of our principal objectives—locating the remains of Antiochus I—remains unfulfilled. Ominous avalanches of stones engulfed our every effort to tunnel into the mound. But we shall return to Nemrud Dagh, confident that with time and new geophysical techniques we shall find the monarch's final resting place.

Our excavations already have thrown new light into a darkened corner of the past. Now Commagene emerges from the mists of history, a dramatic amalgam of East and West, of Greece, Persia, and Anatolia. And archeology has restored the sanctuary of Antiochus I to its deserved position as a great monument of the classical world.





PHOTOGRAPHS BY NATIONAL GEOGRAPHIC SOCIETY



Hunting Africa's

*Armed with net and camera, naturalists
on a year-long safari capture thousands of bizarre
insects, including hundreds of new species*



BY EDWARD S. ROSS, Ph.D.

Smallest Game



Disguised as a thorny wisp of vegetation, a young praying mantis cocks its head and freezes at the camera's approach. Extended forelegs, armed with spines, trap and hold insect prey. Though itself a hunter, *Sibylla* fears larger predators. Standing motionless, the pallid insect gives the illusion of a tasteless tuft of lichen. Such ruses challenged the skill and eyesight of insect photographer Edward S. Ross, who is Curator of Entomology at the California Academy of Sciences. He encountered the mantis on Mount Hoyo, Republic of the Congo.



33,000-mile insect odyssey

1957-58 route 
 1959-60 route 

Beginning of 1957-58 journey

Beginning of 1959-60 journey



Map by G.W. Deatty and G.H. Emerson
 © N.G.S.



With nylon tent pitched, the author's campsite on wheels suggests a covered wagon. Dr. Ross's first African expedition, sponsored by the National Geographic Society and the California Academy of Sciences, zigzagged 26,000 rugged miles. A brief second trip later reached into Madagascar. Altogether, the noted photographer-entomologist spent a year in the field.

AFRICA'S FAME as a big-game paradise eclipses its importance as the habitat of some of nature's strangest miniatures. Actually, the continent's smaller game—its insects—presents equally surprising variations of color, shape, and ingenious adjustment to environment.

My particular interest centers on the Embioptera, a little-known order of web-spinning insects. The wings of an adult embiid, like the one at right, fold forward as it scuttles tail first into a labyrinth of silk produced by glands in the forefeet.

A research grant from the National Geographic Society helped to make possible a year-long safari to broaden man's knowledge of these and other bizarre African insects.

My companions included my wife, one assistant, and a pet lemur that dined on moths too tattered to qualify as museum specimens. We traveled by road and trail, camping out nearly three hundred nights. Though lions roared close by, none ventured into camp.

Hazards increased when we entered the bush. On Mount Hoyo an angry buffalo charged my assistant, Robin Leech. In the Congo rain forest, I stumbled upon a sleeping elephant. A baboon, guarding his harem, drove me off a hill.

Baboons, incidentally, are the original



ILLUSTRATION BY EDWARD S. ROSS

entomologists. Frequently our collecting suffered because the apes had already searched under the rocks for insects.

Once I rashly allowed a pet baboon to accompany me on a collecting trip near Nairobi. The ape insisted on looking for food under every stone I overturned. A ridiculous situation—man and ape vying for first grab. When I popped a new species of embiid into a vial of alcohol, the baboon snatched it and drained the contents, insect and all.

We collected some 250,000 insects. Returning to the California Academy of Sciences, we began the long task of mounting, labeling, and sorting. Since no one can know everything about so vast a field, we sent most specimens to specialists at home and abroad. For example, our grasshoppers went to experts in the British Museum.

Photographs provided a priceless by-product of our expedition. Outstanding examples appear on the following pages.

To attract insects after dark, Dr. Ross hangs out a sheet and baits it with a lamp. "One night's catch," he reports, "can keep museum workers busy for months." Here, in Madagascar, individuals representing literally hundreds of species surround the bulb.

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ILLUSTRATION BY EDWARD S. ROSS NATIONAL GEOGRAPHIC SOCIETY





Sap-sucking flatids brighten a vine on Madagascar. When disturbed, the mothlike bugs

INSECTS LIVE in a Lilliputian world; man can see its details only under enlargement. Thus the camera proves an excellent teacher of entomology. By stalking and photographing tiny subjects, I learn how they behave. Shutter and electronic flash freeze movements too fleeting for the human eye.

Camera in hand, I roam field and forest, never knowing what I'll shoot next. My eyes, trained to spot creatures no bigger than a grain of sand, watch for movement in the

foliage. I peek into flowers, overturn stones, pry bark off trees. When collecting, I rarely carry a net; I prefer tweezers.

An entomologist quickly learns to gauge the timidity of his prey. Warier insects must be approached stealthily. I creep close; my camera-shy target flutters away. Again I slip forward; again the insect escapes. After many false starts, I may at last get a picture.

If I spot the entrance to an insect's nest, I wait patiently for something to emerge. To

410 **Contrasting bands of an acrobatic measuring worm suggest the inch marks on a ruler.**

(FAMILY SCORPIONIDAE, CLASS LEPIDOPTERA)



Tubular head tipped by powerful jaws enables the giraffe weevil to bore deep into plant tissue.

(FAMILY CURCULIONIDAE, CLASS COLEOPTERA)





PHOTOGRAPH BY NATALIA SPOONER/ISTOCK

take wing and scatter like confetti

make underground shots (page 416), I dig a hole close to one side of a burrow and shave away the soil until I expose the nest's contents.

Other wildlife may resent my intrusion. My ears pick up the rustle of a snake slithering out of my path; game crashes through the undergrowth. An elusive subject may lead me into hordes of ferocious ants; I trip the shutter, then escape.

Thornlike thoracic lobes canopy a tree hopper, helping to camouflage the insect from enemies.

PHOTOGRAPH BY NATALIA SPOONER/ISTOCK



PHOTOGRAPH BY NATALIA SPOONER/ISTOCK

Brought to bay, a praying mantis defies the camera with spread wings and raised legs.

Spittlebug nymph hides from its enemies in an airy cloak of bubbles blown from sap.

PHOTOGRAPH BY NATALIA SPOONER/ISTOCK



Grotesque fly sports a dumbbell head. It uses a blade of grass as a landing field.

PHOTOGRAPH BY NATALIA SPOONER/ISTOCK







Teams of Tailor Ants Use Living Tools to Sew Their Nest With Silk

Among nature's most ingenious builders, tailor ants (*Oecophylla*) fashion nests of leaves bound with silken strands. These rare photographs, shot in Angola, record a colony's frantic effort to repair a nest damaged by Dr. Ross.

To draw foliage together for sewing, worker ants line the edge of one leaf and grip an adjoining one with their mandibles. If leaves are far apart, the ants form living chains to span the opening (opposite). When such a chain reaches a distant leaf, the farthest ant grips the edge and the column retreats, closing the gap.

Other workers, each bearing an ant larva in its jaws, rush forward as soon as the leaves touch. When the workers swing their burdens back and forth, the grubs exude threads of sticky silk that bind the leaves together (above).

Comments the author: "Here we have an animal other than man using a tool—indeed, a living tool—that in effect provides both a spool of silk and a spinning shuttle."

Risking attack by angry insects, Dr. Ross moves in to make a motion-picture record of the construction work. Cords attached by the author guy the nest against gusts of wind.





Butterfly Bears the Scars of an Encounter With a Bird

Bright colors often proclaim the identity of an inedible insect. One evil-tasting species is the African monarch (*Danaus chrysippus*), few experienced insect eaters will touch it. Even so, an uninitiated predator may sometimes make a taste test.

This photograph and the two at left were made in what was then the Belgian Congo. Not long after Dr. Ross's expedition had passed, revolution flared in the newly proclaimed Republic of the Congo, and travel by Europeans came to a standstill.

JAMES L. ROSS

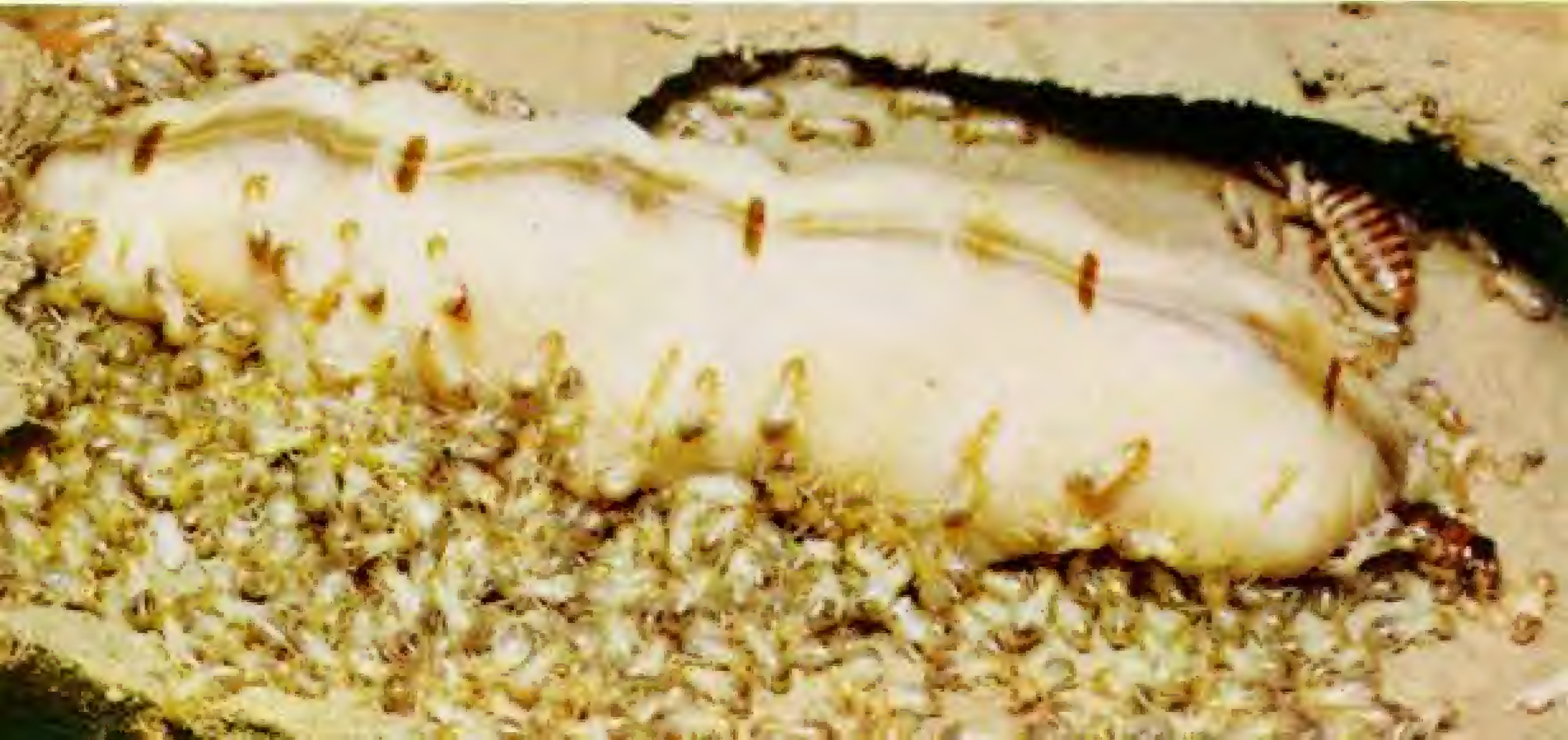
Termite mound rises in a village in Katanga, Congoese children transform the hill into a living pyramid.



Scurrying workers cut up a fallen leaf and haul it away to their mound. There it will nourish the gardens of fungus that the young insects feed on. Unlike most other members of the *Macrotermes* genus, these termites go abroad boldly in daylight.

Slaves Feed a Corpulent Queen Deep Inside a Termite Mound

Too fat to move, the queen lives in well-attended luxury in her royal cell, where she lays thousands of eggs a year. To make the photograph, the author broke into a mound near Monrovia, Liberia. "I had only a few seconds to snap the shutter," he recalls, "before the workers fled the intolerable light." The queen's consort scurries away at upper right.



1. L. J. THOMAS (LIFE 642)

1. LIFE 642





- 1 Female digger wasp (*Chlorion*) prepares a burrow six inches deep to receive an egg. She scoops out dirt with jaws and hairy forelegs.



- 2 Successful huntress drags a long-horned grasshopper toward the finished burrow. Her sting paralyzes the insect but does not kill it.



- 3 Banana-shaped egg laid by the departed mother rests on the still-living victim. As the wasp larva grows, it will devour its inert host.



- 4 Well-fed grub lies amid the remains of the insect that nourished it. To get these shots, Dr. Ross opened many burrows near Humpyakiri.



- 5 Silken cocoon, spun by the grub on reaching maturity, insulates the developing wasp and also protects it from enemies and moisture.



- 6 Cutaway view reveals a helpless but fully formed pupa inside the cocoon. Dark color indicates an adult wasp was about to emerge.



MINICOURTESY OF EDWARD S. ROSS © NATIONAL GEOGRAPHIC SOCIETY

Rabbit-ear wings distinguish a member of the Derbidae family, photographed on Mount Hoyo. Only $3/16$ of an inch in length, the insect is shown 21 times life-size.

Stylets within the jointed beak penetrate the midrib of a leaf, allowing the insect to dine on sap. A related plant-juice sucker, the sugar-cane leaf hopper, once threatened to ruin the Hawaiian sugar industry.

Caught in the Act of Changing Clothes, a Grasshopper Blushes Boiled-lobster Red

Insects wear a rigid outer shell that serves as both skin and skeleton. This covering, or cuticle, resists stretching. To accommodate a growing body, an insect produces a new cuticle and sheds the old one.

Hanging upside down, this young insect splits its old shell, withdraws legs and antennae, and wriggles free. Soon the new skin will harden and change color.

Dr. Ross observed this member of the Tettigoniidae family, shown three times life-size, on Madagascar.





Luckless Bee Dangles From the Lethal Beak of an Assassin Bug

Hiding in a flower, the assassin bug (*Harpactor*) cold-bloodedly waits for a nectar-seeking victim to blunder within reach. Sharp stylets in the beak then stab the prey and inject a saliva that liquefies internal tissue so that it may be sucked out as food. With the victim impaled, the predator enjoys a leisurely meal.

The author made this picture, which magnifies the scene 10 times, near Lwiro, Republic of the Congo. Two flies also take advantage of the bee's unusual stillness to dine on its body fluids.

Puzzled youngsters near Wallkale cannot understand why Robin Léech, the author's aidé, shows such uncommon interest in commonplace insects.

Blood-sucking tsetse fly, here eight times life-size, bites Mr. Léech's arm. *Glossina* can carry sleeping sickness, but infected insects are not widespread. "Tsetse flies usually strike singly," the author reports. "But at one spot in Katanga scores attacked us at once. We fled."







Uncle Sam's biggest warships can anchor in Guantánamo Bay, a superb harbor near

Guantánamo: Keystone in the

By JULES B. BILLARD

Photographs by W. E. GARRETT and THOMAS NEBBIA

National Geographic Staff

THE SENTRY, dressed in Navy dungarees and battle helmet, blocked my way with his rifle. As he did, a lizard with a blue tail skittered into the underbrush, and a mockingbird flew from a cactus into the shade of a scrubby *hatia* tree.

"Let's see your identification," the sentry said. I flipped open my wallet.

"Drop it on the deck," he ordered.

I tossed the wallet to the ground at the sen-

try's feet. With a wary eye on me, and his rifle ready, he stooped and picked it up. After a moment's study, he gave it back, shouldered his gun with a bored grin, and waved me on.

It was a lazy Saturday afternoon at the United States Naval Base on Guantánamo Bay, Cuba, and the battle-clad sailor's challenge was only practice. But it was practice in deadly seriousness. For I had come upon

(Continued on page 422)



REARRANGED BY THOMAS BERRA (JUNIOR) AND W. E. GERRITT © N. G. S.

Cuba's southeast tip

Caribbean

Sandbagged outpost underscores the U.S. Navy's determination to hold Guantánamo in the face of threats by Cuban Prime Minister Fidel Castro. Agreements signed in 1903 and 1934 grant the United States the right to use the bay as a naval base.

Dug in on a hill overlooking the eastern boundary of the base, a Marine sentry scans the Cuban countryside. Telephone links him with headquarters.





his sentry post during an emergency defense exercise. And Guantánamo lives under constant threat.

Sitting astride Guantánamo Bay, near Cuba's southeast tip, this base is a keystone of the Nation's defense in the Caribbean. It guards the narrow Windward Passage through the chain of West Indian isles that hems the Atlantic. Only 800 miles away lies the vital Panama Canal (map, page 426).

For nearly 60 years the base placidly went about its business under the Caribbean sun. Now an unfriendly regime in Cuba wants the U. S. to move out.

Molten brass, poured by Cuban workmen, sizzles into a mold in the base foundry. Castings will replace worn-out parts of destroyers.

Oldest U. S. overseas base, Guantánamo acts as handmaiden to the fleet. It services ships on shakedown cruises and training missions.

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44 EXTRAORDINARY LOCUSES AND WONDERS BY W. E. BARRETT, NATIONAL GEOGRAPHIC STAFF © A. S. S.



Patting pockets and peering into handbags, Marines at the Northeast Gate search departing Cubans to discourage pilfering and cigarette smuggling.



NATIONAL GEOGRAPHIC PHOTOGRAPHER THOMAS RAZZIN

Second search awaits home-board base employees outside the gate. Cuban militia and customs officials inspect cars and frisk drivers and passengers beneath the shed at left.

On paydays, departing workers face pressure to change their dollars into pesos at the official rate; dollars are worth far more on the black market. Unfinished building at far right is a bank being built to catch the dollars at the source.

Some 3,600 Cubans work at the base. Many qualify for retirement benefits under United States civil service.





WHILE
SOME
DANGER
PELIGRO

But the U. S. has firmly stated that the Navy will resist any attempt to force it out.

How has this situation come about? To find out, I went to Guantánamo — or “Gitmo,” as it has been known to generations of American sailors. The nickname comes from the navalese abbreviation GTMO.

First, let’s go back to the Spanish-American War of 1898, which catapulted the United States to prominence as a world power. The U. S. plunged into the conflict with crusading zeal, determined to help Cubans throw off Spain’s yoke. It was a zeal inflamed by such incidents as the blowing up — from still-unknown cause — of the battleship *Maine* in Havana Harbor, and by lurid reports in U. S. newspapers.

“Blood on the roadsides, blood in the fields,

blood on the doorsteps, blood, blood, blood,” wrote the *New York World*. “Is there no nation wise enough, brave enough, and strong enough to restore peace in this bloodsmitten land?”

Seven weeks after the U. S. declared war, the Navy had destroyed a Spanish fleet in Manila Bay in the Philippines, and Marines had won a beachhead in Guantánamo Bay, first successful land action in the conflict.

Columbus Called at Guantánamo

Like a grotesque hand, Guantánamo Bay and its offshoots stretch 12 miles inland to form one of the Caribbean’s finest harbors (painting, pages 426-7). Rocky, scrub-covered hills surround its deep waters. Columbus put in there on his second voyage, and pirates

Jeep and Helicopter Patrol Guantánamo’s Perimeter

Some 24 miles of chain-link fence wall off the base from Oriente Province. Barbed wire and a danger sign in English and Spanish mark a newly laid mine field. Patrols used horses until 1952, when bulldozers ripped roads across the hills.

Battle stations at Guantánamo may be manned by Marines, Seabees, or combat-trained sailors. In case of attack, Navy men would reinforce the leathernecks, who provide the first line of defense; guns and jets of the Atlantic Fleet would back up the garrison. Guantánamo’s orders in an emergency: Hold out until help arrives. Here a Seabee swabs a mortar’s throat during a lull in training.







probably made it a base for forays against galleons sailing the Spanish Main.

But until U. S. Marines arrived on June 10, 1898, the arid site was virtually uninhabited. The Marines seized it as a coaling station and base for the fleet under Rear Adm. W. T. Sampson. Next day Spanish sniper fire brought the Nation's first foot-soldier casualties of the war.

War correspondent Stephen Crane, author of the Civil War classic, *The Red Badge of Courage*, went through the Guantánamo fight with "the hot hiss of the bullets trying to cut my hair." He told of the heat, the tangled brush, and the man a few feet away who was

"dying hard. Hard. . . . He breathed as all noble machinery breathes when it is making its gallant strife against breaking. . . ."

Today a monument commemorates the battleground where 200 Marines, with 50 Cuban insurgents leading the way through the underbrush, routed Spanish defenders from heights commanding the harbor.

U. S. control of Guantánamo Bay, plus the Cuban rebels' stranglehold on land communications, pinned down 7,000 Spanish troops at the city of Guantánamo, eight miles inland. They could not go to the aid of beleaguered Santiago de Cuba, where the historic battles of El Cancey and San Juan Hill were fought



a few weeks later. Thus the harbor's capture played a more important role in the war than some histories record.

The United States entered the war with Spain after a declaration by Congress that the Nation "disclaims any intention to exercise sovereignty...or control" over Cuba. When peace returned, the U. S. went wholeheartedly about living up to its high promise and began putting Cuba on its feet as an independent nation.

Deadly "Yellow Jack" Wiped Out

That program, largely carried out under the direction of Maj. Gen. Leonard Wood as military governor, took until 1902. Roads were built, court reforms effected, education facilities expanded, and sanitation improved.

Dramatically, yellow fever was conquered. A heroic band of volunteers led by Maj. Walter Reed conclusively proved the theory of Cuban physician Carlos Finlay that a

mosquito transmits the disease. Then came a drive by General Wood's sanitation officer, Maj. William C. Gorgas, to eliminate breeding places of the insect pest. Not even soap dishes and baptismal fonts were overlooked.

The knowledge Major Gorgas gained in stamping out yellow fever in Havana and other Cuban cities he later took with him to Panama. His cleanup of disease conditions there made possible the building of the Panama Canal, where yellow fever and malaria in large measure had caused others to fail.

Under U. S. tutelage, Cuba held local elections, and a convention drew up a constitution for the nation. Then the American troops withdrew. A world of colonial powers looked on with surprise: here was a conqueror voluntarily giving up a rich island prize.

But Uncle Sam kept a protective arm around his island neighbor. The constitution of Cuba and a 1903 treaty between the two nations gave the United States the right to

Twelve miles long and with depths to 60 feet, Guantánamo Bay ranks as one of the Caribbean's finest harbors. Columbus named it Puerto Grande.

Although no ships call Guantánamo home, the busy anchorage is rarely clear of visitors. When the fleet's in, liberty boats shuttle swarms of sailors and Marines between U. S. warships and the base's bowling alleys, softball diamonds, tennis courts, swimming pools, riding stables, and 27-hole golf course.

Guantánamo kiddies cherish their own Captain Kangaroo, a performer known as Cousin Whigby. His name comes from the call letters of the base television station: WGBY. Cousin Whigby, alias Marine Cpl. Walter J. Garwood, a tank mechanic, began this show only minutes after coming back from nightlong maneuvers.

WGBY broadcasts in both English and Spanish. Says photographer Garrett: "The station helps keep morale up and tension down inside the big wire fence."

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FEDERAL BUREAU OF INVESTIGATION AND IN RETAILING BY R. F. GARRETT, NATIONAL GEOGRAPHIC SOCIETY © 1964



send its troops back whenever needed to smooth out Cuban affairs. On several occasions it did step in. In 1934, however, this provision—along with others which Cubans regarded as shackling their sovereignty—was terminated by mutual agreement.

Nothing remained of the old ties between the two nations except a clause that provided for U.S. lease of a naval base. It still is in effect and cannot be brought to an end by Cuba without U.S. consent. The site the United States gained was 45 square miles of water and hilly land at Guantánamo Bay.

For this territory the Government pays Cuba a yearly rental spelled out by the 1903 lease: 2,000 gold dollars—today amounting to \$3,386.25. Under the agreement the United States has full jurisdiction over the base.

Guantánamo is virtually the only U.S.-controlled establishment left in Cuba.

PHOTO BY AP/WIDEWORLD



Palms border an outdoor theater at the Officers' Club, where guests in lawn chairs watch *The Bells Are Ringing*. Guantánamo boasts an impressive array of recreation facilities, including seven other open-air cinemas.

Navy wife buys vegetables from a Cuban who brings produce to the base by truck. Although he can enter the compound, she cannot leave it, the Navy forbids travel in Cuba by base personnel. She buys most of her groceries at the commissary, Guantánamo's supermarket, which sells mainland items shipped by refrigerated vessel.

Inflammatory headlines and photograph leap from the pages of *Revolución Semana* (Revolution Week), a Cuban publication. Newsboys hawk such newspapers outside the gates. Navy families live in neat cinder-block bungalows.



THE EXHIBITION BY W. G. GARRETT, NATIONAL GEOGRAPHIC STAFF © W.G.G.

PHOTO BY W.G.G.





NATIONAL GEOGRAPHIC PHOTOGRAPHY THOMAS HERRIN

Guns on McCalla Hill, now fired only for salutes, mark the spot where Marines secured a beachhead in the Spanish-American War. Carrier *Shangri-La* rides at anchor in the harbor.

Leaping from their boat to a pier outside the Main Gate, Cuban employees hasten to their jobs. One base worker in three commutes by ferry from near-by Caimanera or Guantánamo.



Nearly a billion dollars' worth of property created by investments of U.S. citizens—mining and oil facilities, hotels, public utilities, ranches, sugar mills and plantations—has been seized. Now threats have been voiced about the base itself in the Cuban press.

Visit the base, as I did recently, and you find that despite the propaganda barrage, Guantánamo goes about its job unruffled. With dogs and armed Marines guarding its fence-enclosed borders, the base is girded for trouble (pages 424 and 434).

Guantánamo's job is to train and support the men and ships of our Atlantic Fleet, Rear Adm. Edward J. O'Donnell, the base commander, explained to me. The harbor offers safe anchorage for even the Navy's biggest carriers; its fingerlike shoreline creates protected coves for piers where deep-draft vessels can dock. Buildings and facilities worth some \$76,000,000 have been erected at Guantánamo Bay—for use in maintaining the fleet and providing for the living comfort of personnel based there. Another \$100,000,000 has been invested in the myriad needs that Navy slang lumps together as "the three E's"—bullets, beans, and black oil.

But it is as a training center that the base plays its most valued role for the Navy. Warships fresh from drydock at shipyards in the mainland States come to Guantánamo for shakedown cruises. Green seamen, newly assigned to their vessels, are welded into efficient crews in maneuvers and operations there. And fleet units build proficiency as a powerful force for the Nation's defense in exercises at Gitmo's "school for ships."

Mountains Keep Gitmo Dry

For such activities the base has two unparalleled advantages.

"First, there's the weather," says Admiral O'Donnell. "We seldom lose more than a few days of operations a year because of bad weather." Mountain ranges across Cuba's eastern end help block storms—and rain—from Gitmo; even hurricanes tend to sweep harmlessly by.

"Second, there's the geography of the area. The ocean bottom offshore drops sharply. Almost as soon as you clear the entrance to the bay, you can begin deep-sea operation."

There is no tedious threading of harbor channels. A ship that weighs anchor after breakfast can be back at the dock at 5:30 p.m. after a full day's exercises on the high seas.

What is life like for the 6,000-odd U.S. citizens who live at Guantánamo Bay? I found that the days there go by as prosaically as at any military base on the mainland—except for one thing. That is the "closed gate" policy, which has been in effect since the 1958 kidnaping by Castro forces of a busload of sailors and Marines on liberty from the base.

The men were released unharmed after being held for three weeks in the mountain hideouts from which Castro's rebels launched their struggle to overthrow Cuba's President Fulgencio Batista. Resulting headlines dramatized the rebels' cause. To prevent further incidents, U.S. authorities at the base restricted personnel from going outside the gates except with special permission.

Residents Enjoy Easygoing Paradise

For some, living within the confines of the seven-foot-high chain-link fence is like being in an idyllic prison camp—a sort of "comfortable claustrophobia," as one seaman's wife described it to me.

"Sure, there's everything you need here on the base," she said, "but in 15 minutes you can drive from one end of it to the other. There are really only two stores—the Navy Exchange and Marine Exchange—where women can shop, and the commissary is the only grocery you can go to. It's the same old thing day after day."

For other inhabitants, Gitmo is an easygoing paradise—"kind of like Hawaii with Cubans," a Navy pilot told me.

Brilliant tropic waters bathe the shores, and rocky headlands jut picturesquely above the beaches. But there the similarity to Hawaii ends. Of the base's 28,821 acres, 19,625 are arid hills and salt flats; the rest is bay surface. Rainfall totals about 25 inches a year. So dry is the area that when the Navy built a radar station atop a 400-foot peak, a cable had to be run all the way to the beach to reach soil sufficiently moist to ground the equipment properly.

To offset the restrictions on travel and to provide for the tides of seamen arriving with the ships, the Navy has provided elaborate recreational facilities.

I looked at some of the base's 17 softball fields and six baseball diamonds and the league teams that keep them busy. I tried out a few of Gitmo's 16 tennis courts, 24 bowling alleys, nine basketball courts, eight volley-



ball courts, nine swimming pools, and two beaches—these last with swimming areas blasted out of the sharp coral that forms the shore. But even in a week I couldn't manage to sample all the leisure-time activities the base offers.

There are four hobby shops, a photographic darkroom, a roller-skating rink, and even a boxing ring. You can play golf on a 27-hole course for a greens fee of \$6 a month. You can keep a horse in one of the two stables on the base for a feed-and-stall charge of \$16.50 a month, or rent a horse for \$1.25 a day. There are eight outdoor movie sites with shows nightly—free (page 431). And there are bicycles, sailboats, motorboats, and fishing tackle to rent.

The Navy even does what it can to give personnel a chance to "jump the fence" on trips to Haiti and Jamaica. Warships that run to Port au Prince or Kingston on cruises take aboard Gitmo personnel for weekend liberty. Transports and cargo ships sometimes go to the Canal Zone or Puerto Rico. And Navy planes operating in and out of Guantánamo often take passengers on a "space-available" basis.

Battle Stations for Desk-bound Sailors

Reminders of the potential powder keg that Gitmo sits upon turn up regularly in the anti-U. S. headlines of Cuban papers hawked at the gates, or in the periodic "GSF"—Ground Security Force—exercises at the base.

I was there one sultry weekend when a practice alert occurred. Desk-bound sailors grabbed battle dress and "hit for the boon-docks"—the cactus and scrub and guinea grass that mat the rocky hills: There they joined the base's regular security force of 300 or 400 Marines for training in roles they would play in an emergency (page 425).

What are the chances of something happening?

There are those who say the Castro regime doesn't really want Guantánamo back. Some 3,600 Cubans from the surrounding towns of Caimanera, Guantánamo, and Boquerón work on the base. They take out with them pay that puts nearly seven million U. S. dol-

lars a year into the Cuban economy. Navy purchases in Cuba add thousands more.

But more than the dollars, Gitmo represents jobs—something the financially troubled Castro regime would find difficult to replace if our Government gave up the base. Cubans consider employment at the base highly desirable. Work is steady, and sick leave and compensation coverage superior to comparable jobs "outside." More than half the Cuban employees have been holding their jobs at Guantánamo for 10 years or longer. Some are laborers and domestics, but many are skilled machinists, technicians, and supervisors (page 422).

Friendship Survives Despite Tension

Is there risk of sabotage or work stoppage from labor troubles at Guantánamo? Cubans riding freely along the base's roads are only a step from vital pipelines and communications systems.

"By and large, we think the Cubans are loyal employees," H. P. McNeal, Industrial Relations Officer at the base, said when I dropped in at his office. One union leader has been fired for anti-U. S. statements, he told me, and there have been disciplinary measures taken against other workers.

Marines "frisk" Cuban nationals as they go through the gates—a search aimed largely at preventing petty pilfering and cigarette smuggling. But the Cubans grumble also at their own officials, who search them again on their side of the fence, and at the Castro government's policy of escorting base employees to city halls in Caimanera and Guantánamo on payday to "encourage" them to change their U. S. dollars into Cuban pesos. To make the procedure even more watertight, a bank is now going up just outside the gates, where naval base employees can be relieved of their dollars even faster (page 423).

But, despite anti-Yankee tirades in the country's newspapers, there are repeated demonstrations—on a person-to-person level—of Cuban-American friendship. When a fire swept through Caimanera's wooden homes, the base fire department raced to the town to help battle the flames. When the city

Sentry Dog Lunges at the Photographer. A Leash Stops His Charge

Superior nose and ears enable a dog to do the sentry work of four men. Some, like Shadow, a 2½-year-old German shepherd, patrol beats with their handlers. Others, staked out at isolated spots, bark warnings if they detect trespassers. Cactus plants poke slender fingers into the night.



PHOTOGRAPH BY W. D. BARRETT, NATIONAL GEOGRAPHIC STAFF

Seabees bulldoze a road toward a hilltop command post. Combat training at Guantánamo extends even to Navy cooks and clerks. Housing units rise in the distant valley.

of Guantánamo's water supply was threatened with pollution, sanitation officers and a supply of chlorine from the base eased the situation. When two U. S. planes made emergency landings off the base, Cuban officials sent out bulldozers to clear a road so Navy fuel trucks could get to them.

Christmas parties for Cuban children and clothing drives for Cuban needy are held by U. S. personnel. On the Fourth of July a team of Cuban all-stars traditionally meets Guantánamo's all-stars in a baseball game on the base; last summer the Navy team won 4-3 in 10 innings.

Critical Problem: Water Supply

If there is an Achilles' heel to the U. S. position at Guantánamo Bay, it is the water supply. Every drop comes from the Viteras River, four miles outside the base. The Cuban government runs the pumping station; a turn of a valve could be ordered at an official's whim. There is no natural water source

on the base; all shallow- and deep-well explorations have proved fruitless.

But Guantánamo's storage tanks hold a three-week emergency supply. And Navy tankers would bring in water to keep the base going, just as they do for St. Thomas, in the U. S. Virgin Islands, when that island's rain-fed cisterns go dry.

"It would be a nuisance, but perfectly feasible," says Admiral O'Donnell. "I'm not worried about the situation."

How long will the tension last? Perhaps the words a friendly Cuban spoke to me one afternoon at the base's Northeast Gate hold the answer.

"You must come to visit my country," the Cuban said.

"I can't," I answered. "I am not permitted to leave the base."

"Ah," he said, "these are sad times." Then, in a lowered voice, so no one around us could hear, he added, "But they will one day be gone, and we will be warm friends again."

MOUNTAIN MISIDENTIFIED

Despite the NATIONAL GEOGRAPHIC's policy of painstaking checking of every statement, the peak on pages 86-87 of the January, 1961, issue was incorrectly identified as Mount Everest. Actually it was Everest's neighbor, 27,824-foot Makalu. In the interest of accuracy this correction is published as promptly as possible.—The Editor.



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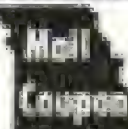


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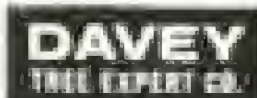
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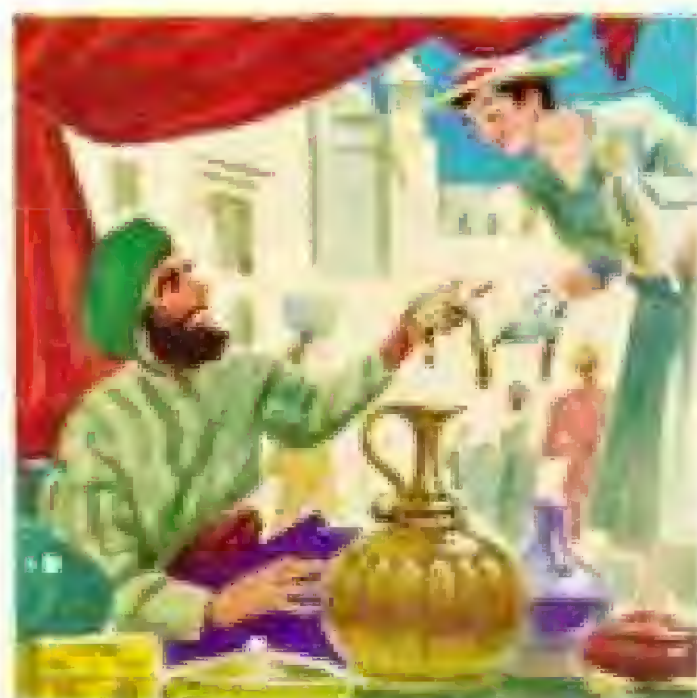
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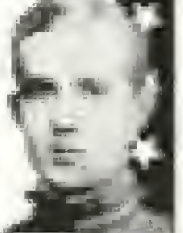
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Where to write

For the free literature mentioned above, write to the British Travel Association, Box 181, at any one of the following addresses:

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