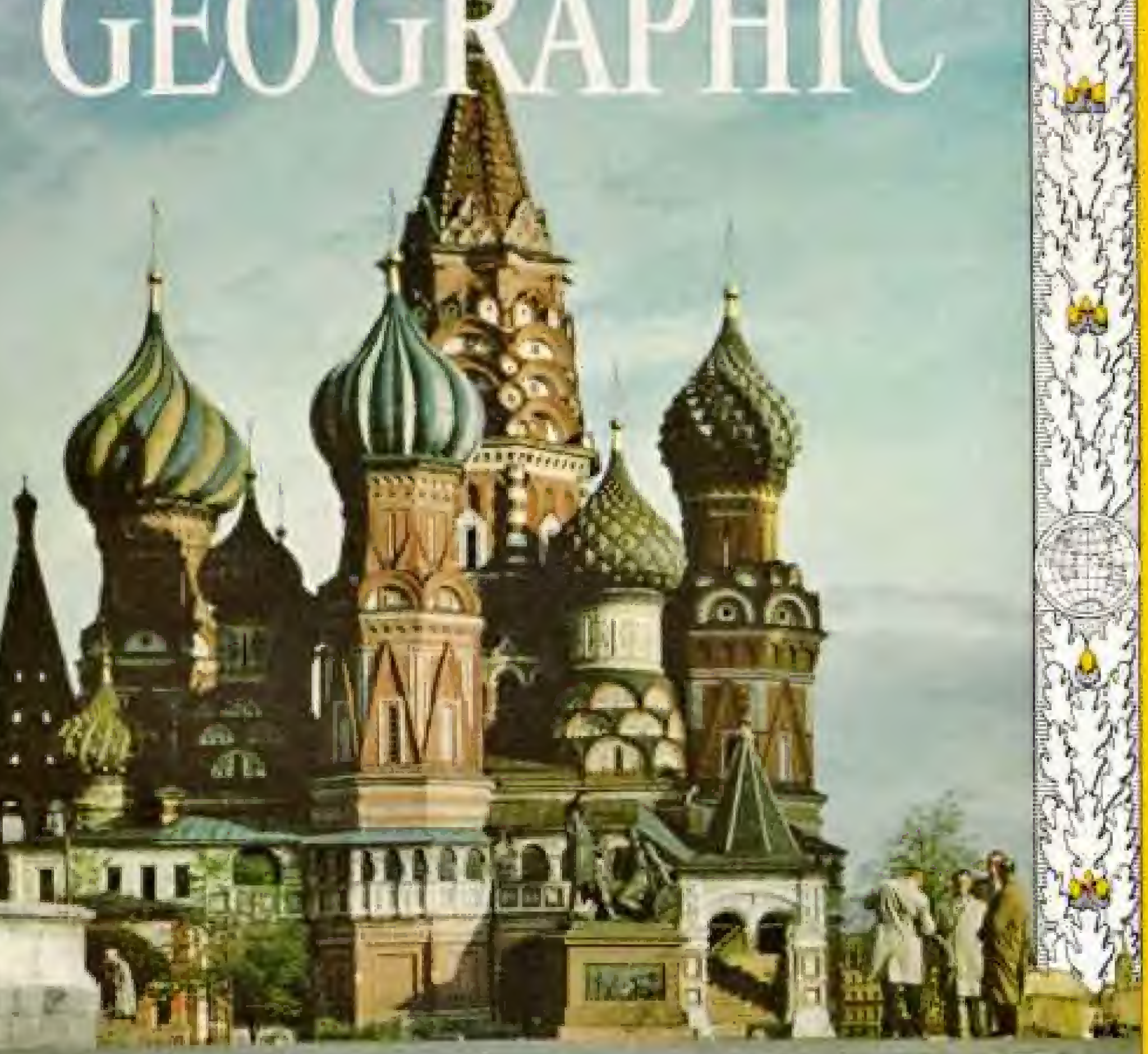
VOL. 129, NO. 3 MARCH, 1966

NATIONAL GEOGRAPHIC



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

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WASHINGTON, D. C.

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

Since 1890 the Society has supported more than 289 explorations and research projects, adding immeasurably to man's knowledge of earth, sea, and sky. It diffuses this knowledge through its monthly journal, NATIONAL GEOGRAPHIC; more than 28 million maps distributed each year; its books, globes, and atlases; 20 School Bulletins a year in color; information services to press, radio, and television; technical monographs; timely exhibits from around the world in Explorers Hall; and now a nationwide series of programs on television.

Articles and photographs of travel, natural history, and expeditions to far places are desired. For material used, generous remuneration is made.

COVER: St. Basil's Cathedral raises a fantasy of shapes and colors against the Moscow sky (page 314).

NATIONAL GEOGRAPHIC MAGAZINE

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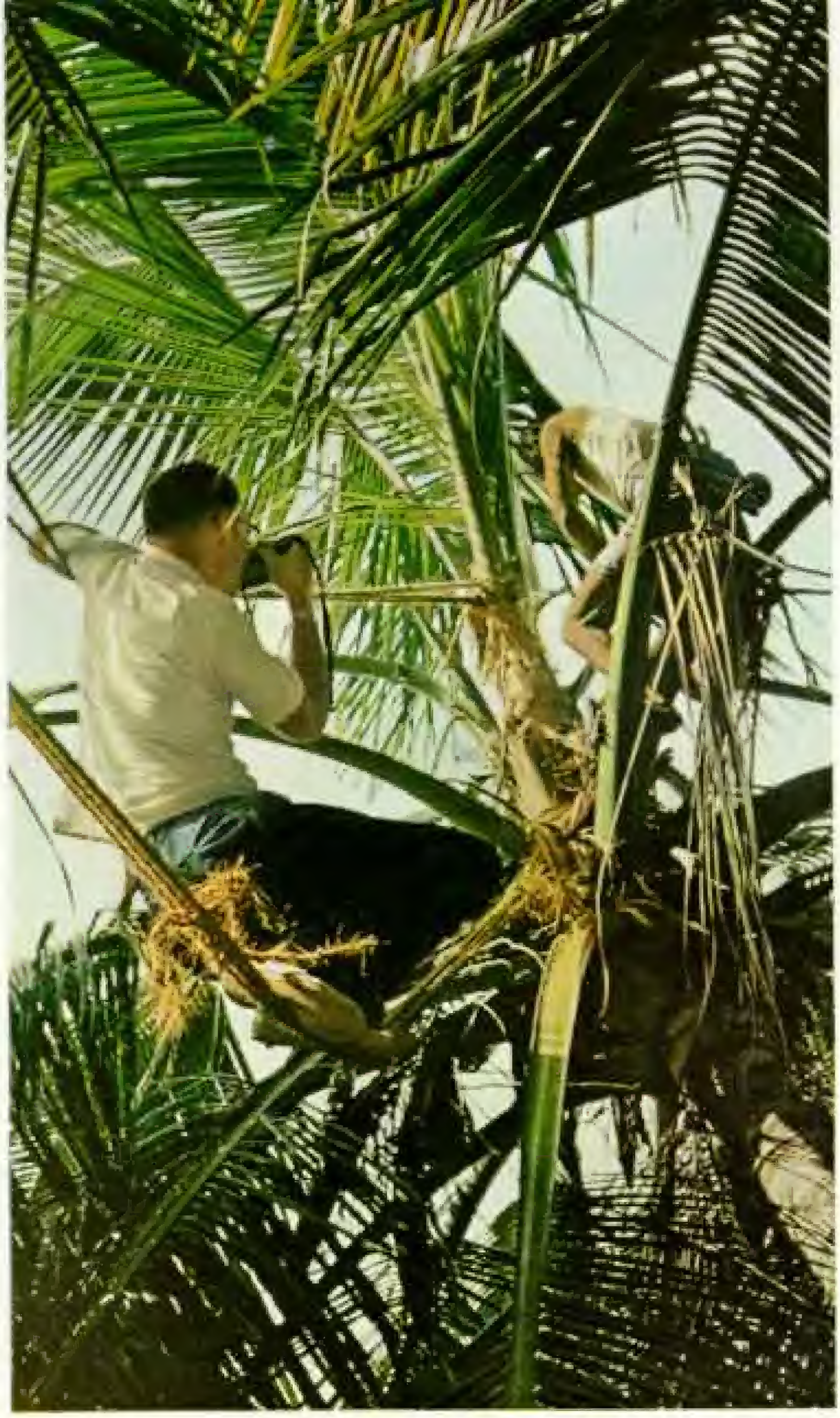

Ceylon close up

BALANCING on a precarious rope walkway between coconut palms, Senior Assistant Editor Gilbert M. Grosvenor photographs a Ceylonese tapper gathering toddy, the sap of the tree, from which potent drinks are brewed.

Mr. Grosvenor and his wife Donna explored the fabled Indian Ocean island nation on a seven-week journey—reported in next month's magazine. Photographing an incredible fire-walking ceremony, they marveled at barefoot men, women, boys, and girls treading a carpet of red-hot coals without raising a blister.

They watched elephants at work in a lumbermill, tried the subtle art of tea tasting, sojourned with a Ceylonese family, and interviewed Prime Minister Dudley Senanayake, who strives to make the friendly democracy prosper.

Through the eyes of NATIONAL GEOGRAPHIC's globe-circling staff, you see the kaleidoscope of life in other lands. Invite your friends and family to join the Society and travel the world in the pages of NATIONAL GEOGRAPHIC: simply nominate them below, or better still, send them gift memberships.

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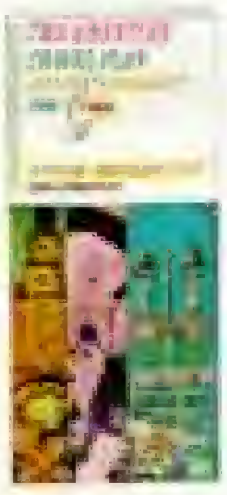

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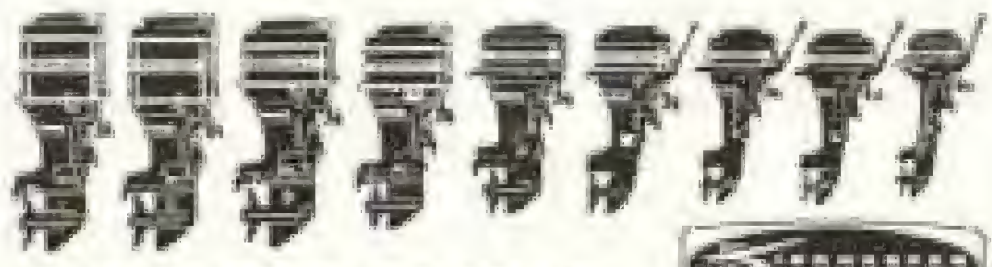

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ONTARIO Canada

Buying your first movie camera? There's something you should know about your second.

It's probably going to be a Bell & Howell. That's the usual pattern. First, most people buy some beginner's camera, just to see if they like taking movies. It's only afterwards that they start making demands that the first camera can't deliver.

So be smart. Skip your first camera and buy a Bell & Howell Super 8 instead.

Don't let the fact that it's a fine precision instrument fool you into thinking it'll be hard to use. Not so. It loads in 3 seconds, with the new Kodak cartridge film. Your hands never touch the film. Speed, exposures and filters are all set automatically. About all you have to do is pick it up, aim it and shoot. But ease isn't everything. The real reason for moving up to Bell & Howell is the kind of movies only a precision instrument can take.

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Want to shoot your little league star in slow motion? Use the same button you do for regular motion — just push it a little harder. Want to zoom in or out on your subject without running film, so you can compose your shot better? We've added an extra motor to our camera so you can do it.

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Don't think you don't need this kind of precision for the movies you want to take. It shows up on the screen.

Remember that when you go out to buy your first movie camera.

And buy your second instead.

This Super 8 cartridge drops in the Bell & Howell camera for push-button movies. Super 8 Film with its 50% larger picture area can only be used in Super 8 Cameras and Projectors.

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North Carolina's Grand Old Man of Folk Music

SOUTH TURKEY CREEK—For more than a half century, 83-year-old Bascomb Lamar Lunsford has presided over North Carolina's large and loosely-linked fraternity of authentic folk music artists from this picturesque Blue Ridge community.

An attorney by profession, but a minstrel at heart, the patriarch of Tar Heel folk singers has devoted much of a long life to the preservation of the music of America.

A generation ago, this scholarly banjo-picker began the Mountain Dance and Folk Festival at Asheville. Since then North Carolina has become a veritable folk festival state.

One of the most widely known folk festivals in the nation is the Singing on the Mountain held annually on top of Grandfather Mountain. Thousands of visitors from throughout the United States are on hand each year to enjoy the folk and gospel music.

Other nationally acclaimed folk festivals include the Old Time Fiddlers' Convention at Union Grove in North Carolina's foothills, the Old Time Gospel Sing in the small farming town of Benson, and the State Fair Folk Festival directed each year in Raleigh by the Grand Old Man of Folk Music himself. Tar Heel folk artists, Frank Proffitt of Pick Britches Road and Arthel (Doc) Watson, usually attend these annual festivals.

North Carolina's folk festivals provide a richly rewarding experience. Not to be overlooked, however, are the many other interesting things to see and do in our state.

In the heartland of North Carolina, a charming, restored Moravian village is at Winston-Salem, a cultural metropolis of the South. To the west are the magnificent Blue Ridge and Great Smoky Mountains. To the east, the Atlantic Ocean and the nation's most historic coastal region.

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VIEW

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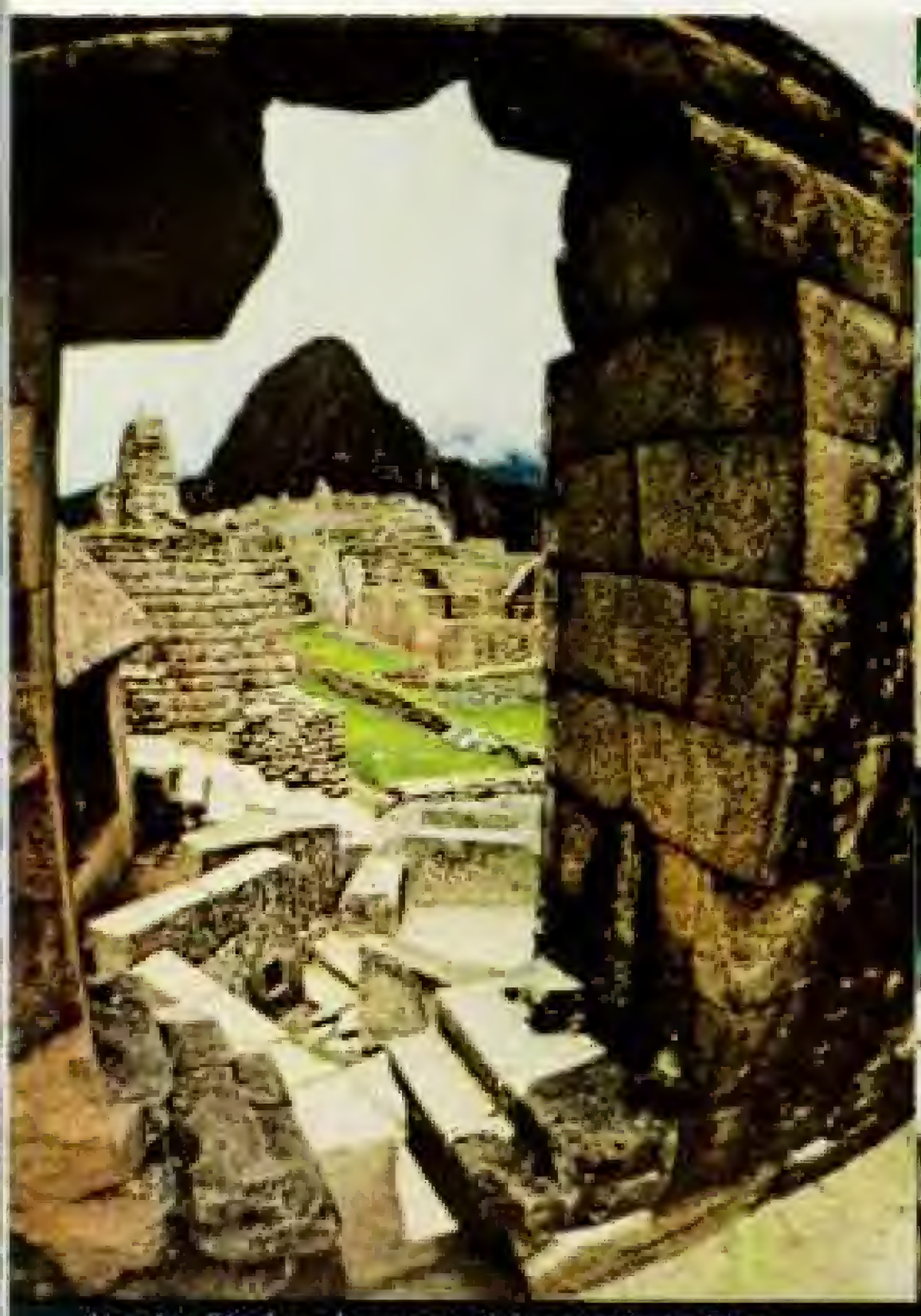

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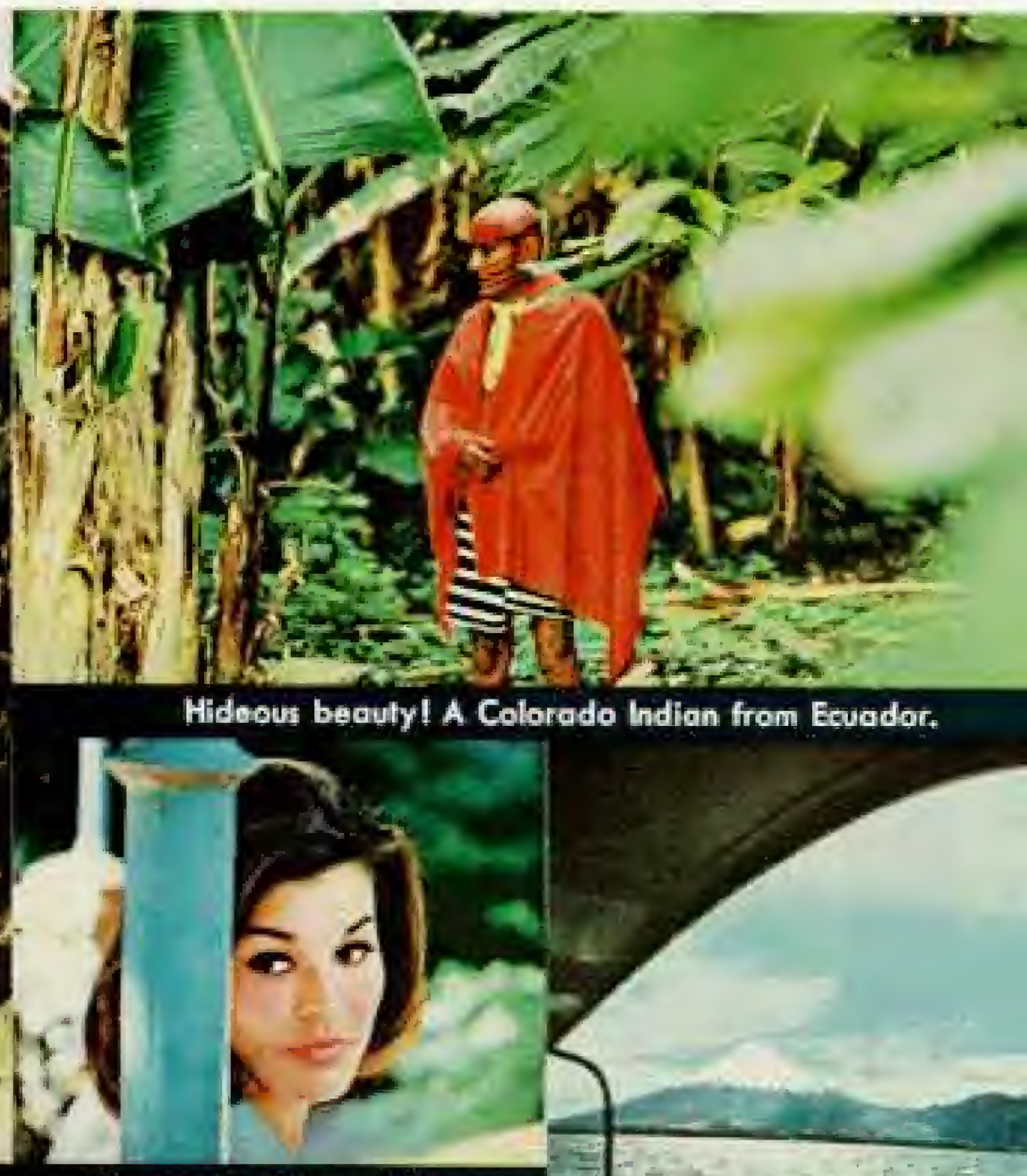

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TO SOUTH AMERICA

March, 1966

NATIONAL GEOGRAPHIC

An American in MOCKBA Russia's Capital

By THOMAS T. HAMMOND, Ph.D.

Illustrations by National Geographic photographer DEAN CONGER

A LOUD KNOCK shook the door of my sleeping compartment. "Wake up!" shouted the train conductress. "We'll be in Moscow in half an hour."

"*Spasibo*—thank you," I shouted back. "How cold is it?"

"Twenty-two degrees below zero!"

I shuddered. This centigrade figure meant nearly eight below zero on the Fahrenheit scale—a real introduction to Russian winter. I pulled on my long underwear, woolen shirt, heavy tweed jacket, and galoshes. The conductress brought me hot tea served in a glass, the usual Russian way.

Munching on a breakfast of *pirozhki*, meat pies, I looked out the window at a world all white, gray, and black. Snow lay everywhere, hanging gracefully on the pines that lined the railroad tracks and burdening the rows of log cabins in the villages. Even the sky seemed covered with snow, since the orange ball of the sun was barely visible behind a curtain of white clouds.

Peasants rode by in heavy horse-drawn sleds or plodded through the snow in huge felt boots. The men wore fur caps with thick flaps covering their ears, while the women were wrapped in so many woolen scarves that they seemed to have no necks. Both men and women were bundled in dark-blue jackets of quilted cotton; they looked so round I thought they might roll more easily than they walked. Clouds of steam rose from their mouths as they puffed along.

Moscow Revisited—Student Style

Our train from Warsaw now passed through forests of lovely white birches, past suburban railroad depots and rows of new apartment buildings, each topped with dozens of TV antennas. Finally, the train squeaked to a halt in the Belorussian Station.

Though I had been to Moscow three times before, I was as excited as a country boy on his first trip to New York. On my previous visits I had been a tourist, staying no more than a few weeks, and the Intourist travel agency had catered to all my needs.* This time I would be in Moscow five months, and I would live like an ordinary Soviet citizen.

*See "Firsthand Look at the Soviet Union," by Thomas T. Hammond, GEOGRAPHIC, September, 1959.

Hearthstone of Mother Russia, Moscow's Red Square glows on a frosty winter night. Above its snow-buried cobbles loom the crenelated walls of the Kremlin, citadel of tsarist and Communist masters; the boxlike Lenin Mausoleum, floodlighted Spasskaya

(Saviour's) Tower, topped by a glowing star; and onion-domed St. Basil's Cathedral. Living among Muscovites for five months, the author came to know the Soviet people and their pride in a metropolis intimately linked with their nation's turbulent history.

I had come to do research on a book dealing with Russian history. Selected by a committee of American scholars under the official cultural exchange program of the U. S. and Soviet Governments, I would be quartered in a Moscow University dormitory.

Living like a student again after 15 years as a professor would be strange enough, and like a Soviet student still more so, but I would get closer to the reality of Soviet life than is ever possible for a tourist.

I hailed a taxi, and the driver—a friendly, chubby type with a day's growth of stubble on his face—helped load my suitcases.

"To M.G.U. [Moscow State University]," I said. "And please go through the center of town, so I can see what the Kremlin looks like in winter."

Sparkling Snow Beautifies the City

As we rode along, I stared out the window, wide-eyed lest I miss something. A light snow was falling, and red-faced women were busily shoveling the drifts into the streets—presumably the same women one can always see sweeping the sidewalks at other times of the year. Moscow, with its fresh blanket of white, seemed much more beautiful in February than in summer. Snow hid the cracks in the plaster, covered piles of trash in courtyards, and gave even log cabins an air of mysterious loveliness.

We headed down Gorky Street, the main shopping thoroughfare, which Russian students call "Broadvey" (map, page 305). We passed through Mayakovskiy Square, dedicated to the colorful "poet of the Russian Revolution"; then, a few blocks farther on, through Pushkin Square, honoring the 19th-century writer whom Russians consider their greatest literary genius. Behind Pushkin's statue I saw a strikingly modern building with a massive glass façade.

"That's the new Rossiya cinema," said the driver, "the most beautiful movie house in the world."

On either side of Gorky Street stood shops of various kinds: some had large modern display windows, with goods arranged in a more attractive manner than any I remembered seeing before. None of the shops bore the names of private firms; these, of course, were abolished long ago. Instead, signs said "Book Store No. 100," "Grocery Store No. 14," "Pharmacy No. 36," or simply the name of the chief commodity—"Shoes," "Milk," "Wine."

There were only a few of the big neon signs one would find on our Broadway, and these were mostly political: "Glory to the Communist Party of the Soviet Union," "Long Live Leninism," "Forward to the Victory of Communism," or "Atoms for Peace." Some offered advice: "Insure Your Property With the

Jubilant students greet dawn with a song as they celebrate high-school graduation night in Red Square, a local tradition. The luckiest will continue educations or work in Moscow; military service or factory jobs elsewhere in the Soviet Union await others.

State Insurance Trust." "Keep Your Money in State Savings Banks," or simply "Drive Carefully."

The sidewalks teemed with people hurrying along, as if driven by the cold. They seemed better dressed than I remembered them in summer; almost everyone wore a fur hat—many of black or gray karakul from the steppes of central Asia—and some had matching fur collars on heavy wool coats.

On the street corners we passed brightly painted little wooden kiosks selling cigarettes, theater tickets, artificial flowers, cakes and cookies, meat pies, or fruit-flavored drinks. To my surprise, I saw a heavily bundled woman selling ice-cream sticks.

"Oh, sure," said the driver. "We eat as much ice cream in winter as in summer. We Russians are tough—we don't mind the cold."

Continuing to the end of Gorky Street, we came to Manezh Square. Straight ahead rose the old-fashioned red-brick turrets of the Historical Museum; to the right loomed the Kremlin wall, while in between I could see

part of Red Square, the Lenin Mausoleum, Spasskaya Tower, and fantastic St. Basil's Cathedral.

We turned right, passing some older buildings of Moscow University, with their white classical columns and plastered walls of bright yellow. Then came the Lenin Library, a clean modern sculpture in gray marble. A few blocks on I saw a beautiful little Orthodox church, gaily painted in white, red, and green.

"What church is that?" I asked the driver.

"I don't know," he replied. "I'm an atheist."

Soon we had left the old part of town and were speeding along a broad new boulevard, Komsomol Prospect, bordered by rows of new apartments—most of them built since my last visit, six years before.

"See that tallest building over there?" asked the driver. "The architect who designed it forgot to include elevators, so the judge sentenced him to ten years—ten years of living on the top floor!" He grinned at his own joke.

Double-decker Bridge Carries Moscow Subway

We ascended a long bridge over the Moscow River, leading up to the steep bluff called Lenin Hills. The bridge was also a new addition since my last trip.

"It's a two-story bridge," said the driver, with a touch of pride in his voice. "The subway goes underneath!"

Now I could see the huge wedding-cake tower of Moscow University (pages 322–3), sitting grandly on a bluff by the river. As we reached the top of the hill, I asked the driver to stop so I could look back at the magnificent panorama of Moscow—the same vista that Napoleon had when he arrived with his army in 1812.

Since most of Moscow is flat and I stood on its highest point, almost the entire city was visible. I could see, immediately across the river, the huge bowl of Lenin Stadium, which seats more than 100,000 people for holiday celebrations and sports events (pages 324–5). Beyond was 440-year-old Novodevichiy Convent, surrounded by an ancient fortresslike wall as if to protect it from the modern city that has grown up around it. Its great bell tower and many churches are much the same as they were in 1598, when Boris Godunov received a delegation that came to ask him to become tsar.

In the far center of the horizon I glimpsed the Kremlin itself (painting, pages 308–9), with its golden domes, highest of them the Bell Tower of Ivan the Great. For centuries it was the tallest structure in Moscow, but Stalin surpassed it after World War II with no less than seven skyscrapers—tall, pointed towers adorned with elaborate cupolas in a style sometimes called "Stalinist Gothic."

Behind me soared the tallest and most imposing of these

To share the moment with folks at home, a soldier armed with camera as well as automatic rifle records the excitement of May Day, when the Soviets display their might in Red Square. In the hours-long spectacle, workers, farmers, athletes, and the men and machines of war pass in review before Soviet leaders. Only officials and selected guests, diplomats, journalists, and foreign visitors gain admission to Red Square; ordinary citizens who do not take part view it on television.

Cultural capital of the Soviet Union as well as its industrial and political center, fast-growing Moscow ranks as the world's fifth largest city, with a population of nearly 6,400,000. Owning few cars, people take advantage of the city's elaborate and well-run subway system (pages 316-17).

Spider web of boulevards and subways weaves out from the Kremlin, heart of Moscow. Palaces, museums, theaters, and libraries cluster in the downtown section, cut by the looping Moscow River. The name for both city and river—Москва in Cyrillic, pronounced "mos-kvah"—may have derived from a Finnish word meaning "waterway."

grandiloquent skyscrapers, the main building of Moscow University, 32 stories high, my home for the coming months.

My room, on the fifth floor, measured about 12 feet by 9—small by U. S. standards. But at least I had it all to myself; some Soviet students live two or three to a room. The furnishings included a table covered with oilcloth on which sat a cut-glass water carafe—one bit of elegance that is found in even the plainest Soviet offices and waiting rooms.

I had also been provided another typically Russian item: a large aluminum teapot. The English may insist upon having tea in mid-afternoon, but Russians keep the pot boiling all day long. On trains your sleeping car may not have hot water for shaving, but the porter will surely have a water heater for tea.

The room also had a loudspeaker that broadcast Radio Moscow. I couldn't dial another station, nor could I get foreign countries; I could only turn the speaker on or off.

Next to my room was another just like it occupied by my suitemate, Aleksandr Yosefovich Primenko, or Sasha as we called him. Between us we shared a toilet, a wash basin, and a shower with plenty of hot water.

By Soviet standards, these quarters were luxurious. Even in Moscow, where thousands of new apartment buildings have gone up in the past ten years, it is still common for three or four people to live in one room and for several families to share the same toilet, bath, and kitchen. Homes in some parts of the city still lack running water, and housewives have to fetch it from outdoor pumps.

Indeed, the dormitory rooms are so superior to much of Moscow's housing that many unauthorized persons try to live at the university. Guards at all entrances require everyone to show his *propusk* (pass) for admittance. Even so, by using a borrowed pass or by some other ruse, many individuals manage to live in the dormitories without permission.

One night around 12:30 I was trying to go to sleep, when suddenly there was an insistent knock on the door. Three young men walked in and demanded, "Show us your passport!" I was completely bewildered. Were they secret police? What had I done wrong? I hastily handed them my passport. To my relief they said, "Everything's in order."

"What's it all about?" I asked.

"We belong to the Voluntary People's Guard for the Preservation of Social Order. We're looking for people living here illegally."

Student Committee Polices Dormitory

The People's Guard was not the only group checking on me to see that I followed the rules. The Sanitary Committee examined my room once a week, graded me on its cleanliness, and posted the grade on the bulletin board. Other inspectors looked for vermin, spraying poisons where necessary. I never saw a mouse, a roach, or an ant in the dormitory

CENTRAL MOSCOW

Metro railways and stations — Railroads

KREMLIN PALACE OF CONGRESSES

MUSEUM OF SOVIET ART

EXHIBITION OF ECONOMIC ACHIEVEMENTS

CHURCH IN ALEKSEYEVSKOYE

PYATNITSKOYE CEMETERY

SOKOLNIKI PARK

PETROVSKIY PALACE (AIR FORCE ACADEMY)

DYNAMO STADIUM

SAVELOV STATION

RIGA STATION

LAZAREV CEMETERY

CHURCH OF THE ASCENSION

CHURCH OF ST. TRIFON

PRAVDA OFFICES

SOVETSKAYA HOTEL

YOUNG PIONEERS' SPORTS STADIUM

SOVIET ARMY THEATRE

SOVIET ARMY MUSEUM

COMMUNE SQUARE

MOSKVA

BELORUSSIAN STATION

HIPPODROME

MONUMENT TO GEORGY ZHUKOV

CENTRAL PUPPET THEATRE

STATE CIRCUS

LENINGRADSKAYA HOTEL

YAROSLAVL STATION

LENINGRAD STATION

KAZAN STATION

CHURCH OF THE EPIPHANY IN YELOKHOVO

VAGANKOV CEMETERY

PENN HOTEL

SATIRE THEATRE

TCHAIKOVSKY CONCERT HALL

IZVESTIA OFFICES

TRETYAKOV MONASTERY (ART GALLERY)

PLANETARIUM

PUSHKIN SQUARE

ARAGVI RESTAURANT

MOSCOW ART THEATRE

BOLSHOI OPERA AND BALLET THEATRE

CHEKHOV HOUSE

NATIONAL CAFE

NATIONAL HOTEL

MOSCOW CONSERVATORY

HOUSE OF WRITERS

AMERICAN EMBASSY

ARBAT SQUARE

LENIN LIBRARY

KREMLIN

SUM

CENTRAL TELEGRAPH

MUSEUM OF ORIENTAL CULTURE

ANDRONIKOV MONASTERY (RUBLEV MUSEUM)

HOTEL UKRAINA

FOREIGN MINISTRY

PUSHKIN MUSEUM OF FINE ARTS

BRITISH EMBASSY

KROPOTKIN SQUARE

MOSCOW OUTDOOR SWIMMING POOL

ACADEMY OF FINE ARTS

TRETYAKOV GALLERY

LENIN LIBRARY

DRAMA AND COMEDY THEATER

MAYAKOVSKY MUSEUM AND LIBRARY

CENTRAL THEATRICAL MUSEUM

CHURCH OF ST. JOHN THE WARRIOR

NOVOSPASSKIY MONASTERY

PLEASANT GATE SQUARE

KRUTITSKOYE PODVORYE (CHURCH)

TOLSTOY HOUSE

CHURCH OF ST. NICHOLAS IN KHAMOVNIKI

GORKY PARK

VARSHAVA (WARSAW) HOTEL

DANILOVSKIY MARKET

MOSCOW RIVER

NOVODEVICHIY CONVENT

MUSEUM STUDIOS

CHURCH IN TROITSKOYE-GOLENISHCHEVO

TOURIST (YOUTH) HOTEL

USSR ACADEMY OF SCIENCES

LENIN STADIUM

DONSKOY MONASTERY (ARCHITECTURAL MUSEUM)

DANILOVSKY MONASTERY

SIMONOV MONASTERY

PATRICE LUMUMBA PEOPLES' FRIENDSHIP UNIVERSITY

SERPUKHOVSKAYA SQUARE

DANILOVSKOYE CEMETERY

MOSCOW STATE UNIVERSITY

ALL UNION COUNCIL OF TRADE UNIONS

MOSCOW DEPT. STORE

LENIN HILLS

—surprising, since most students kept food in their rooms. Nor was I ever bothered by bedbugs, though a friend was less fortunate.

As a resident of the dorm, I took my turn at floor duty. This involved sweeping the corridors and the two kitchens on our floor, as well as answering the telephone in the parlor for half a day.

The Student Committee, made up of activists from the Komsomol, the Communist Youth League, supervised all these matters. If a student was extremely lax in his academic and social responsibilities, the committee could recommend expulsion.

More than a score of American exchange scholars were quartered at the university during my stay, and all of us were objects of special supervision. Our suitemates, usually members of the Communist Party or the Komsomol, probably were required to report on us. We assumed microphones were hidden in our rooms. One of the Russians on my floor, a member of the People's Guard, inquired among the other students as to who came to my room and why.

Under these circumstances, many students were reluctant to drop into my room for a chat. They thought it would not look good on their records. Some of my dormitory mates were friendly nonetheless.

"*Nichevo*," one said, "what the heck. If anybody asks me what I'm doing here, I'll say I'm practicing my English. I don't care. I never expect to be a Party member or have an important job anyhow."

One student from another Communist country was afraid even to speak to me, lest his compatriots find out about it. He asked a Soviet student to ask me if I would be willing to sell him some American cigarettes.

I refused, lest I be accused of *spekulatsiya*—black marketeering—but offered him some as a gift. He was afraid to take them from me directly, but suggested that I give them to a Soviet friend, who in turn would give them to him. Only after I assured him repeatedly that I would tell no one did he reluctantly hide the cigarettes in his pockets.

"If anyone knew, it would be this for me," he said, drawing a finger across his throat.

University "City" Fills Most Needs

My suitemate, Sasha, 37, was an attractive Ukrainian with bushy brown hair, a sharp nose, and usually a broad smile on his lips. He served in the army during World War II, was wounded three times, and lost one leg.

Sasha, a graduate student, aimed at becoming a history professor. Although he worked hard writing his dissertation, frequently typing till 3 a.m., he was always ready to answer my questions or simply to bat the breeze, and he helped greatly to ease my adjustment to Soviet life.

The towering home of Moscow University (or, to use its full name, "Moscow Order of Lenin and Order of the Red Banner of Labor State University Named for M. V. Lomonosov") is a self-sufficient community. It has a grocery store, shoe-repair shop, laundry, drugstore, a small clothing shop, a watch-repair kiosk, theater-ticket bureau, photo studio, post office, several book and newspaper stands, a movie hall, a barbershop (where I got excellent haircuts for 40 cents), and a beauty parlor where coeds get fancy hairdos for their weekend dates.

On my first visit to the student cafeteria, I was introduced to one of the most common

(Continued on page 311)

With heel-clicking precision, the guard changes at Lenin Mausoleum exactly on the stroke of the hour. During visiting hours, long lines wait patiently to view the glass-encased embalmed body of the father of the Union of Soviet Socialist Republics. Cyrillic letters over the door spell "Lenin."

Flowers alone grace the grave of a downgraded Stalin, dictator of the Soviet Union until his death in 1953, though busts mark the plots of less-famous Bolsheviks behind the Lenin shrine. A de-Stalinization program after his death rewrote the nation's history books and stripped the mantle of greatness from the long-time leader. In 1961 officials moved his remains here from a place of honor beside Lenin in the mausoleum.

MANEZH SQUARE

MOSCOW RIVER

КРЕМЛЬ

KREMLIN—its very name conjures a foreboding image in Western minds. Thus the magnificent buildings, capped by bulbous cupolas of gold and silver, often surprise foreign visitors with their beauty.

The Kremlin—literally "the citadel," the fortified center of the medieval city—stands where Prince Yuri Dolgorukiy, founder of Moscow, built a rude wooden fort in the 12th century. Later rulers rebuilt and improved it many times, erecting palaces, churches, and government offices befitting the seat of Russian empire. At the time Columbus was planning his voyages of discovery, Europe's foremost military engineers raised the protecting brick battlements around the Kremlin's 65 acres.

Succeeding the tsars in this traditional home of authority, the Bolsheviks imposed their new order. Paradoxically, the stronghold of an atheistic ideology preserves its former churches as historic treasures—the Cathedral of the Assumption, where the tsars were crowned; the Cathedral of the Annunciation, where they were wed; and the Cathedral of the Archangel Michael, where many lie entombed.

In the Hall of Arms, descendants of serfs see priceless riches of tsarist days. Diplomats sip vodka and eat caviar at gala receptions in St. George's Hall of the Grand Kremlin Palace.

Some visitors complain that the modern glass-and-marble Palace of Congresses, completed in 1961, looks out of place. The Soviets reply, "Other periods of Russian architecture are represented here—why not ours?"

Beyond Spasskaya Tower, the main Kremlin entrance, spreads Red Square, bounded by the Historical Museum, GUM (State Department Store), and St. Basil's Cathedral (pages 298-9). The square's Russian name, Krasnaya, once meaning "beautiful" as well as "red," predates the 1917 Revolution by centuries.

This precisely scaled painting shows the Kremlin in unprecedented detail. Since Soviet security regulations bar aerial photographs, artists gathered all available diagrams and ground-level photographs. They drafted a sketch that was carried to Moscow and corrected on the spot by a GEOGRAPHIC assistant editor.

features of Russian life—the queue. In this case there were two queues, operating on a pay-before-you-see-the-food basis.

After 10 or 15 minutes of waiting, I got close enough to read the menu posted on the cashier's cage. The menus were almost illegible and difficult to translate, even though I knew Russian. Several words meant stew; chopped meat had countless names.

Upon arriving at the head of the line, I faced the impossible task of deciphering the menu, translating it, and making a choice—all in a few seconds. If I dallied, the cashier would start shouting at me.

As I sounded off each item, the cashier would punch the cash register, which simply recorded the sale. She added up the total on an abacus (the standard device for adding in Russia). She then handed me the cash register tape in return for my kopecks (cents).

I now had the privilege of moving to the second queue and waiting another ten minutes or so before getting to the serving counters. At the first counter I presented one of my receipts to the girl, who reached into a trough, threw some mashed potatoes on a plate, and then plopped a bit of stew on top.

At the next counter I got my borsch, served in a shallow bowl filled to the brim. I carried it delicately lest it spill on my clothes. (This would have been a catastrophe, because of the poor dry-cleaning facilities in Moscow.)

The serving of bread occupied the full-time attention of still another girl, since it was not sold by the slice, but by the gram. The bread girl carefully weighed each piece, adding a bit here or cutting off a bit there, so no one would get slightly more or less than his two kopecks' worth.

There was one other feature of the student cafeteria that I will never forget—the complete lack of knives. Either I had to pick up my meat with a fork and bite off a chunk at a time, as most of the Russians did, or painfully pry the meat into pieces with the edge of a spoon.

Students Live on $40 a Month

The only virtue of the student cafeteria was its cheapness. I usually spent from 50 cents to 80 cents for dinner, never as much as a dollar. Cheapness, of course, is important for students who have to live on scholarships of $40 a month. Fortunately for me, there were two other eating places at the university. The professors' dining room (open to all) and the dietetic dining room both had better food, with table service, at somewhat higher prices—about $1.00 for an average dinner.

Of course, there were several good restaurants downtown. Among my favorites were

Early tsars ruled and reveled in the throne room of the Kremlin's Hall of Facets. Beneath the arched ceiling at Christmas, 1553, Ivan the Terrible feted the first Englishmen to visit Russia. Allegorical frescoes glorify the power and the wisdom of the tsars.

Hoard of riches amassed by Russian rulers—gilded presentation pieces, crown jewels, golden carriages and sleighs, and diamond-studded robes—awe visitors to the Hall of Arms in the Kremlin. Stalin barred citizens from admission during his rule; not until 1953 could they tour the citadel.

Government by "*Da*—Yes"

RUBBER STAMP OF THE COMMUNIST PARTY, the Supreme Soviet meets in the Grand Kremlin Palace. Unlike the Congress of the United States, this body wields little power, approving decisions already reached by the Party's Presidium. Every four years citizens dutifully elect nearly 1,500 deputies to the two Supreme Soviet chambers, casting their ballots for unopposed candidates selected by the Communist Party.

At a joint session last fall, Party Presidium members (from right) Leonid Brezhnev, Alexei Kosygin, Anastas Mikoyan, Nikolay Podgorny, and Mikhail Suslov take front-row seats by rank. Mikoyan later resigned as President of the Supreme Soviet, and Podgorny succeeded him. Brezhnev, First Secretary of the Party, and Kosygin, Chairman of the Council of Ministers, hold positions once occupied by Nikita Khrushchev alone.

PHOTO BY S. SOBOLEV, FROM SOVFOTO

the Aragvi (specializing in Georgian foods and wines), the Uzbekistan (serving central Asian dishes), and the National Hotel (with a varied, predominantly Russian cuisine). Even these de luxe restaurants were inexpensive by American standards: A Soviet couple could have dinner, listen to a jazz orchestra, dance, and sip *shampanskoye*—Russian champagne—for about $5.00 a person. And, best of all, tipping was more or less voluntary.

Metropolis Retains Village Flavor

Though I spent most of my time in libraries doing research on Russian history, I set aside weekends for sightseeing. I walked the streets of Moscow for five months, yet every time I turned a new corner I found surprises—a little jewel of a church hidden beside a factory wall, a ramshackle log cabin on the edge of a new housing development, or a neoclassic palace built by some noble in the time of Catherine the Great.

Moscow is fascinating and confusing. It's a modern industrial metropolis with a population of 6,388,000, and yet it's only an overgrown peasant village. It's the capital of the biggest country in the world, but it is provincial and ingrown. It is at the same time clean and shabby; magnificent and dowdy; exhilarating and depressing; dynamic and stagnant; planned and chaotic; revolutionary and conservative. And it's always changing.

Moscow is the center of one of the world's most highly centralized countries. All major decisions—political, economic, scientific, or cultural—are made here. Soviet trains and planes operate on Moscow time. Outlying newspapers copy the contents and format of *Pravda* and *Izvestia*, published in Moscow. Moscow has the most industry, the most governmental offices, museums, monuments, scientists, and the most famous theaters.

Of all Russian cities, only Leningrad (formerly St. Petersburg), with 3,607,000 people, makes any claim to challenging Moscow's predominance. Peter the Great moved the capital to St. Petersburg in 1714; there it remained during most of the 200 years to 1918, when the Bolsheviks returned it to Moscow.

Leningraders still insist that their city is the most civilized metropolis in Russia, and regard Moscow as crude, backward, and drab. If Moscow is Washington and New York combined, Leningrad is Russia's Boston.

I tried to cover as much of Moscow as I could. Sometimes I boarded a bus or streetcar and rode to the end of the line, just to see what would turn up next. At other times I took the subway to look at the people, perhaps stopping along the way to admire the ornately decorated stations (pages 316-17).

Often I knocked around town with my closest Soviet friend, a graduate student in linguistics, whom I shall call Boris. A tall young man with finely chiseled features, high forehead, and curly black hair, Boris was one of the most cultured Russians I met, with a great knowledge of literature, history, art, architecture, and Soviet life in general.

He spoke German and English fluently and asked me to teach him American slang, which he found fascinating. Whenever we met, he would look at me with a grin and say, "What's cooking, Doc?" And when we parted, "See you later, alligator."

"Student From the Moon" Intrigues Boris

Boris obviously got a thrill out of having a friend from the United States, and he used to come by my room often to look at my magazines and newspapers. I once asked him why he was so interested in America.

"If a student from the moon came to your university, wouldn't you want to meet him?" he replied. "Our press has a lot of articles about the United States, but they don't tell the whole truth. I want to know for myself."

Like most Russians, Boris was generous. Frequently he brought gifts—a rare book on Russian history, a toy wooden bear for my son, or a cigarette box decorated with a miniature painting of a Russian fairy story.

Not long after my arrival, I made a return visit to the biggest tourist attraction in all Russia—Red Square and the Kremlin. Though Boris had seen them a hundred times, he was glad to go along.

In Red Square we joined the crowd in front

Fairy-tale fantasy mirrored in a rain pool, St. Basil's Cathedral embodies the splendor and mystique of old Russia. Built by Ivan the Terrible to commemorate his victory over the Tatars in 1552, the flamboyant masterpiece lifts domes of many shapes and colors above chapels linked by a labyrinth of passages. Napoleon, who called St. Basil's a "mosque" and stabled horses here, wanted the cathedral torn down. But it survived to become a historic monument. Around the platformlike Lobnoye Mesto, or Place of Execution (left), citizens once gathered for tsarist proclamations and public beheadings.

of Lenin's tomb to watch the changing of the guard. As three trim soldiers goose-stepped from the Kremlin, we watched to see if they would succeed in taking their places at the precise moment when the clock on Spasskaya Tower struck the hour (page 307).

"Perfect!" said Boris, beaming, as the click of their heels coincided exactly with the first "bong."

Swimmers Splash Amid Swirling Snow

On another day we visited GUM, the huge State Department Store (Gosudarstvennyy Universalnyy Magazin) across from the Kremlin (page 345). I had come to Moscow without a fur hat, and my Russian friends seemed worried that I would die of pneumonia. The smart karakul caps were too expensive—$75—but I found a muskrat one with ear flaps for $20.

One of the strangest sights to me was the Moscow swimming pool—an enormous outdoor pool that operates even in below-zero weather. The water, of course, was heated, so a huge cloud of steam billowed up,

"World's most beautiful subway," say Muscovites of their Metro. But hurrying commuters rarely glance at the Stalin-era mosaics and chandeliers like these in Kiev Station.

Nearly three million people a day pay 5 kopecks (about 5½ cents) to travel in cars that run smoothly and on time. Four-lane escalators whisk them to and from stations as much as 200 feet below city streets.

Camped beneath an ornamental window, a subway hawker sells state lottery tickets for 30 kopecks. First prize: a small Moscow-made sedan worth about 3,500 rubles ($3,885).

giving the impression of a vast Turkish bath. It was odd to stand in a whirling snowstorm and watch hundreds of men and women splashing a few feet away in scanty bathing suits.

Another day we went to the Exhibition of Economic Achievements, a sort of permanent world's fair, except that only the U.S.S.R. is represented (pages 326-7). Spread across 534 acres, many of the pavilions reflect architectural styles of the Union's different republics and nationalities. They hold thousands of displays of the most up-to-date developments of Soviet industry, construction, transportation, and agriculture. Special halls proclaim achievements in "Space," "Atomic Energy for Peaceful Purposes," "Electronics," "Livestock Breeding," and so on.

Additives Turn White Bread Tan

An exhibition boasting of Russia's agricultural achievements seemed a bit ironic, because the food situation that year was the worst the country had seen in a long time. Indeed, the crop failure was so serious that Russia was forced to buy wheat from the United States.

Inhabitants of Moscow felt the shortage most keenly in bread, always a large part of the Russian diet. The delicious white bread I had eaten as a tourist was available now only in the most expensive restaurants. Elsewhere people had a choice of either the traditional black bread or a bread that, though described as "white," was actually tan in color and rather unpleasant in flavor.

The queer taste was the result of adding one or another substitute to the flour—corn meal, peas, beans, and so on. The students had a sarcastic comment: "Did you hear what they're adding to the bread this week?"

"What?"

"Flour!"

The crop failure also affected other foods; macaroni, rice, buckwheat, and similar grain products disappeared from the stores completely. Friends told me that outside Moscow the food situation was, as usual, much worse. In provincial villages and towns there were periods when only black bread was available, and customers had to wait in long lines for that.

"There are always shortages of one thing or another," a Moscow housewife told me. "They

Face as round and red as the beets she sells, a vendor hunches against the cold in a Moscow free market. Her solid strength reflects the Russian spirit that wore down Napoleon's invading legions and checked Hitler's panzers in the rubble of Stalingrad. Like hundreds of farm folk who stream into the city each morning, she offers produce raised on a private plot tilled on a collective farm. For stall and scale she pays a nominal rent and pockets the rest of her earnings.

boast that our economy is a planned one, but it doesn't show many signs of being planned in the sale of the goods I need. But if you think Moscow is bad, you should see the other cities. I mail my sister in Archangel a package of foods every month—things she can't buy at all."

On my trips as a tourist I hadn't felt the food shortages, since the hotel restaurants where I ate offered a wide variety of dishes. This time, however, I shopped for food regularly, mostly in the university's *gastronom* (grocery store), and found it quite a chore.

I would have liked to buy milk every day, but I never knew when the gastronom would get its supply—one day it would be in the morning, the next day in the afternoon, and the third day in the evening. Sometimes they would have only milk, sometimes only yogurt, and sometimes neither. And even when they had exactly what I wanted, I might stand in line for 15 minutes, only to find the supply exhausted before my turn came.

"If It's for Sale, Buy It"

During winter the arrival of eggs was a rare event. Word would spread through the dormitory—"Eggs!"—and students would come hurrying from all directions. The eggs came packed in large wooden crates. This meant that the purchasers had to perform a balancing trick—carrying home their limit of 30 eggs on a piece of the indented cardboard from the crate.

Living in a country where shortages are common, one develops new attitudes. I soon adopted a basic rule of Communist society: "If you see something for sale that you want, buy it, because tomorrow there probably won't be any."

I seldom eat oranges, but when I unexpectedly found them on sale in Moscow, I very much wanted some—until I discovered the price: 20 to 30 cents apiece. Soon, however, the lure of the scarce luxury became irresistible, and I queued up for oranges whenever they were available—usually shipped in from Spain, Morocco, or Israel. As a result, I ate more oranges in those five months than I ordinarily eat in five years.

Pensive poet Robert Rozhdestvenskiy often aims his blank verse at Stalinist repressions. Though a confirmed Communist, he aroused Khrushchev's ire with his protests, later he publicly confessed his "errors." He and other liberal young poets enjoy the popularity of matinee idols. Public readings on Poetry Day pack Moscow's many Houses of Culture and even fill Lenin Stadium with a capacity crowd of 100,000 poetry lovers.

Interviewing Rozhdestvenskiy in his Moscow flat, photographer Conger found him "always moving—gesturing, pacing, changing chairs." Twice a visitor to the United States, the 33-year-old poet at times waxes anti-American in his verses.

Guitars are in, balalaikas out, with Russia's jazz-loving young people. Reclining on rented slat chairs, this group whiles away leisure hours at Silver Pine Forest Beach on the Moscow River.

AGLOW FOR MAY DAY, *Moscow University rises above a fountain-studded pool. The city's tallest building bristles with "Stalinist Gothic" towers and ornamentation; its hundreds of well-equipped laboratories reflect Russia's stress on science. More than 30,000 undergraduates, a third of them coeds (inset), compete for admission and attend tuition-free. Living in student quarters, the author found the university a self-contained community complete with stores, barbershop, and bank. Guards at each entrance intercept would-be squatters lured by the relative luxury of the dormitories.*

EKTACHROMES BY DEAN CONGER (INSET) AND THOMAS T. HAMMOND © N.G.S.

The Soviet regime encourages its subjects to accept the shortages and hardships of today by holding out the promise of the glorious future awaiting them "in a few more years." According to the official line, what they have today is called "socialism," while the future system, in which everybody will have plenty of everything, will be called "communism."

The government has made many promises in the past, and Soviet citizens have become somewhat cynical. One day Boris asked me: "Did you hear what it's going to be like at the end of the next five-year plan? Every family will have a TV set and a private jet plane."

"I can see why everybody would want a TV set," I replied, "but why will they need a jet airplane?"

"Well," he said, "when we see on TV that eggs are on sale in Vladivostok, we can jump in our planes and fly there to buy some."

A similar skepticism about the utopian future was revealed in the remark made to me on a bus one day. When I first arrived in Moscow, I noticed that the buses bore signs saying "No Conductor." Instead of someone to collect fares, there was a box near the entrance, where each passenger was supposed to drop his 5 kopecks and take a ticket. I asked the young man seated beside me about the new system.

"Not long ago," he said, "all the conductors were removed, and we changed to the honor system. This shows that we have achieved socialism, since all citizens have rid themselves of capitalist greed and think only of the collective good.

"And when we achieve communism," he added with a grin, "there will be no drivers."

Western Fashions Invade Moscow

Though the food situation in Moscow had deteriorated since my last trip, clothing seemed much improved. The heavy utilitarian shoes for ladies had been replaced by slim pumps with spike heels, most of them imported. Dresses were of better fit and fashion. Parisian coiffures had replaced the dowdy hairdos of the past, and use of lipstick and mascara (which the Bolsheviks had once denounced as "bourgeois") was common.

The typical Soviet man of the past wore jackets with sleeves (by Western tastes) too long, trousers with cuffs too wide, and shoes that were broad and ungainly. Now many Soviet men have gone Italian—with form-fitting jackets, narrow trousers, and pointed shoes.

My first impression in 1956 had been that almost everybody looked like either a worker or a peasant; now, eight years later, most

Poised for a skalom, skiers await their turn on a steep slope in the Lenin Hills near the university. The run ends at the ice-paved Moscow River.

From these bluffs in 1812, Napoleon first spied the turreted Oriental city he held so briefly. "She lies at my feet," he gloats in Tolstoy's *War and Peace*, "her golden domes and crosses flashing and twinkling in the sun." Now viewers see the honeycomb tiers of Lenin Stadium and phalanxes of new apartments.

Muskrat *shapka* warms the author's ears in a city so cold that passersby search each others' faces for frostbite. Professor of Russian History at the University of Virginia, Dr. Hammond speaks Russian and has made four visits to the U.S.S.R.

Market-bound *babushka* —"grandmother" in Russian—tows a snow-time perambulator with bundled cargo.

Photograph copyright © U.S.I.S.

Muscovites looked middle class. One evening at the Bolshoi Theater I sat next to a gray-haired gentleman who was so distinguished-looking in his neat white shirt and well-tailored navy-blue suit that I assumed he was from some Western country, perhaps the United States. His wife wore a big beehive hairdo, an ermine cape, and diamonds on her fingers. Yet during intermission, when they began to talk, I discovered that they were both Russians, evidently members of the new upper class. Perhaps he was a Party or government official, a scientist, a successful author, or a university professor.

One could not say, however, that today the stores are filled with attractive, well-made clothing. Foreign visitors still meet black marketeers who are ready to buy the clothes off their backs for high prices. One student I knew paid $22 for a nylon shirt from Yugoslavia because, he said, the quality was superior to similar Soviet products.

Foreign clothes are a status symbol, especially among the youth. Once in downtown Moscow I saw a boy about 19 or 20 whom I immediately identified as an American from his clothes—a seersucker jacket, madras shirt, khaki trousers, and loafers. "What part of the States are you from?" I asked.

He looked puzzled. "*Chto vy skazali?*—What did you say?" he replied in Russian.

He *was* Russian. He had bought his American outfit, he explained, from American tourists and Soviet black marketeers.

Shoe Speculator Draws Jail Term

The chronic shortage of quality goods also has led to what the government calls "speculation"—buying scarce items and reselling them at a profit. I ran into a case of this one

day when I attended a trial at a People's Court, lowest in the Soviet judicial system. The defendant, a man about 45, was accused of buying a pair of ladies' shoes for $23, then trying to sell them for $28 to a girl at the end of the line.

He denied it. "I bought them for my niece, but that girl begged me to sell them to her, so I was going to let her have them for the same price I paid."

The judge interrupted impatiently. "Are you trying to tell us that after waiting in line several hours you were going to sell the shoes for the same price? That's not believable! You're a professional speculator; you've been in court before for the same offense, and your pockets were full of earrings when the police arrested you."

The man finally admitted his guilt, but pleaded for mercy on the basis of his service in World War II. His sentence: two years in prison.

Consumer goods may be scarce in Moscow, but cultural activities abound. The city's numerous theaters operate on the repertory system, and the variety of performances that one can see (if he has the time and money) is overwhelming.

During one typical ten-day period, Muscovites could attend no fewer than 221 different plays, 12 ballets, 19 operas, 12 operettas, 16 puppet shows, a circus, and 23 plays written

Showcase of a nation, the Exhibition of Economic Achievements attracts huge crowds. Housed in templelike pavilions, the 100,000 displays in this permanent fair range from sputniks to laying hens, computers to milking machines. Streaming past the Friendship of Peoples Fountain, more than 8,000,000 visitors a year crisscross the parklike grounds in north-central Moscow.

Hoops of pretzel-like *bubliki* appeal to all ages at the exhibit. Boiled, then baked, the crusty rings ride like bracelets on the arms of matrons in scarves and chic younger women with bouffant hairdos.

especially for children. This is not counting the concerts, which are numerous and of high quality. Tickets, moreover, are quite cheap. Even at the Bolshoi Ballet the top price is only $3.85.

Many people have seen the Bolshoi dancers on world tours in recent years, but nothing compares with seeing them in their own home theater, with its huge stage, gilded balconies, red-plush upholstery, and crystal chandeliers —an appropriate setting for the classical ballets they do so well.

And it is particularly fun to watch the spectacle with an enthusiastic Soviet audience (pages 334-5). Russians are fanatics about ballet; the leading stars are national heroes. One night at the Bolshoi I shared a box with two schoolteachers who could tell me in detail the professional histories of each of the principal dancers, where they had studied, how long they had been dancing, their best roles, and what their particular virtues were.

The performance that night starred Maya Plisetskaya, one of the most honored ballerinas in Russia, in a ballet concert. Whenever Plisetskaya was about to appear, the audience began to applaud, and before she had finished each dance, they began to applaud again. At the end she had to repeat "The Dying Swan." Then huge bouquets of flowers were brought onto the stage, while she bowed for nearly 20 minutes. Never before had I seen such love between audience and artist.

"Dangerous" Books Withheld From Public

The main purpose of my coming to Russia, as stated in my application, was to collect information for a book on the Russian Revolution of 1905, an event which paved the way for the Bolshevik Revolution of 1917.

The staff of Lenin Library, the Russian equivalent of our Library of Congress, served

Riding the giant Ferris wheel, rowing on the lake, or giggling at images in funhouse mirrors—Gorky Park on a soft summer evening offers something for everyone. Less-active visitors relax in formal gardens, dine in restaurants, or attend plays in the amphitheater. Most popular of the city's 11 "parks of culture and rest," Gorky stretches along the Moscow River. The capital lacks true night clubs, but in a number of restaurants revelers such as these May Day celebrants may dance to popular music.

Flame of faith lighting her face, a supplicant offers a candle in a Russian Orthodox church. Schools teach militant atheism and church membership closes the door to good jobs, but religion persists despite decades of persecution.

Hallowed Virgin of Vladimir, a 12th-century Byzantine masterpiece, hangs in Moscow's Tretyakov Gallery. It inspired many icons by Russian artists during an age of religious fervor.

me politely and efficiently, though the library had some rather strange regulations. Many books, newspapers, and magazines were not included in the card catalogue because they were considered too heretical for the general public. Publications considered especially dangerous were kept in a secret part of the library called the "Special Fund," inaccessible to all but the most stalwart supporters of the Communist regime.

Though Lenin Library proved useful, the most important place for my research was the Central State Historical Archive. It contains invaluable original source materials—letters, diaries, government records, and other unpublished materials that exist nowhere else in the world.

When my application to study in Moscow was sent to the Soviet authorities in the spring of 1963, I stated clearly that I wished to do research in archives, and I listed the archives by name. I stated further that I would do preliminary reading on my topic in the United States, using a 15-volume series of documents published by the Soviet Academy of Sciences.

Red Tape Drags On for Months

On my arrival in Moscow in February, 1964, the university said that before using the archives I must first submit a "Research Plan" —my work, like everything else in the Soviet Union, having to be planned. I prepared the plan, emphasizing again that my main interest was in archival materials.

CATACOMBS © NATIONAL GEOGRAPHIC SOCIETY

Next I had to submit a detailed three-page list of the collections I wished to use in the archives. After a few weeks of waiting, I was assured that I had permission to use the archives "in principle," but that I would have to give the archivists time to get the materials together for me.

Throughout March and April I was repeatedly told that the collections would be ready "in a few days." Finally, on May 22, I was handed a letter from the Main Archival Administration. It stated that it was not necessary for me to use the archives, since I could find all the necessary documents in the 15-volume series of the Academy of Sciences.

The net result of my three-and-a-half-month wait was a suggestion that I read the books I had already read in the United States!

The final chapter occurred only after I returned home, where a letter awaited me from the U.S. Embassy in Moscow. An official of the Ministry of Education had telephoned the embassy on July 7—five days after my departure—to say that permission for me to work in the archives had been granted, and they were terribly sorry to have "just discovered" that I had left.

While the archives story is evidence that Stalinist bureaucracy and suspicion of foreigners is far from dead in the Soviet Union, I found indications of liberalizing trends and greater respect for the truth.

I was particularly impressed by public meetings which the Institute of History held

to discuss the draft of a book on the history of the Soviet Union during the time of Stalin's dictatorship. Although the draft apparently was much more truthful than earlier Soviet histories, it still was not sufficiently honest to satisfy some of the speakers.

"During the time of Stalin," said one critic caustically, "we described everything as either great or awful, black or white, with nothing in between. We still do the same thing; we are still under Stalin's influence. Have we ever given a balanced evaluation of a person, showing both his good and bad sides? No, always a person is a god or a devil. We must not continue this. We can't write just for today; we must write so that in ten years we won't blush."

Problem of Truth Plagues Soviet Historians

Other members of the audience attacked the book for not telling enough about the great purges of 1935-38, the Stalin-Hitler pact of 1939, or the ruthless way in which Stalin collectivized agriculture. Still, there seemed to be tacit acknowledgment by those present that Soviet authorities would not permit historians to tell the *whole* truth.

As one speaker commented, "There are many fabrications in this volume, and *some* of them can certainly be eliminated."

In other areas also I found greater freedom and less fear of the police than on previous trips. Voice of America broadcasts to Russia are no longer jammed (with the unfortunate result that people seem less eager to listen), and jazz is no longer condemned (with the unfortunate result that I was kept awake nights by recordings of the loudest kind of rock 'n' roll). American music is played fairly often on the Soviet radio; one night I was startled to hear "Wagon Wheels," "Indiana," and "Beautiful Ohio"

High-rise apartments lift above rustic cabins near Moscow University as the capital expands. The prefabricated structures provide more than 100,000 new units annually, and families accustomed to communal baths and kitchens clamor for the apartments' comparative luxury—even while criticizing the mass-produced buildings for shoddy workmanship. Women masons, carpenters, and painters labor side by side with men on the projects.

Bolshoi Ballet: big and beautiful

TRADITIONALLY, the ballet enjoys tremendous esteem in Russia, which has produced some of the world's foremost dancers—Pavlova, Nijinsky, Ulanova, Nureyev. The celebrated Bolshoi company features extravagant productions and extraordinary physical feats. Bolshoi means "grand," and the image justifies its name in classics like "Swan Lake," performed here in the Kremlin's Palace of Congresses before a capacity audience of 6,000.

The Bolshoi's 250 dancers, supported by their own orchestra and an army of technicians, live in a world apart. Wards of the Ministry of Culture, solo ballerinas like Yekaterina Maximova (below) begin their careers at age 9 or 10. Each year 30 youngsters, chosen from 1,500 applicants, enter the Bolshoi's school for nine years of rigorous training. To make the picture below and others of Russian artists and professional people (pages 320, 336-7, and 339), photographer Conger had the assistance of the Institute of Soviet-American Relations, a government agency dealing with American visitors.

—American voices singing along with Mitch Miller.

A few Broadway hits are now performed on the Moscow stage, though they are usually chosen to show the degeneration of American life (Tennessee Williams's *Orpheus Descending*), or the class divisions of American society (*Two for the Seesaw* by William Gibson).

Another landmark in the removal of Stalinist restrictions was the first presentation since the Revolution of ballets by the Russian émigré composer Igor Stravinsky, such as "Petrushka" and "Fire Bird."

Workaday world of Moscow women

SPURRED BY STAGGERING WAR CASUALTIES, the necessity for more family income, and governmental encouragement, Soviet women invade fields regarded in many lands as male domain—from unskilled labor to top-notch professions. Today 55 percent of employed Muscovites are women, including three of every four doctors. They earn equal pay for equal work with men, but predominate in lower-wage occupations.

Dr. Nadezhda Blokhin teams with husband Nikolay, President of the Academy of Medical Sciences, in cancer surgery. Yelena Prosvetova spends long hours at her desk as deputy mayor of Moscow. Dark-haired Elina Bystritskaya, a screen and stage star, turns heads in a Moscow park. When women grow too old for jobs like tending textile looms, they care for children (opposite, above) and thus free young mothers for work.

I also heard much talk about two Soviet movies which dealt with hitherto forbidden subjects. One, called *Silence*, showed the secret police of Stalin's era arriving in the middle of the night to arrest a man who was probably innocent, and then pictured a meeting of a Party cell where his son was unjustly expelled. In another film a leading character was Grigoriy Zinoviev, an early Bolshevik who was purged by Stalin and became for many years an "unperson."

State Still Controls Soviet Arts

In general, however, intellectual and cultural life in 1964 was less free than it had been at other times since the death of Stalin. Yevgeny Yevtushenko and a number of other somewhat rebellious writers and artists were condemned by the Party in 1963, and political controls were tightened. Today Soviet Russia, the land of revolution, remains extremely conservative in art, literature, ballet, and drama.

One thing that surprised me was how often I heard Russians criticize Nikita Khrushchev, then the premier. While they were afraid to say anything disrespectful when fellow Soviet citizens were around, some of them spoke to me quite freely and spontaneously, as though they were in the habit of talking like this with their friends. Intellectuals were particularly contemptuous of him. "*Kakoy durak!* What a fool!" they used to say.

In Russia there is an infinite series of jokes about things supposedly said by the radio station in the capital of Armenia, Radio Yerevan. Usually they are in the form of requests by listeners for information, which the announcer tries to answer. One of the most popular of these stories involved Khrushchev:

Question: "Can you tell the best way to get rid of baldness?"

Announcer: "I'm sorry, but we do not discuss political questions."

Criticism of Khrushchev Mounts

A Russian professor I met was especially critical. "Stalin may have been cruel and despotic," he said, "but at least he had dignity. But this *kukuruznik* [cornball] we have now is always boasting about some new harebrained scheme of his.

"One year he sent the students out to Siberia and Kazakhstan to help plow up the virgin lands, but that was a flop. Then he said that all the farms had to grow corn, and that was a fiasco, too. And of course we were shocked by the Cuban missile crisis—one day he denied that there were any Soviet missiles in Cuba, and the next day he promised to remove them! That scared us. We've had enough of war, and we don't like this playing around with brinkmanship."

"I have no great love for Khrushchev," I said, "but still he seems to me an enormous improvement over Stalin. Don't forget all the reforms he's put through."

"You Americans are all alike!" said the professor. "All your newspapers talk about are the good things Khrushchev has done. But in 1962, when he raised prices on meat and butter, you didn't publish anything about the food riots in Novocherkassk. And what about the food shortages now? If we had an intelligent man at the top, this wouldn't happen."

How typical these views were is hard to say. But when Khrushchev was removed from power after my return to the United States, it was interesting to read official criticisms of

"Baa, baa, black sheep," sing Young Pioneers, practicing English with a nursery rhyme in Sokolniki Park. Most youngsters from 9 to 14 belong to Pioneer clubs, learning woodcraft as well as Marxist doctrine.

Colossus of Lenin dwarfs the noted sculptor Matvey Manizer. On the balcony a full-bearded Karl Marx broods beside smaller works. Copies of Manizer's works adorn schools and plazas throughout the U.S.S.R.

Romance blooms in a shady nook of Pushkin Square. Lack of privacy, due to overcrowding, throws a major obstacle in the path of young love. Couples often must court in parks and cafes to escape prying eyes of parents and little brothers.

him in the Soviet press similar to those I had heard from private citizens.

There are still many reminders, however, that Russia is a police state. One night I was chatting with friends in a Moscow apartment when the hostess got up and closed the windows. "No need to arouse the curiosity of the neighbors," she commented.

Another day I was enjoying a gay dinner with several Soviet students in a dormitory room. We were having such a good time that I decided to photograph the occasion.

"Be sure you don't publish any of those pictures," said one of my friends.

"Why not?" I asked. "What trouble could you get into because of such pictures?"

"In Russia," he laughed, "anything is possible. The authorities might think that the room looks too shabby and that our food isn't fancy enough. They might ask why we let you take our pictures unless we had champagne and caviar on the table."

Russians Keep "Tongue Behind Teeth"

Once I asked Boris which restrictions he felt most keenly.

"Well, for one thing," he said, "I'd like to be able to travel abroad as freely as you do. I've never been outside the U.S.S.R., and I may never get out. Even if I should get a passport some day, I'd have to leave my family behind as a guarantee that I'd come back.

"And, of course," he added, "every Soviet citizen has to learn to keep his tongue behind his teeth. You never know who might report on you and get you into trouble. This makes it difficult to have close friendships, or to speak frankly with anybody."

I learned what he meant the hard way, for unintentionally I got someone into trouble myself. In one of the downtown restaurants there was a young waitress, a peasant girl fresh from the country. Since she gave good service, I usually sat at one of her tables, and we used to chat. When she learned I was from America, her eyes bulged with wonder.

"Are you . . . are you a . . . a capitalist?" she asked hesitantly, as though she were seeing the devil himself.

Another time she asked: "Tell me, why do you drink water? Don't you know that only peasants drink water?"

I found her naivete both charming and amusing, and in a conversation with my friend the head waiter, I repeated her questions. Later that day I chanced to pass her

on the sidewalk in front of the restaurant. Tears were streaming down her face.

"What's the matter?" I asked.

"Why did you talk to the head waiter?" she said. "Now I've lost my job."

I was astounded. How incredible that they had fired this innocent girl just because she was friendly with an American and had asked some foolish questions! "I'm going to choke that head waiter," I said.

"Oh, don't say anything to him about it," she pleaded, "because I'll be in worse trouble for telling you."

"But what can I do?" I asked.

"Nothing," she said. "It's too late now."

"Can you get another job?"

"Yes, but it may take a while to find one. And besides, I have my mother to support."

The only thing I could do was to give her some money and wish her luck. I had never felt so helpless and frustrated.

The Soviet citizen I felt most sorry for, however, was Arash, an Armenian—or, as he would say, an American of Armenian descent—whom I met one day in the American Embassy. Born in Boston of immigrant parents, he had moved with his family and 300 other Armenian-Americans to the Soviet Socialist Republic of Armenia after World War II. The Soviet regime, playing on Armenian nationalist pride, had urged Armenians all over the world to "return" to a fatherland which most of them had never seen.

"The Soviet agent in Boston told us that if we didn't like it in the Soviet Union, we could simply pack our things and come back to the States," said Arash. "Well, that's what I've been wanting to do since the day I got here, and they haven't let me out yet."

"Why in the world did you come in the first place?" I asked.

"Well, we wanted to help build up our own country, where people could speak Armenian, where we could all worship in the Armenian church, and where we wouldn't feel like outsiders.

"The day we arrived," he continued, "we knew we had made a mistake, but then it was too late. Those who complained were packed off to Siberia, and that silenced the rest."

"Why did the Soviet regime play such a cruel trick on your people?" I asked.

"When we came," said Arash, "the Armenian Republic was nothing—just slums—and they wanted us to help build it up. We brought

Tsarina for a day, a bride legalizes her vows in a Marriage Palace. Elegantly decorated, such chambers lend glamor to drab civil ceremonies. Couples yearn for the beauty and dignity of holy nuptials, and church weddings still occur despite official frowns and attempts to make civil ones more attractive.

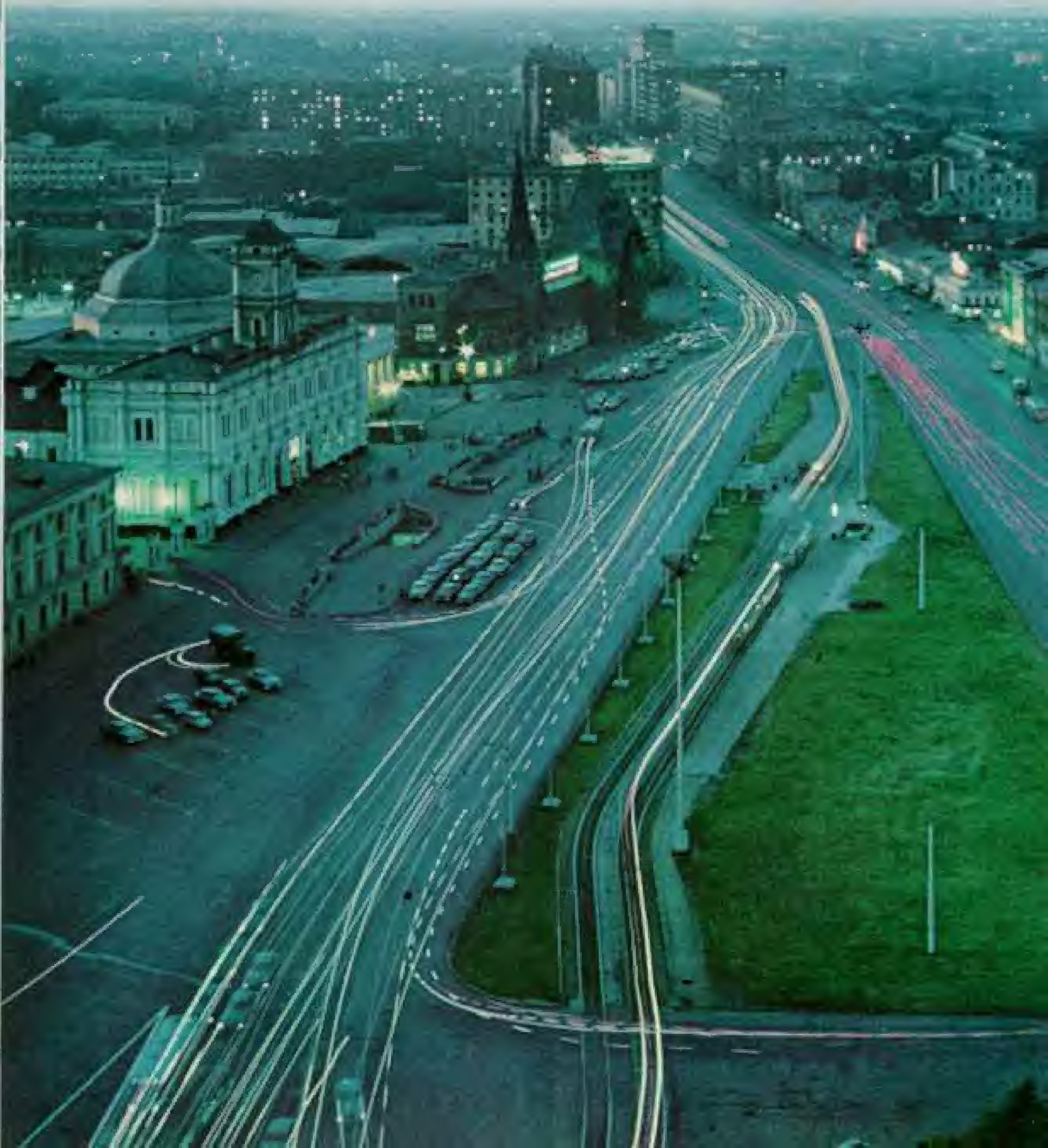
bulldozers and tractors and all sorts of machinery—why, one guy even brought a complete shoe factory, which the Soviet Government took away from him. Compared with Soviet citizens, we were rich, and we brought everything with us."

"What are you doing here in the American Embassy?" I asked.

"I was hoping they could help me, but there's nothing they can do unless the Soviets give me permission to leave. You see, when we came, we gave up our American citizenship and became Soviet citizens."

"Do you still hope to go back to America some day?" I asked.

"I *am* going back," he shouted. "They've let a few of us Americans out, and I'm gonna make it some day, even if I have to send my application in a thousand times. I read the *Daily Worker* regularly—it's the only foreign newspaper in English that I can get—and I listen every night to the American Armed



"Citizens," flashes a giant neon warning, "before stepping from the sidewalk into the street, be sure that the crossing is absolutely safe." Lighted signs, rare in dim downtown Moscow, promote safety, sobriety, and Communism.

Crossroads of the U.S.S.R., Komsomol Square at dusk channels luminous veins of traffic between major railroad stations. Trains of the Trans-Siberian line rumble out of spired Kazan Station. Leningrad and Yaroslavl Stations at left send passengers northward.

EKTACHROME (ABOVE) BY THOMAS T. HAMMOND; KODACHROME BY DEAN CONGER © N.G.S.

Forces radio network. I'm an American, and I'm gonna be an American till the day I die!"

My encounter with Arash depressed me—and Moscow weather didn't help. April was a dreary month. There were no more snowfalls, but the gutters were still filled with dirty snow and ice, mixed with all the trash that had accumulated during the long winter. The wind was cold, the trees were bare, and the parks were brown and drab. It was as if Moscow had lost its beautiful white ermine robe and had been left with only some dirty rags.

Muscovites Emerge From Winter

Early in May I had a chance to go south on a trip to Transcaucasia and central Asia, and I was delighted to get away. But on my return at the end of the month, I found that Moscow had been miraculously transformed.

Driving into the city from the airport, we passed through fields that had suddenly become a brilliant green. Shrubs thrust forth their blossoms as if in celebration that the long freeze had ended. In the little park in front of the Bolshoi Theater pansies had been planted, and delicate pink blooms covered the apple trees. The whole city gave the impression of having been newly washed and painted.

The people of Moscow had emerged from their furry cocoons and joined in worshiping the newborn sun. They lay in the grass in the parks—some in bathing suits, some simply in their underwear—soaking up the warmth as though their bodies were starved for it. Every afternoon the courtyard in front of my dormitory was filled with students playing soccer, volleyball, and badminton. On Sundays some of us would walk down to the river to sunbathe, mingle with the crowd, and watch the excursion boats—some of them speedy hydrofoils—go whizzing by (page 346).

One beautiful afternoon some friends and I

Like women the world over, shoppers delight in trying on hats at the new Moscow Department Store in the southwest section. Quality and variety of clothing improve as Russians demand more consumer goods.

Macy's of Moscow, GUM offers everything from sausages to perfumes—when available. Recent economic reforms permit stores to order goods directly from factories, specifying styles and colors most desirable to buyers.

PATHFINDER LEAVING AND RETURNING TO HER BERTH AT DEAN LUMBER, BOOTHBAY HARBOR BY THOMAS F. HAMMOND © M.C.C.

Skimming at 40 knots, a hydrofoil whisks sightseers along the winding Moscow River as the hull lifts free of the surface on underwater wings. Swift hydrofoils like *Meteor 3* have captured the imagination of Soviet planners, who send them spinning by the score over Russian waterways. Already they ease Moscow's chronic fresh-food shortage, bringing in vegetables and fruits from gardens far to the south.

Though locked in the heart of Eurasia, Moscow docks an increasing tonnage of waterborne commerce and wears the title Port of Five Seas. Canals linking the Moscow, Volga, and Don Rivers reach south to the Caspian, Azov, and Black Seas; others carry trade northward to the Baltic and icy White Sea. But the boats bow to trains when ice paralyzes shipping—at least four months a year.

Savoring every sunlit hour of the all-too-brief summer, bathers stroll the banks of the Moscow River. Once a narrow waterway that shrank in summer droughts, the river today winds broad and steady through the city, its level controlled by locks. Swimmers flock to this spot beside Metro Bridge, where autos roll above the glass-enclosed subway. Partial to bikinis, some Russian girls make their own suits and wear them impartially on beach or badminton court. This teen-ager plays in the Lenin Hills.

took the subway out to the northern section of Moscow to Ostankino, formerly one of the estates of the fabulously wealthy Sheremetev family, and now a public museum and park. Before entering the palace, we were required to put cloth slippers over our shoes, lest we scratch the elaborate inlaid floors.

Inside, posters and pictures explained to visitors the horrors of pre-Revolutionary Russia, when this one aristocratic family was able to own hundreds of thousands of serfs. The building was furnished as if its former owners had intended it to be a museum—paintings crowded the walls, and the rooms were filled with ornate furniture. A huge ballroom had doubled as a theater; Count Sheremetev had built it for his wife, a former serf, who was a famous actress.

Outside, classical statuary studded the gardens. It was Sunday, and the grounds were crowded with ordinary working people—families eating lunch, children chasing one another, women with their shoes off playing cards, and men drinking beer or lying in the grass with their chests bared to the sun. The whole scene seemed to symbolize the Revolution, the overthrow of the old aristocracy, the confiscation of their property, and the enthronement of the working masses.

Argument With an Ice-cream Seller

An old woman with a wrinkled face, twinkling eyes, and a scarf round her head was selling ice cream from a pushcart. We stopped to buy some. Seeing by my clothes that I was a foreigner, she asked where I came from.

"A-mer-i-ka!" she exclaimed in surprise. Then the smile on her face faded. "I don't like America," she said. "There the capitalists are the bosses. Here I'm my own boss."

"You mean the state is your boss," I replied. "In the old days you could work for yourself, but now you sell ice cream for the state, which takes away most of your profit."

"No," she insisted, "here we have no bosses any more. My mother and father were serfs, but now everybody is free."

We argued in a friendly fashion, but I seemed unable to convince her. Then she changed the subject.

"I'm so sorry that your President Kennedy was killed," she said. "He was a good man; he was for peace. I hope your new President will fight for peace also."

Such expressions of sympathy I heard over and over, from simple working people like this woman, as well as from sophisticated intellectuals who praised the late President's firmness and restraint in the Cuban crisis.

In the summer my friends and I also got together for picnics. From the university we

Three hundred pounds of limp lion drape a trainer in the grand finale at the Moscow State Circus. Bengal tigers crouch motionless on stools at ring's edge as Walter Zapashny, once a professional strongman, daringly mixes high-strung cats of different species. European circuses, unlike America's three-ring spectacles, stage one act at a time to ensure that the audience misses nothing.

could catch a bus to the outskirts of the city, where the forests had not yet surrendered to the onward march of apartment houses and factories. One afternoon four of my closest Russian friends took me with them to a little pond hidden in the heart of a quiet grove of white birches. It was a farewell party, since I would soon be heading home and they would be leaving the university to begin work at their newly assigned jobs.

The youngest of the group was Grigoriy, a broad-faced Cossack from Rostov on Don, who was going home to marry Nina, his childhood sweetheart. He had been assigned to teach history in a high school in Bratsk, far off in Siberia, where Russia has built the world's largest hydroelectric power station. We kidded him about being "exiled" to Siberia.

"Oh, it won't be so bad," he said. "At least I won't be separated from my wife. Nina has a job there as an electrical technician. The pay is high, and we can save some money. Besides, I can go hunting and fishing. Who knows, maybe we'll like it and stay there."

My friend Boris was less optimistic about his job in Tallinn, the capital of Estonia.

Soldiers of the playing field, athletes parade their colors past the Kremlin on May Day. White flag flutters above the standard bearer of the Dynamo Sports Society; a streamlined diesel rides the red banner of the Locomotive Sports Society.

At every school, farm, factory, office, and military unit, calisthenics and games promote physical fitness. The Soviet Union constantly strives to win world recognition in international competitions.

Pondering the pageantry of sport, a young Muscovite perches on top of her father's shoulder.

"I've heard that the Estonians hate the Russians," he said. "When a Russian goes into a restaurant in Tallinn, the waiters serve all the Estonians first. I don't think I'll stay there any longer than I have to."

Hot Dogs, Caviar, and Conversation

Luckiest of the three was Dmitri, a fun-loving graduate student in his 30's with many friends—a man who knew how to get ahead in the world. His red-headed wife Olga was from Moscow, and through family connections she had managed to get her husband a job there.

"I wish I had *blat* [pull] like you," said Boris. "I could get a nice soft job in Moscow."

"Why should we have to move?" retorted Olga. "I want to be here with my family and friends. And besides, Dmitri has already taught for four years in the provinces. Now it's his turn to live and work in the big city."

We built a fire and roasted hot dogs; they laughed when I translated the name into Russian. Olga had brought some dried fish, salami, smoked cheese, caviar, and fresh black bread. I opened a bottle of Khvanchkara, the best of Georgian red wines. A friend at the U. S. Embassy had given me some marshmallows—the first my Russian friends had ever seen—and we toasted them, American style.

Since we knew that this might be the last time we would see each other, we felt a bit sad, and the talk took a serious turn.

"Do you think that Russia and America will go to war?" asked Olga.

"I don't think so," I replied. "Both sides realize that you can't win an atomic war."

"But," said Grigoriy, "some fanatic might start a war. I read there are many fascists in

EXPLORING COMPLEXITY AND REDISCOVERING BY NATIONAL GEOGRAPHIC PHOTOGRAPHER JOHN JONES © N.G.S.

America. Or some Pentagon general might push a button and blow up the world."

"I don't think you have to worry," I said. "We have safeguards that make it impossible for one madman to trigger a war."

"Wouldn't Have Dared" Ten Years Ago

I changed the subject. "What about your future here in Russia—do you think things will be better, or will they stay the same?"

"Better," said Dmitri. "The repudiation of Stalin was a tremendous step forward. Now there's no turning back. The regime has got to give the people more freedom and a better life. And we'll never let another man become as powerful as Stalin was."

"We have a lot more freedom now," said Boris. "Ten years ago we wouldn't have dared to be so friendly with an American like you. Ten years ago there weren't any American exchange scholars at the university. In Stalin's day this picnic would have been impossible."

"He's right," said Dmitri. "You probably don't realize how much it means for us to have an American friend—it's like having a window to the outside world, through which we can see things that have been hidden from us. Besides, it's hard to hate Americans or be afraid of them when you know one personally and find he's just a human being like us."

"It's the same with me," I said. "It's good to find that Russians are basically the same as the people back home. And it's nice to have friends who tell me what they really believe, instead of feeding me propaganda."

"Let's drink a toast to more American-Russian friendships!" said Boris.

I poured the last of the wine. THE END

CAJUNLAND

Louisiana's French-speaking Coast

By BERN KEATING

Photographs by CHARLES HARBUTT, Magnum, and FRANKE KEATING

THE SHRIMP BOATS were late, and by midmorning we all nodded, drowsy from squinting into the wintry sun that glinted on the shimmering bayou at Lafitte. The roustabouts sprawled on the dock, softly chatting in the French dialect of coastal Louisiana.

I was waiting with my wife Franke—my photographer on this trip—for a launch to carry us to Barataria Bay. The shrimpers ignored us; our city clothes marked us as beneath their notice. They talked indiscreetly (certain social sets along this coast regard poaching as a year-round sport) in what they fondly believed was a private language. But with my French-Canadian rearing, I could eavesdrop shamelessly.

A big-eyed Cajun girl, a toddler of no more than three or four, tussled with a fisherman, punching him playfully on the biceps. When the playing became rough, the child picked up a stick to augment her puny strength. I couldn't keep quiet any longer.

"*Lâches le bâton, méchante,*" I scolded.

I could not have stopped the conversation quicker

Like phantoms out of the past, Cajun dancers whirl beneath a moss-hung live oak at Longfellow-Evangeline Memorial State Park near St. Martinville. The old plantation grounds and home, now the Acadia House Museum, commemorate poet Henry Wadsworth Longfellow and his heroine Evangeline. Her people, exiled from Canada, settled in southern Louisiana and gave the region a distinctive name, Nouvelle Acadie—New Acadia. Rich marsh and woodland watered by twisting bayous offered peace and plenty then as now.

Sundown's blaze silhouettes a trawler chugging the quiet waters of Barataria Bay, a marsh-fringed lagoon south of New Orleans. Slipping through Barataria Pass, Cajun shrimpers sweep coastal waters of the Gulf of Mexico. They stay out for days at a time, dropping trial nets in likely spots. When they find shrimp, a large trawl goes overboard to scoop up the harvest. Then the trawlers dash for packing houses and a few days of leisure on Grand Isle (below). One of the Nation's top shrimp producers, Louisiana landed 60,000,000 pounds last year.

by firing a ten-gauge shotgun into the crowd. All heads snapped around. All eyes bore down on me with astonishment.

One of the fishermen said in English, "You speak French, mister?"

"Since I am a baby."

"But you not from Lafitte!"

"Oh, man, people speak French lots of places besides Lafitte."

"Yeah, I guess you right. Lafayette, Houma, Thibodaux, all them Loo-zeeun places the folks speak French, so they tell me."

Thus reminded of the widespread use of

the Gallic idiom, the dockers resumed their drowsy hum, but now they amiably included me. I spoke French; ergo, I was a Cajun.

That is how the *habitants* have always treated me in Cajunland—or Acadiana, as sophisticated Cajun journalists have started calling it. During 15 years of travel in southern Louisiana, I have used French as my passport into the Cajun world. The estimated quarter of a million French-speaking dwellers of the Louisiana coastal marsh do not accept strangers easily. Louisiana Frenchmen show an un-Gallic reserve, possibly because their English-speaking neighbors have often misunderstood them.

For instance, before I began my latest tour of Acadiana, I chatted with an Anglo-Saxon state official who expressed alarm at my free use of the word "Cajun."

"Don't let them hear you call them Cajuns," he said. "It's a dirty word to them."

Like most of his Anglo-Saxon neighbors, the nervous official has managed to spend his life among the French-speakers of southern Louisiana without once noticing that Cajun is precisely what they call themselves.

"Fairest of all the maids was Evangeline . . ." The statue of the young Acadian girl sits in St. Martinville atop the grave of Emmeline Labiche, whose story may have inspired Longfellow's poem. In 1755 the British deported 6,000 French settlers from Acadia, today's Nova Scotia, after they refused to swear unqualified allegiance to the Crown. Emmeline and her betrothed, Louis Arceneaux, became separated. Several years later she found him in St. Martinville, wed to another—and died heartbroken. The poem's tragic tale differs: Silver-haired Evangeline discovers her Gabriel dying in a Philadelphia almshouse.

Gulf of Mexico

A shrewd Cajun farmer from near Baldwin, Johnny Derouen, laid this question of terminology to rest for me.

"Tell me, Johnny," I asked, "does it insult you Louisiana French to be called Cajuns?"

"Only when an outsider call us *damn* Cajun, whether he say damn out loud or not."

Storms Sweep Low-lying Coast

Acadiana is a strip along the Louisiana Gulf Coast stretching roughly from the Texas border to the mouths of the Mississippi (map, above). It comprises a brackish marshland, plus a narrow band of drained farmland and low-lying ridge just in from the coastal marsh.

The lowland produces a wealth of game, rice, sugar, fur, and oil, but the marsh inhabitants have suffered in recent years from devastating hurricanes. This past September Hurricane Betsy roared up the Mississippi. With her deadly eye paralleling the river, but 30 miles to the west, Betsy laid waste the

eastern end of the marsh. The storm rapidly lost strength as it bulled upstream, but not before its 150-mile-an-hour winds had hurled a nine-foot wall of Gulf water across the delta and Grand Isle, 45 miles westward.

After the storm, I flew over the devastated area with Dick Yancey, Assistant Director of the Louisiana Wild Life and Fisheries Commission, who wanted to survey damage to marsh wildlife.

Banking his plane, Dick pointed to an ocean-going oil-rig tender perched on the Mississippi River levee where the tidal surge had lifted it (page 359). The streets of the towns that line the riverbank had become canals, and returning refugees poled pirogues between car tops peeping above floodwaters. Boxcars lay scattered like jackstraws in a yard where rescue crews found 15 bodies. In the occasional grove, the wind had blown the very bark from the weather side of what few trees still stood.

Grande Isle was marked by a column of smoke from burning debris. Betsy had mauled it as severely as she had the delta. I recognized most of the surviving structures, but the storm had pushed them a block, two blocks, half a mile from where they belonged. Miles away in the marsh, buildings, trailers, and automobiles wallowed in the backwash. But a few miles farther west damage dropped off sharply. By the time we reached Cameron, at the extreme western end of the Cajun country, we didn't see a misplaced shingle.

"Betsy hit Grand Isle hard," Dick said after we landed. "One man drowned there. Cameron Parish lost 544 people in Hurricane Audrey in 1957, and hardly a building stood on its own lot. Today you'd never know the area had suffered such a tragedy.

"Eventually the delta and Grand Isle will be as good as new. These are hardy folk, or they would never have lasted two hundred years on this coast."

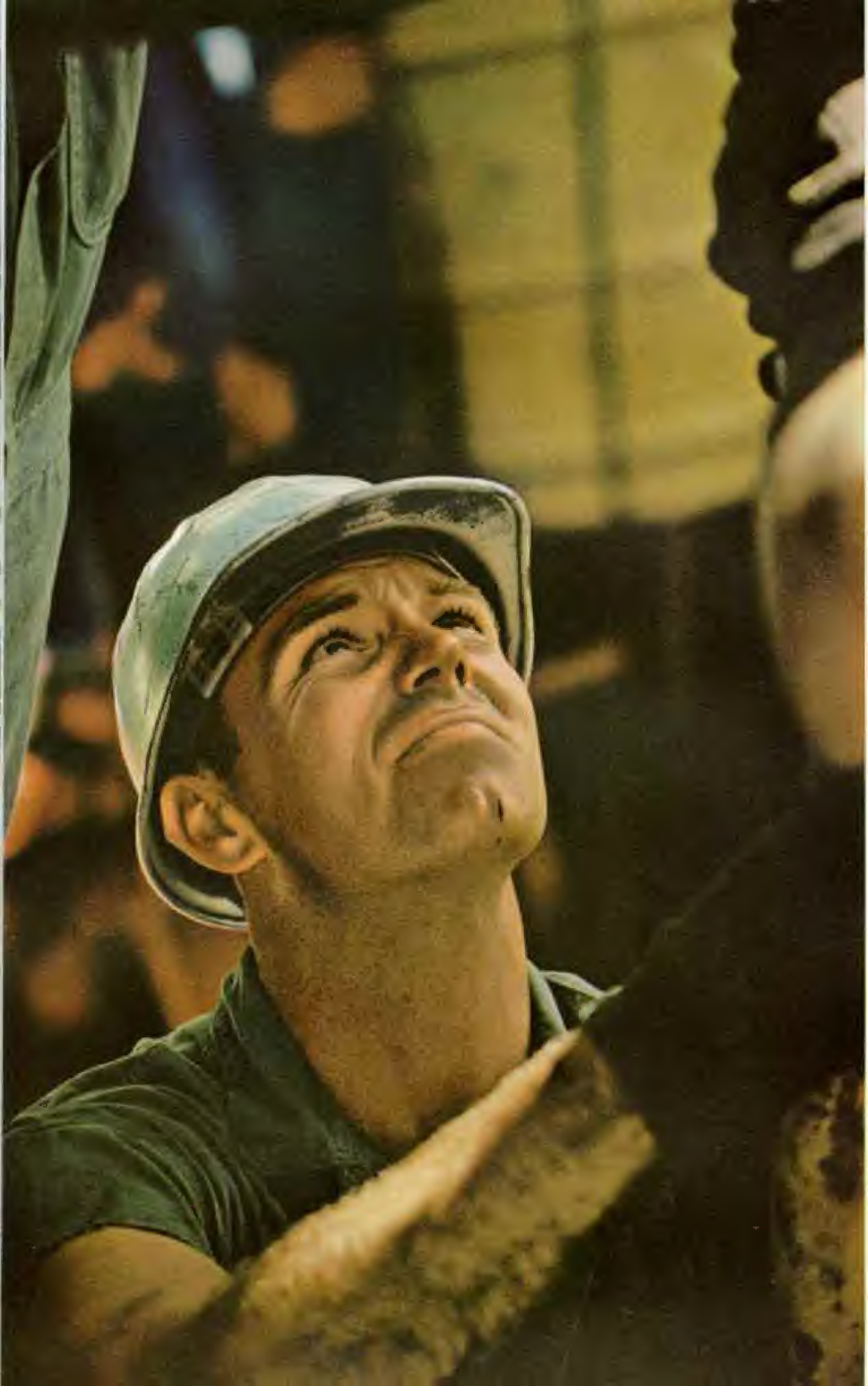
EKTACHROME (ABOVE) AND KODACHROME BY [illegible] © N.G.S.

Beached ships, broken homes, and miles of debris attest the fury of Hurricane Betsy. Raging across the Gulf last September, Betsy slammed into southeastern Louisiana with 150-mile-an-hour winds followed by a nine-foot wave. Grand Isle caught the full blast. A restaurant, swept from its foundations by wind and rushing waters, blocks the island's main highway (above). Mrs. Amy Rhine takes shelter in a ruined building (left). Wall of water moving up the Mississippi River lifted the oil tender and its tugboat onto shore (right). The Red Cross erected tents for the homeless; the Coast Guard provided dry clothes and coffee.

Dr. Thomas Arceneaux, of the University of Southwestern Louisiana in Lafayette, researches the saga of his Acadian ancestors as a scholarly hobby, so I consulted him about the origins of this Gallic enclave.

"According to historians," he said, "Cajun is a corruption of Acadian. The original Cajuns were peaceable French farmers whose ancestors had lived since 1604 in the French colony of Acadia, in what is now the Canadian Province of Nova Scotia. Nobody knows for sure what Acadia means. One guess is that it's a corruption of Arcadia. Another is that it comes from a Micmac Indian word. In either case, the connotation seems to have been 'place of plenty.'

"In 1713 Acadia fell to the British as a prize of war. At first the new rulers urged the French farmers to remain. But in 1755, as war with France raged anew, the British demanded that the Acadians take an unqualified oath of loyalty. When the farmers refused, their homes were burned, and they were scattered among English colonies of the Atlantic seaboard.



Derrick-spiked islands of steel probe for undersea oil and gas in the Gulf of Mexico. The tender, anchored at the rig, serves as floating hotel and supply depot: helicopters land supplies and new crews at a pocket-size heliport on the ship's stern. Gleaming hard hat protects a driller guiding a bit (left). Development of offshore oil fields has boosted the state's petroleum production; it ranks second in the United States after Texas.

Gradually many of the exiles trickled into the French-Catholic country around New Orleans."

The tragedies of separation and loss which followed the dispersal of the Acadians are known to virtually every schoolboy through Longfellow's "Evangeline." She was an Acadian maiden who lost her lover during *Le Grand Dérangement*—The Big Upheaval.

Around St. Martinville, every other enterprise bears the name Evangeline, the whole area is called the Evangeline Country, and a statue to Evangeline marks the graveyard (page 356). Surely, all this reverence for a fictitious heroine is a tribute to the poet's art.

Nostalgia Survives Time and Distance

The flesh-and-blood Cajuns arrived in Louisiana with a terrible nostalgia for their lost Acadian meadows. They shunned the city life of New Orleans and settled the empty lands west of the Mississippi. Their descendants have remained a rural people. They hunt, trap, raise sugar and rice, and tend 380,000 head of cattle—some of which seem almost aquatic.

"Acadians have remained true to their ancestors," Dr. Arceneaux said, "those devout people who suffered the intruder to burn their homes and drive them into penniless exile rather than swear allegiance to Britain. So powerfully does Acadian nostalgia for the old ways work that even outsiders who have married Cajun girls have blended completely into the community. The once-Anglo-Saxon Bradberries and the Germanic Hoffpauirs and Shexnayders speak French as merrily as the Boudreaux and LeBlancs."

Toward the edges of Acadiana the Cajun culture blends into the Anglo-Saxon culture that surrounds it. In westernmost Cameron Parish, cattle ranches dot the squashy coastal strip. Hereford steers happily splash about in knee-deep water; prickly-pear cactus grows on the occasional low ridge; French-speaking cowboys fasten hidalgo spurs to rubber boots and swing whips behind their herds, giving a Wild West look to the landscape (pages 366-7). Nobody has to tell the visitor that Texas lies just across the Sabine River.

But Cameron is not Texas; it is French Louisiana, and the people's accents show it.

Recovered from the 1957 hurricane and virtually untouched by Betsy, the western marshes of Louisiana grow the biggest and glossiest muskrat and nutria on the fur-rich coast. Cameron's annual winter fur festival was under way when I arrived. The waterfront main street teemed with merrymakers.

On the flat bed of a truck parked in the

Harsh honk of a blue goose, blown in imitation of the wild bird, may win a prize for Kenneth Duhon in the goose-calling contest at the Fur and Wildlife Festival in Cameron, Louisiana. Judges rate him on the quality and variety of his calls.

Explosion of wings erupts from the waters of Hell Hole, an inlet of Vermilion Bay. During winter months, some 400,000 blue and snow geese from Canada find haven in 450,000 acres of coastline set aside for the preservation of wildlife.

Fur-clad fishermen, marsh raccoon (left) and otter roam the bayous in search of food. With muskrat, mink, and nutria, they keep Louisiana among the Nation's leaders in fur production.

Photographs by Bern Keating, above, and Frances Keating © National Geographic Society

center of town, Robert Mhire, a powerfully built trapper wielding an oversize jackknife with blade honed down to razor-weight, skinned a nutria in a race against time. Hurling a flayed cadaver aside, he attacked the next of his allotted two animals.

"What's in it for the winner?" I asked a rubber-booted spectator.

"Championship of Loo-zeean," he said, without taking his eyes off the blade. The tone of his voice indicated that in Acadiana a fur-skinning title outranks a Nobel Prize.

"I'm a pretty fast knife, me, and I was going to skin some nutria myself, but when I hear that Robert Mhire is coming in, I back out. No use to let him skin the nutria and me too in front of all these people."

Mhire skinned both animals in a total of two minutes and 21 seconds, then threw his hands overhead to the applause of the throng.

"That Mhire," said the booted man, "he can skin a running camel and peel a bucket-ful of gnats for lagniappe while I'm only reaching for my knife."

Later, I struck up a conversation with the new champion and discovered that, paradoxically, as a wildlife commission employee he is more concerned with caring for fur bearers than with skinning them. Then, at the oyster-shucking contest, or maybe it was the wild goose calling, or even at the gumbo tasting, Mhire introduced me to his fellow conservationist, Raymond Mayard.

"I got to go in the marsh tonight to put a tag on some little bitty alligator so we know how fast he grows," Raymond told me. "Want to come along?"

The sun had set by the time we started for

Nutria gives all to the fur industry. Its pelt goes into coats (above), and its meat feeds mink. A South American native, the nutria (below) rejuvenated Louisiana's fur trade 30 years ago when a dozen of the rodents escaped from private pens on Avery Island. Eating their way with beaverlike teeth across the swamplands, the prolific creatures usurped the domain of M'sieu Mus'rat, former king of the marsh. Louisiana trappers sent more than a million and a half nutria pelts to furriers last year.

the Mayard home at nearby Grand Chenière. As dark fell, the wild inhabitants of the marsh came to life and swarmed across the road.

"Them coons and rabbits, otters and minks and muskrats, and especially nutria, they crowding the marsh so thick they shouldering each other onto the road," Raymond said. "Sometimes the road-striping crew don't even have time to stop the machine to throw the dead ones out of the road. They just drag the white line smack across them."

Housewives the world over have a built-in hostility toward the unannounced dinner guest, so I approached the Mayard house with some nervousness. "Come in, *cher*," Mrs. Mayard called cheerily, and her good humor survived even the discovery that Raymond had brought home a surprise visitor.

A glance at the table showed why Mrs. Mayard was undisturbed. She had prepared a suitcase-size roasting pan four inches deep with *chevrettes étouffées*, jumbo shrimp smothered in a sauce that filled the room with perfume of herbs and spices lightly spiked with Tabasco and chili peppers. Hungry as Raymond and I were, we could make only an insignificant dent in the massive dish.

"Ghost Fire" Makes Bayous Glow

We needed all the calories we could absorb, too, for after supper we bundled into hunting clothes and sortied into the chilly night to go after the 'gators. I held an electric spotlight in the bow, and Raymond guided our boat down seemingly endless canals and bayous.

"Blow out your light," Raymond whispered as we entered a shallow lake. He cut the engine and we glided through water that leaped to life in the sudden darkness. Everywhere it glittered with the silent fire of phosphorescent plankton. Minnows dashing for cover trailed wiggling darts of light before the blazing track left by a marauding redfish. A flock of ducks, alarmed by the sudden stop of our motor, exploded from their feeding grounds and sprayed the night with a shower of falling stars. Raymond plunged his hand into the water and brought it up glowing with phosphorescence.

"You bring good luck," he said. "I never seen the ghost fire so bright before."

I snapped on my lamp. Its beam caught a pair of flashing eyes that looked as big as oranges. Transfixed by the light, a six-foot alligator let us ease up to him and, with a minimum of thrashing, allowed us to slip a noose over his head and pull him into the boat.

"Cold weather makes bad traveling in the

Smiles announce good hunting for Robert Chiasson and Victor Tabor, but they rarely talk about the abundance of nutria—to do so might bring bad luck; it also might bring other hunters. To control the rodents, trappers may bag them in daylight hours without limit.

marsh," Raymond said, "but it also makes the alligator sleepy, and that's the best kind of alligator I like if I got to tag him."

We found two more alligators, both already tagged; so Raymond loaded them into the boat to be taken to the laboratory for a growth study. Their jaws and legs were tied, but I shied from the thrashing tails. "That business about a 'gator's tail breaking your leg," Raymond said, "don't you believe it. A 'gator's tail ain't no stronger than my arm."

Tame 'Gator Begs for Lunchtime Handout

I had already marveled at the slender Raymond's wiry strength in hauling the heavy boat and motor over portages; his figure of speech was not reassuring. I gave the alligators all the room available in a 14-foot boat.

"The 'gator is the most lied-about animal I know," Raymond said. "You can hold a big 'gator's mouth shut with your hands and he doesn't want to bite. I been living with 'gators all my life, and I ain't never heard of one biting folks. We don't taste good, I expect.

"And the story that 'gators take forever to grow and live forever in the same den. These tagged 'gators are big boys and girls six feet long and roaring for romance when they only 6 or maybe even 5 year old. And don't they ramble! Everybody see the 'gator sleeping in the zoo think they drag along, but when we catch one on dry land, he can run along on them stumpy legs faster than we can walk. We got to trot to lasso him. We find 'gators 8 or 12 or even 20 miles from where we put them out of the boat. But of course they was males; the ladies stay closer to home.

"They ugly fellows, but you be surprised how fast you can like them. One fellow hung around the boat dock at the refuge for years, begging for handouts at lunchtime. It got so some of us was packing an extra sandwich for that scaly bum. He got run over by a boat, and we like to held a funeral for him."

Cowboy spurs and rubber boots mark a wrangler in the soggy grassland and river-bottom of Cajun country. Muzzles high, cattle from the Carter Ranch swim the Mermentau River (below) to winter pasture on marsh-locked Hackberry Ridge. Cowhands crack whips (right), sending a reluctant calf scampering. On the ridge, cattle graze Louisiana-straw and sprig-tail grasses that shoot tall and green during winter on land that was burned off in September. The Carter herd of 1,000 reflects a slow build-up after the devastation of Hurricane Audrey in 1957, when 2,000 head were lost.

Next afternoon a wildlife commission plane carried me 50 miles east to Vermilion Bay, in the heart of the marsh, where 125,000 geese from Canada spend the winter. I wanted to photograph the flocks at dawn.

Dick Yancey piloted the plane and followed a more tortuous course than a small boy's errand to the grocery store, for he had to make a side trip to investigate every deer, every flock of pintail and teal, every alligator basking in the first feeble rays of the sun, to be sure the central coastal wildlife had escaped the worst of Betsy.

He set me down on a primitive landing strip behind a camp building.

"The rangers stationed here will put you up and take you back to civilization when you have your pictures," he said, and took off immediately.

Unexpectedly, the camp was deserted. I sat on the front steps and shrank from the brooding silence of the vast landscape. Slowly, however, the marsh came to life for me.

as my ears grew attuned to a humming, buzzing, droning, splashing cacophony. The sun declined, and one special thin whine mounted steadily. A million salt marsh mosquitoes, ravenous after a day of fasting in their grassy bed, drove me behind the refuge of the camp's screen door.

A pirogue ghosted up to the dock, and a stocky fisherman climbed out carrying a long string of fish and a bucket of live crabs. He jumped and almost scattered the crabs into the bayou when I walked up and spoke to him from out of the twilight.

"Man, I thought the devil had finally come for me," he said. "Why you walk up so quiet? You should make a big noise when you come up on somebody out here, else you make him jump out of his shoe."

Gamble on Gumbo Pays Off

After apologies for my tenderfoot behavior, I exchanged introductions with Malon White, who has dwelt in the marsh, as he put it, "since before alligators was invented."

"Unless you like a bologna sandwich, you going to eat my cooking," Malon said. "If your insurance ain't paid up, I say take the bologna."

"What are you planning to cook?"

"A pot of gumbo with some nice young crab in him. Maybe a little fresh mullet to fill out the corners. You skin the fish, I brown the roux, and we both say some prayers the supper don't kill us."

Malon's professionally able movements around the kitchen quieted my fears. The outdoorsmen of Acadiana for generations have had to feed themselves during lonely months at fishing and trapping camps, and they have had to learn how to substitute the pleasures of the table for the pleasures of society.

Scattering a handful of flour into a pan of hot oil, Malon stirred furiously at the mixture to keep it from burning.

"Any time you see some smoke coming from your roux, throw it away, or you be sorry," he said. "A burned roux look fine, and the bad cook he'll try to sneak it by you, but he just spoil his fish and his crab if he too lazy to make a new one."

When the roux was right, Malon turned it out into a soup kettle and pitched in onions, a bay leaf, three dashes of Tabasco, crab meat, fish fillets, a bit of water. He brought the gumbo to a simmer and sat down to talk.

"You came to the right place for goose pictures. We get up an hour before the sun tomorrow, and I take you to Hell Hole. There's a strip of sand there maybe 20 feet wide, the only sand around, and the goose comes at sunrise to fill his craw. He needs that sand for chewing, for he don't have no teeth.

Room without walls distinguishes the old Cajun home of Mr. and Mrs. Aldes Vidrine of Tate Cove. As important to the family as its kitchen, the *galerie*, or porch, provides an outdoor parlor that fills to overflowing when the family gets together—*grandmere*, *grand-père*, *maman*, *papa*, *les enfants*, and a seemingly endless supply of *cousins*. Outside staircase leading to the *garçonnière*, or bachelor's quarters, affords young men privacy and protects maman's rugs from their muddy feet.

Homemade sunbonnet frames the face of Mrs. Frank Pitre, who lives near Opelousas. She and her husband celebrated their fiftieth wedding anniversary last year; they have four children, 17 grandchildren, and seven great-grandchildren.

Bounty from a *boucherie*, a cooperative butchery, fills the table at the Terry Vidrine home in Mamou. When the north wind blows, relatives and neighbors round up hogs for slaughter; in warm weather the meat would spoil quickly. The women cook all day—stuffing sausages, layering smoked pork in crocks, frying *grutons*, or cracklings, and preparing *boudin*, a delectable pork dish with rice and spices.

Pirogue-borne fisherman drops his net in the shadow of a cypress stump on Bayou Teche. Fish swarm around pilings of the oil-pumping rig. Cajuns paddle the narrow, flat-bottomed pirogues through root-faced swamps and along rivulets that ribbon the marshes. The craft, they say, "can ride on a heavy dew."

For jambalaya or gumbo—and for tables beyond Cajunland—rice grows in abundance near Crowley. Huge tires keep combines from miring. Louisianians, who use rice in Creole and Cajun dishes, each consume 40 pounds a year, five times the national average.

"Hide yourself in the wire grass there and you'll get some pictures, man, a thousand pictures. That goose'll walk all over you with his bare feet, to get a mouthful of that sand."

Malon soon set the table with a gumbo that would have been a credit to the great Escoffier. I am referring, of course, to Cyprien Escoffier of Turtle Tail Bayou, for a true gumbo is not a French invention but a combination of African or Indian recipes, Spanish seasonings, and Cajun culinary genius.

Before sunrise the next morning, Malon shook me awake and guided my uncertain steps to the boat landing. Vermilion Bay was covered with fog that cut visibility to zero, but Malon pushed forward as if he knew precisely where he was going.

The boat bumped against a bank, and Malon said, "Hell Hole . . . you get out here. Me, I've seen a goose before. I'm going around the bend to do a little fishing."

As the first watery rays from the sun lit the

banks of pearly fog, the birds found their way to the sand spit. They wheeled and floated down, necks outstretched, feet paddling, wings spread to brake their swift descent. Within minutes of the first arrivals, I was listening to the gabble of masses of geese, the closest just barely beyond arm's reach. Only a goose hunter can know what a triumph it was to be so close to thousands of blues and snows, which are among the world's wariest game birds.

When I had my fill of pictures, I leaped to my feet for a try at capturing on film an explosion of feathers and thrashing wings (pages 362-3). Malon heard the great flocks passing over and, guessing what had happened, coiled his lines and came to carry me to the dock at Intracoastal City, south of Abbeville.

Fugitives Thrive in New Home

From the time the first Canadian exile moved into the bogs west of New Orleans until this century, pelts of fur-bearing swamp animals provided a steady but small portion of the Cajuns' income. During the 20th century, however, the proliferation of two animals new to the marsh boosted trapping to a major industry.

The muskrat probably did not arrive till just before the turn of the century. He sneaked in while everybody was busy elsewhere, but these immigrants from northern stream banks found a cushy home in the coastal marsh. For long, Louisiana produced more muskrat pelts than all other states combined, but saltwater invasion of the marsh has seriously altered the habitat, and the take of pelts dropped from a record ten million in the 1922-23 season to less than a quarter of a million in 1964-65.

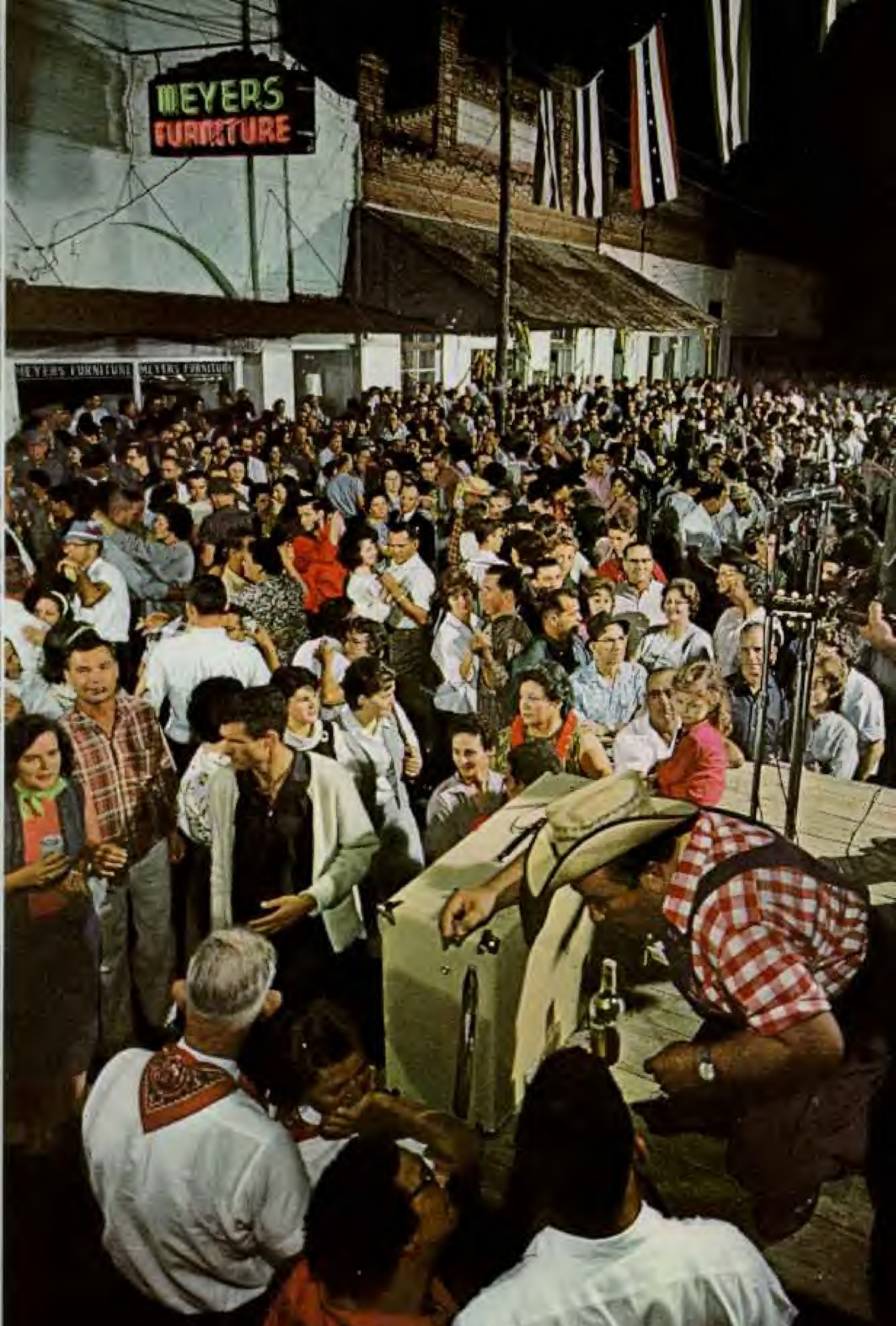
Nevertheless, Louisiana still traps a lot of muskrat. Betsy killed thousands of fur bearers in the delta, but Dick Yancey told me replacements will pour into the ecological vacuum from the surrounding overcrowded marshes. The total fur harvest may not suffer at all.

Just before World War II, the nutria from Argentina invaded the

(Continued on page 377)

Bunched like a bouquet, crawfish await the chefs at Don's Seafood and Steak House in Lafayette. From their bayou-threaded crawfish "ranch," the owners annually harvest 300,000 pounds of this freshwater cousin of the lobster. Using recipes handed down from cook to cook, Don's creates an all-crawfish platter including bisque, pie, patties, and fried tails.

Fiery pepper pods fill boxes on Avery Island, an inland hump surrounded by cypress swamps and the waters of Bayou Petit Anse. Walter S. McIlhenny (center) weighs the crop, chief ingredient in the famous Tabasco sauce produced on the island by the McIlhenny Company, of which he is president. His uncle, Edward Avery McIlhenny, won distinction as a conservationist and helped save the snowy egret from extinction.


MEYERS
FURNITURE

Dancers jam Main Street at the Sugar Cane Festival in New Iberia. Couples do the Cajun two-step to the cadence of Happy Fats and his country band. Bass viol and guitars augment accordion and fiddle, traditional Acadian instruments. As in the old Saturday-night community dance, called a fais-do-do, children join their parents for the evening.

Harvest in, farmers and townspeople burst out in a three-day celebration with dancing, parades, and exhibits. The crowning of a beauty queen highlights the occasion. Always ready for a get-together and a good time, Acadians also honor rice, yams, cotton, dairy products, furs, shrimp, and crawfish with festivals.

In the quiet weeks after harvest, men of Mamou (below) relax over *bourré*, a Cajun combination of bridge and poker.

Dollar for good luck adorns the bridal veil of newly married Mrs. Wayne Ridoux of Basile. She and her groom welcome guests at their *Bal de Noce*, or wedding dance, in Eunice.

Canopy of net hangs from the mast of a shrimp trawler at Delcambre, the name rhymes with "welcome," say residents.

Haunt of pirates more than a century ago, Grand Isle now harbors fisherfolk and oilmen. In the early 1800's dashing Jean Lafitte organized the privateers of Barataria Bay. From Grand Isle and Grand Terre, the distant smudge of land at right, they preyed on Spanish merchantmen in the Gulf. During the War of 1812, the British offered Lafitte money, land, and rank to join their side. Instead, he volunteered services to U.S. Gen. Andrew Jackson. For help in winning the Battle of New Orleans, Lafitte and men won praise and pardon.

Oysters go to bed in Barataria Bay. Transplanted from seed grounds where they have been growing for a year or more, the shellfish will now mature in a 1,000-acre underwater field leased from the state.

marsh. The heavy-bodied rodent multiplied so wildly that Cajun trappers have fabricated an elaborate and ribald mythology about the fecund creatures. Among other tall tales, the Cajuns say that the female nutria has her teats beside her backbone so that her young can suckle as she swims—which preposterous folk tale happens to be exactly true.

Trapping Helps Balance Nature

To get the straight story on the nutria, I called on Ted O'Neil in Abbeville. Ted is head of the wildlife commission's fur division and the top expert on Louisiana trapping.

I sat down with him in his kitchen to split a pot of tar-black Cajun coffee, and for two hours Ted talked about nutria without seeming to come to an end of his knowledge. During a storm about 30 years ago, he said, a dozen of the 18-pound beaverlike creatures escaped private pens on Avery Island.

"With no important disease and no enemies," Ted said, "the nutria have increased till you can hardly put your foot down in the marsh without stepping on a nutria footprint —or sometimes even on a nutria himself.

"Lucky for us, the nutria is the great American Shmoo, fearless and sublimely stupid, so that you don't even have to bait traps; just put them where he'll obligingly step into them.

"He grows a durable fur, one of the most easily dyed, and so prized that a nutria coat of finest pelts and craftsmanship sells for around $1,500. Besides, each carcass yields about eight pounds of red meat to feed ranch mink in the north. So, as a pelt or as mink food, the nutria ends up as a fur coat."

To let me see the nutria in its unbelievable numbers, Ted O'Neil passed me along to the Louisiana Land and Exploration Company in

Houma, owner of 650,000 acres of marshland. The marsh lay at the western edge of Betsy's devastation, but the game had survived.

Chester Voisin, a French-speaking guide, rounded up a party of native bogtrotters, and we set out in an immense and powerfully engined amphibious tractor with aluminum cleats on its gigantic tracks. We headed for a shell mound called Congo Island (named for the venomous cottonmouth moccasin, *congo* in Cajun French).

The marsh literally crawled with nutria. It was a cold day and the tractor had to stop every 50 to 100 feet to keep from running over colonies of nutria huddled together for warmth. Sometimes even a cottontail rabbit burst out of this fur ball when we stirred the nutria up with a stick.

The dullest eye (mine) could count 20 nutria waddling away from our racket at any given second during the two-mile trip. Mink and coon, muskrat, otter, and rabbit kept the landscape jumping. It seemed impossible that the marsh could support such a teeming population (pages 362-5).

"Sometimes it can't," Chester told me. "If we don't trap them nutria hard enough to keep them thinned out, they'll eat up all the grass in the marsh, turn it to naked mud, and then they'll sure enough die, every last one of them."

We had a picnic lunch on Congo Island, actually a ridge in the marsh built by generations of Indians who scooped the meat from millions of clams and tossed the shells over their shoulders. The shell pile finally rose high enough to support live oaks and Spanish moss.

Cajun Trappers Careful Not to Brag

From the bayou north of the island, we heard the snapping of .22 rifle fire. Two trappers poled a pirogue into view. The pirogue's waist was piled high with nutria.

Chester called, "How is the luck? Plenty of nutria, *hein?*"

"No, man, scarcer than snake shoes," one of the trappers complained. "You can't make a dollar no more off this nutria. Pretty soon us trappers got to skin cockroaches if nutria get more scarce."

Gloomy-faced, the trapper pair poled on down the bayou, their pirogue overloaded so grossly that occasional trickles of water ran over the gunwale. I wondered aloud what the trappers would possibly consider an abundance. Chester explained that they were only catering to a fear that bragging would stir the wrath of the gods and bring bad luck.

EXPERIMENT (ABOVE) BY CHARLES HARBUTT, MAGNUM
COMPOSITION BY FRANCE SCIENCE PHOTO

The Cross leads as altar boys and parishioners circle the square of St. Martin Catholic Church in St. Martinville at the beginning of the Corpus Christi Procession.

Cascading moss graces the driveway of the Sacred Heart Church in Grand Coteau, where Marius Thibodeaux parks his buggy each morning on the way to Mass. Braids of an Indian princess gave Louisiana its Spanish moss, a legend relates. When she died, a grieving brave hung her raven locks on a limb above the grave. Turning gray with time, the strands blew from tree to tree, and finally all the land wept for the maiden.

East of these swamplands, State Route 1 runs beside Bayou Lafourche for 100 miles. The road is lined by a continuous strip city which is in most places only one house deep. Beyond lies the marsh, aswarm with game but void of human life, except for the weeks following Betsy, when power and telephone company linemen cut away the tangle of storm-toppled poles and wires.

On my way to Grand Isle only days after Betsy struck, I could trace the increasing fury of the storm by the angle of the power poles leaning over the highway. For the last 20 miles of the drive south, if a single pole stood upright, I missed it.

Sea Hawk Rides Out Betsy's Fury

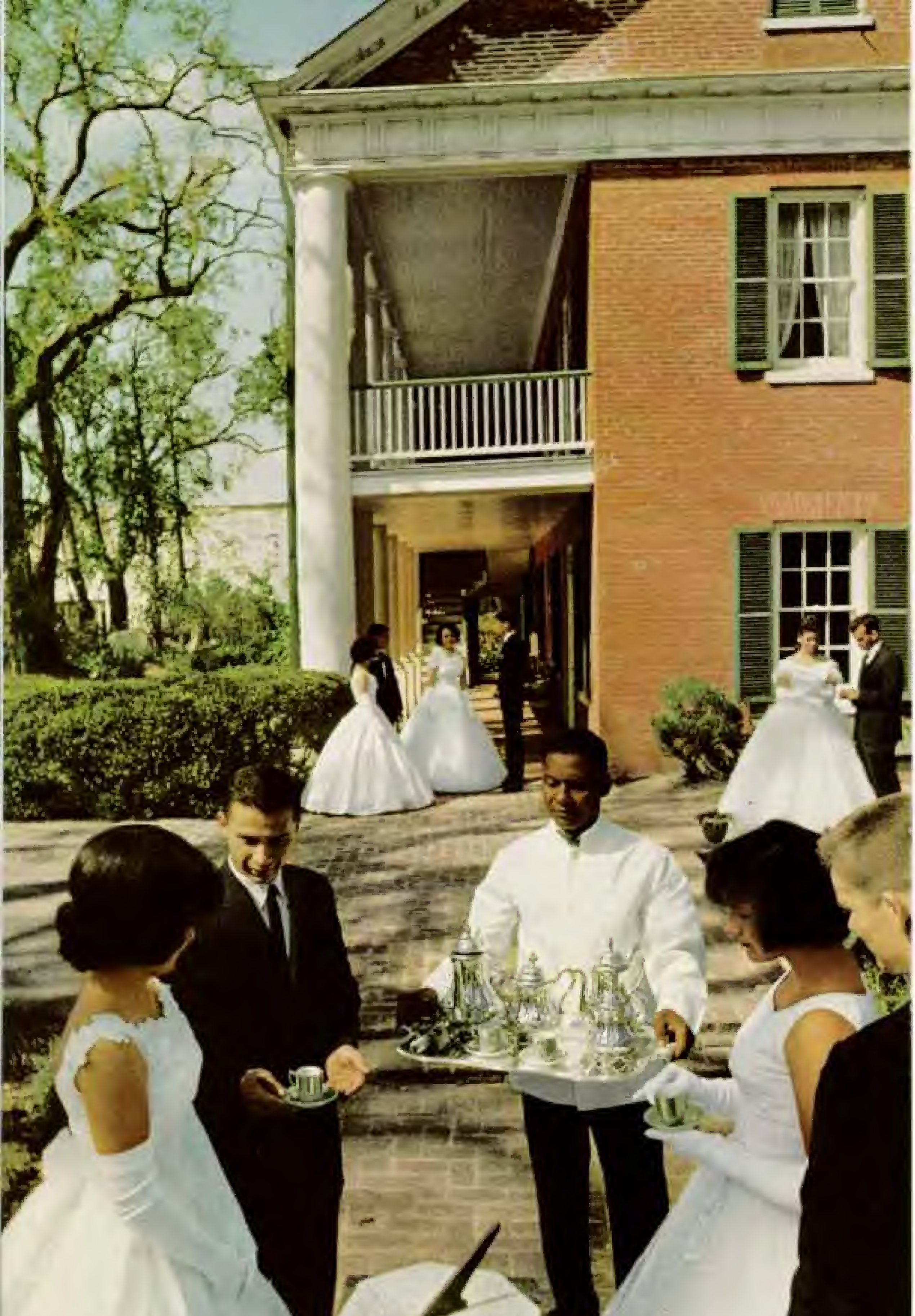
At the Grand Isle town limits, civil authorities and rifle-bearing National Guardsmen stopped all cars to turn back idle sightseers or potential looters. The guards searched every car leaving Grand Isle to be sure it carried no goods stolen from the wreckage.

Bulldozers chuffed through the desolate lanes, stacking the splintered debris of houses. Where Grand Isle's liveliest juke joint had once stood, the bulldozers piled a mound of concrete blocks and broken boards, the remains of a dozen vanished dwellings.

With some nervousness, I looked for the house of my old friend Capt. Charles Sebastian, "for 20 years the South's most famous fisherman," as his charter-boat shingle proclaims. Fortunately, his house, built on eight-foot pilings, was intact, except for a door split open and half a ton of sand spread on furniture and floor.

"The *Sea Hawk* rode out the storm without a scratch in the bayou at Lafitte, 30 miles inland," Charles reported. "When I brought

Feathers fly as Mardi Gras celebrants raid a chicken yard—with the owner's permission. Preserving a custom of the 1780's, men of Mamou rise before dawn on Shrove Tuesday. Hiding behind masks (left) and bizarre costumes, they ride on horseback across the countryside, calling at each farm to collect food for a feast. After a steaming cup of *café noir* (right), the thick black coffee Cajuns drink a dozen times a day, they gallop to the next stop. From the collection of ducks, chickens, sausage, onions, and spices, wives concoct huge pots of gumbo. Following the meal, tired riders still find the energy to dance to zai-dodo music until midnight, when Lent begins.



House that sugar built, Shadows-on-the-Teche in New Iberia opens its gardens to belles in tulle and taffeta as in years past, when visiting Creoles from nearby plantations danced the magnolia-scented nights away. David Weeks built the mansion in 1830 as a town house for his vast domain of sugar land. The home drifted to ruin after the Civil War. Then in 1922, descendant Weeks Hall began restoring it to its original grandeur, a task completed by the National Trust for Historic Preservation. Today the Shadows provides a romantic isle of yesteryear for beauties such as Gail Romero (right).

her to Grand Isle the next day, my boat's radio was one of the few links with the outside world till the Coast Guard's regular transmitter went back in commission."

We walked to the boat, moored at Fisherman's Wharf, where in happier times I had whiled away evenings listening to pungent conversation in the local French patois, larded with words from Spanish, Portuguese, Italian, and Choctaw. Lafitte's corsairs, drawn from many maritime nations, left behind this exotic mishmash of a language when they sailed from these islands for New Orleans to help Andrew Jackson rout the British in 1815.

The groceries, chandleries, bars, and seafood packing plants that once had lined the wharf lay in ruins, but already the air rang with banging hammers, and power saws snarled through tangled heaps of wreckage.

Fish Swarm Near Oil-rig Pilings

We boarded *Sea Hawk* to inspect the fishing sites. Charles steered for the mile-long platform of the Freeport Sulphur Company's underwater mining rig, standing on immense steel stilts seven miles out in the Gulf of Mexico (following pages).

"The storm damaged many offshore oil platforms and the sulphur rig; but Betsy won't stop production for long," Charles said. "Good thing too, the wells in the marsh and offshore pump 500 million barrels of crude a year. More than 42,000 Louisianians make a living out of the industry nowadays, and a pretty good living, too [pages 360-61].

"What concerns me, though, is the fishing grounds. These offshore rigs along the Louisiana and Texas coasts have made some of the fattest fishing waters in the world out of what used to be ordinary pickings.

"When you build a new rig, first the barnacles and the water plants fix themselves on the pilings. Then the little swimming stuff that feeds on the barnacles and plants comes along, and right behind them come the big swimming things that eat the little swimming things. Pretty soon you have a whole swarming underwater world hugging the shade and shelter of the rig.

"I wouldn't care if they never found oil or sulphur with these rigs, so long as they put down plenty of piling. Now let's find out if Betsy messed up my underwater world."

We tied up to one of the towering, stiltlike piers of the sulphur rig and threw lines over the side. Within minutes we were pulling in firm-fleshed red snappers—each as big across as a serving platter—sand trout, sheepshead, channel bass, and spadefish. From the bottom we pulled up croaker, grouper, and grunt. The waters clearly still teemed with fish.

Grinning for joy, Charles broke out the spinning gear and went after the surface feeders, which that day were bluefish and Spanish mackerel. Farther offshore he caught six amberjack weighing 40 to 60 pounds each.

"This boom in the fish population often happens after a storm," Charles said. "Sometimes the fishing is enormously better for a few days after a big wind riles up the water. The turbulence must bring up nutrients from the deep or something. And, of course, the rigs provide perfect shelter."

Back ashore, Tony Cheramie, shrimper and dock worker, helped us tie up. He took in the report about fishing conditions without surprise. During the thirty or so years he has lived on this seven miles of sandy ridge, he has survived many storms.

"The shrimping is always much more better after a blow," he said. "And with the marsh to hide in, even the little water things do all right."

Tony told of cruising the marsh to see what Betsy had done to the fish world. As a proper Baratarian with a big stake in the fisheries, he had searched the marsh waters and could report happily that the little sea creatures still hid there in unimaginable billions.

"Them little water babies sneak around in the thick grass, hide from the wind and the big fellow. All day they drink the soup of the marsh and grow big. Some of them little fellow, they only good for fish food, but some of them is shrimp and oyster. When they grow big enough, we catch them for the pot. Man, that marsh is just one big seafood gumbo."

Monday morning at the wildlife commission's marine laboratory on Grand Terre just

Offshore sulphur mine yields a golden hoard

across Barataria Pass, I got a sadder report. Dr. Lyle St. Amant, the state's seafood conservation expert, said the storm had smothered hundreds of oyster reefs with silt.

"The tides will eventually flush out the silt," he said, "but much of this year's crop of Barataria Bay oysters has been killed."

"Will the beds reseed themselves?"

"Reseed themselves? Yes, but only on natural-producing reefs, controlled and operated by the state. On privately leased beds, an oysterman works like a sugarmill mule to make his crop. He must plant seed oysters annually and move them about as they grow, to take advantage of changes in salinity. We harvest a million barrels of oysters in a normal year only because we farm them like sweet potatoes."

He focused a telescope on an oyster lugger steaming in circles on Barataria Bay, then passed the glass to me. Through the lens I could see muscular young oystermen, half-naked and sweaty, shoveling tons of seed oysters over the side (page 376).

"Those oystermen are reseeding their silted reefs," he said. "They are planting seed oysters

Blades whirring, a helicopter chugs aloft from Freeport Sulphur's mile-long Y-shaped mining platform off the Louisiana coast. Here superheated water, forced 2,000 feet beneath the Gulf to a subterranean deposit, melts the sulphur. Conveyed by pipeline to shore, 80 percent of the mineral goes into storage for sale in liquid form; the remainder solidifies in vats at Port Sulphur (opposite).

that have set on old shell which they get from seed beds on the other side of the Mississippi.

"The normal method in Louisiana involves the removal of seed oysters from natural reefs owned and managed by the state. The seed oysters are planted on privately leased bottoms, where they grow to market size and fatten. Though predators occur in these areas, the annual plantings, rapid growth, and a rotational system of planting result in good production—frequently as much as three to one over the natural-reef output.

"And oystering pays pretty well. The shrimp and oyster harvest brings us about 60 million dollars in a normal year. Of course, the oyster crop probably will be 20 to 50 percent less this year, but they grow fast. Production should return to normal by next season.

"At least 15,000 people work in the shrimp and oyster fisheries," Dr. St. Amant continued. "They're a rugged bunch, and the fisheries have survived worse than the storm.

"A few years ago shrimp production declined from an unknown cause, but it has come back to almost what it used to be. We expect 60 million pounds a year from now on."*

Next day, I went out with Junior Duet on his oyster lugger, and for a test of my aging arteries I took over a shovel myself. The young oystermen eyed me dubiously as I attacked the seed-oyster heap with an old-fashioned coal stoker's scoop big enough to hold half a bushel at a bite. Within ten minutes I collapsed over a capstan with eyes bulging and sides heaving like a sunfish out of water.

The oystermen swung their shovels steadily on, till five tons of seed were over the side. From that moment, I have eaten my fat Gulf oysters with more respect for the men who keep them coming.

Lafitte's Ghost Lingers in the Marsh

After my essay at oyster farming, Théard Rigaud, a local skipper, invited me to go on a more relaxed kind of oyster harvest—a search of the Grand Terre marsh for "wild" oysters that had seeded and fattened themselves as

*Dr. Clarence P. Idyll wrote of the industry in two GEOGRAPHIC articles: "Shrimp Nursery," in May, 1965, and "Shrimpers Strike Gold in the Gulf," May, 1957.

Southwest Pass, one of two chief mouths of the Mississippi River, provides a gateway for vessels heading up the delta to New Orleans. By confining the channel with a system of jetties and dikes, engineers accelerate the river current. The increased flow helps keep the passage clear and minimizes dredging. Spur dikes collect sediment that would otherwise drop in the ship channel.

Treacherous fogs add to the dangers faced by a Mississippi River bar pilot. At Pilottown, near Head of Passes, W. R. Aitkens awaits a ship guided by a river pilot from New Orleans. Here the bar pilot takes over to direct the vessel through the lower channel to the Gulf

Haven for study and relaxation, the Memorial Student Union of the University of Southwestern Louisiana at Lafayette overlooks a cypress lake where native iris bloom in the spring. Another kind of Cajun beauty, a coed (above), wears silver crawfish earrings and brooch. A fellow student (top) leads a bonfire rally for her football team, the Bulldogs, nicknamed the "Ragin' Cajuns."

Established in 1898 as the Southwestern Louisiana Industrial Institute, the school achieved university status in 1960. Its six colleges and graduate school enrolled 8,500 students this year. The College of Agriculture maintains some 600 acres of farmland for experiments in horticulture and animal and poultry science.

best they could in the old-fashioned, easy-going way.

Grand Terre is bare of buildings except for the marine laboratory and the ruins of Fort Livingston, built before the Civil War and smashed in the hurricanes that have hurried this coast. But the name Grand Terre stirred memories of great doings.

"What's the history of this place?"

"Why, this was Lafitte's town," Theard told me. "Hundreds of pirates once lived here, when they weren't at sea robbing the Spanish. Come. I'll show you the brick pillars of old Fort Lafitte."

We picked up the bushel of wild oysters we had gathered in the shallow bayou and loaded them into the pirogue. But before leaving we searched the spot where stumps of massive pillars had stood the last time Rigaud passed that way, ten years before. We found only brickbats, scattered probably by Hurricane Audrey in 1957 and again by Betsy in 1965.

Louisiana Grows 100 Feet a Year

About 15,000 square miles of land, almost a third of Louisiana's area, was built by the Mississippi River. With a million tons of sand and silt coming down the river every day, the delta—or at least that part of it around the mouths of the Mississippi—grows southward at the rate of 100 feet a year, a mile every half-century or so.

The road below New Orleans runs along the top of a natural levee formed by periodic river overflow. The land falls away on either side. Citizens of the delta grow their oranges, tend their oil wells, skin their nutria in a strip of land 75 miles long and just wide enough in places for a baseball diamond.

On the delta's eastern side, a new 2,000-acre lake of brackish water glitters where Betsy's winds and tides rolled up the life-supporting

layer of marsh plants and threw this cyclopean mud pie against the coast 17 miles northward. More than 200 deer that once flourished here have disappeared forever, or at least for the decades it will take for river silt to rebuild the marshy habitat.

The dwellers of the delta are not exactly the breed you find elsewhere on the coast. A glance at the faces and names along the delta road shows that the Cajun character of the marshland culture is diluted below New Orleans by Spanish and Slavic blood.

The river road ends just beyond Venice, a fishing and trapping village 20-odd miles up from the river mouths. I wanted to go all the way to the Gulf, so, despite a heavy fog that made travel dangerous, parish authorities detailed a boat to take me to Pilottown, a station near the end of the line.

Conversation there rarely drifted far from the recent storm. The station escaped with only minor damage, but on down the river, where six bar pilots rode out the storm, the tidal surge heavily damaged pilot shelters. Nevertheless, bar and river pilots moved ships up and down the river 24 hours after the hurricane passed.

After two days of cribbage forced on me by the persistent fog, I persuaded my boat captain to sneak us through the fog back to the road head so I could drive to the unofficial capital of Acadiana, at Lafayette, more than 200 miles to the northwest.

Lafayette Flaunts Gallic Flavor

"*Bienvenu à Lafayette*" says a highway marker at the edge of town. On the main street the eavesdropping passerby hears as much French as English. The gas-station attendant sings out your bill in piastres. He is not so quaint, however, as to turn down a proffered American dollar, for that is exactly what a piastre is in Lafayette.

The television broadcast day opens at sunrise with "*Passe Partout*," a live news and farm show in French. Commercials proclaim that a certain store offers its goods at "*les prix* wholesale *à tous*." Wholesale prices to everybody, more or less.

For luncheon, I went to Don's Seafood and Steak House, where I met the host, Ashby Landry. He calls himself "*le roi d'écrevisse du monde*"—the crawfish king of the world—and maybe he is at that.

Ashby briefed me on the care, feeding, and cooking of the crawfish, a decapod crustacean that is not only the No. 1 delicacy of the Cajun cuisine but also the totem of the Cajun clan. Just as the bulldog is the British totem, the eagle is American, the rooster French.

Plate after plate of crawfish dishes whisked by me for a sampling. Bisques followed gumbos, *étouffées* followed patties, jambalayas followed pies (page 372).

"Don't eat too much of the *écrevisses étouffées*," Ashby warned. "You not good started yet, so save plenty of room in you insides."

Ashby's dining room resounded with a happy babble of French and English, as Cajuns and Texas-Oklahoma oil immigrants pitched into aromatic Louisiana dishes. These oil men, I am told, come grudgingly to the Cajun country, but kick like bee-stung mules when the companies try to transfer them away.

Cajuns Persist in a Changing World

How long can this exotic pocket of Gallic individuality last, I wondered.

On my way home, I snapped on the car radio and tuned in a program of Cajun waltzes and two-steps. The music faded fast as I went north, as did the French names on the roadside mailboxes. Almost inaudible now, the radio swung into a bilingual song by Cajun singer Rod Bernard and his friend Jack Clement. It was about a modern Cajun girl at the fais-dodo, a Cajun-style Saturday night hoedown. The English version went:

She don't like to ride in my pirogue,
Don't even know how to cook gumbo.
She upsets her Cajun papa
When she does the twist at the fais-dodo.

So even the Cajuns are nervous about remaining themselves. But I think they will survive. Their resilient recovery after the storm showed of what tough stuff they are made. Surely, the American gumbo still needs the Cajun world—the Tabasco pepper that gives a piquant flavor to the whole. THE END

Softly the evening came. The sun
from the western horizon
Like a magician extended his golden
wand o'er the landscape. . . .

Longfellow's lines capture the beauty of waning day in Acadiana. Although industrialization spreads across the land, the Cajun people—fun-loving, steadfast, devout—keep the spirit of "Evangeline."

THE STARTING PISTOL CRACKS. the checkered flag whips down. My ground crew and I sprint the hundred yards to my balloon, a 79-foot-long, plastic-coated nylon bag spread out on the hot sand like a discarded awning.

I throw a lighted match into the propane-fueled ground inflation unit, and the hot-air blower roars into action with a whoosh of flame. You can always tell a racing balloon pilot by his singed eyebrows.

Two of my six-man crew hold open the skirt around the mouth of the bag. A bubble of hot air creeps inside to the crown, like a cat under a blanket.

The big bag slowly swells to life, straining to right itself. Now I light the two in-flight gas burners on the gondola's aluminum frame and pour in more hot air. "Let go of the crown," I shout. The balloon

Hot-Air Balloons Race on Silent Winds

NYLON BAGS UNFOLD *like giant blossoms as a balloon race gets under way near Reno, Nevada.*

By WILLIAM R. BERRY

Photographs by
DON W. JONES

swings upright with a powerful pull, filling to its 60,000-cubic-foot capacity—a thing of beauty.

We fight to keep the gondola on the ground. I scramble aboard, and my weight—180 pounds plus parachute—momentarily halts the upthrusting globe. Then my crew heaves upward on the bottom of the wicker basket. It is just eight minutes after the gun. I note with satisfaction. I am airborne.

Ten other balloons blossom around me—contestants in a special cross-country event of the four-day National Championship Air Races at Reno, Nevada, in September, 1965. Ours is a time-distance race; whoever flies farthest and lands within one hour will win.

Balloons Gain New Favor in an Era of Rockets

Our vehicles, lofting us skyward, are something special themselves. In an age of rocketry, they hark back to one of the oldest principles of flight: Heated air, imprisoned in a bag, struggles to rise through the colder, denser air around it—and can carry a man with it.

The "rediscovery" of hot-air ballooning in 1960—when Ed Yost of Sioux Falls, South Dakota, flew a 40-foot fabric envelope for an hour and 35 minutes—opened a new era in a fascinating sport. Balloonists no longer need depend on expensive gas and cumbersome ballast. Adjustable propane burners heat nature's own air within the bag; now we can rise or descend at the turn of a valve.

My burners roar their frenzied song. The altimeter needle winds swiftly around its dial. I recheck the ground handling lines dangling below and shudder, recalling a harrowing ascent two years ago: I had fancied I heard a muffled shout over the roar of the burners as I climbed swiftly past 300 feet. I shrugged it off, intent on watching the rate-of-climb indicator.

Later, as I cut back the burners at 3,000 feet, I heard someone call again—this time unmistakably.

"Please, mister, won't you get me down?" a child's voice whimpered desperately.

I looked overboard. The memory of what I saw still gives me nightmares. Somehow a boy had gotten a line wrapped tightly around his hand, and I had unwittingly lifted him with me!

I couldn't reach him, for the ground lines dangle straight down from the sides of the balloon, far from the gondola. As quickly as I could, I brought the balloon down, talking to the boy quietly, telling him to look at me, not at the ground.

(Continued on page 402)

Off at a dead run in a Le Mans Start—named after the famous French auto race—author Berry, in red flying suit, and his crew dash to the lifeless balloon. Moments later, hot-air blower roaring, the bag billows. While one crewman holds the skirt open, a second braves the 120° F. air inside to free fouled lines. Others, visible through the crown, restrain the balloon.

Flames spurt from dual propane burners in a pre-flight test designed to guard against flameout. If burners should fail in high-altitude flight, the balloon would descend out of control and eventually crash.

STRAINING SKYWARD *as burners pour hot air into the envelopes, balloons fight their crews' efforts to hold them in place until they swell to full size. Then, with a final push upward, the bags will soar. Capacities range from 27,000 to 87,000 cubic feet. Commercial firms sponsor most racers; Mr. Berry's entry bears the banner of Holiday Magic, Inc., a cosmetics firm.*

[illegible]

Gemlike sun peers from behind the author's glowing balloon (above) as it climbs skyward. Exhaust ports at top of skirt allow cooling air to leave the bag. To descend, the balloonist vents hot air through the "boo-boo," a valve that shows as a vertical slit on the gold gore left of the registration number.

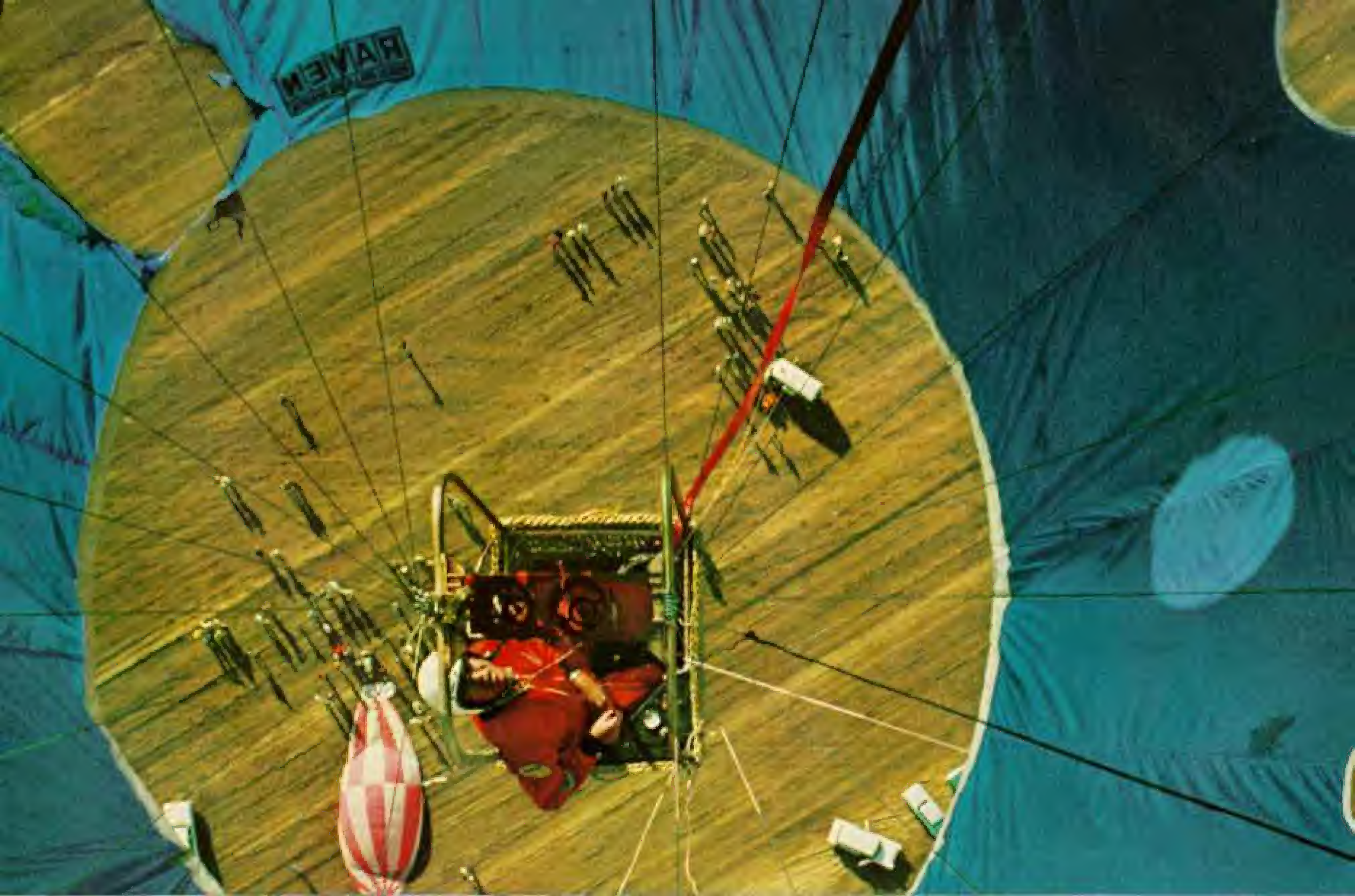
Eyeing his instruments as well as his competitors, Berry soars at 5,000 feet above Nevada. Red strap attaches to a rip panel that deflates the balloon for landing. Firebreaks stripe the sage below. Using a camera suspended from the balloon by photographer Don W. Jones, the author snapped this unusual picture by remote control.

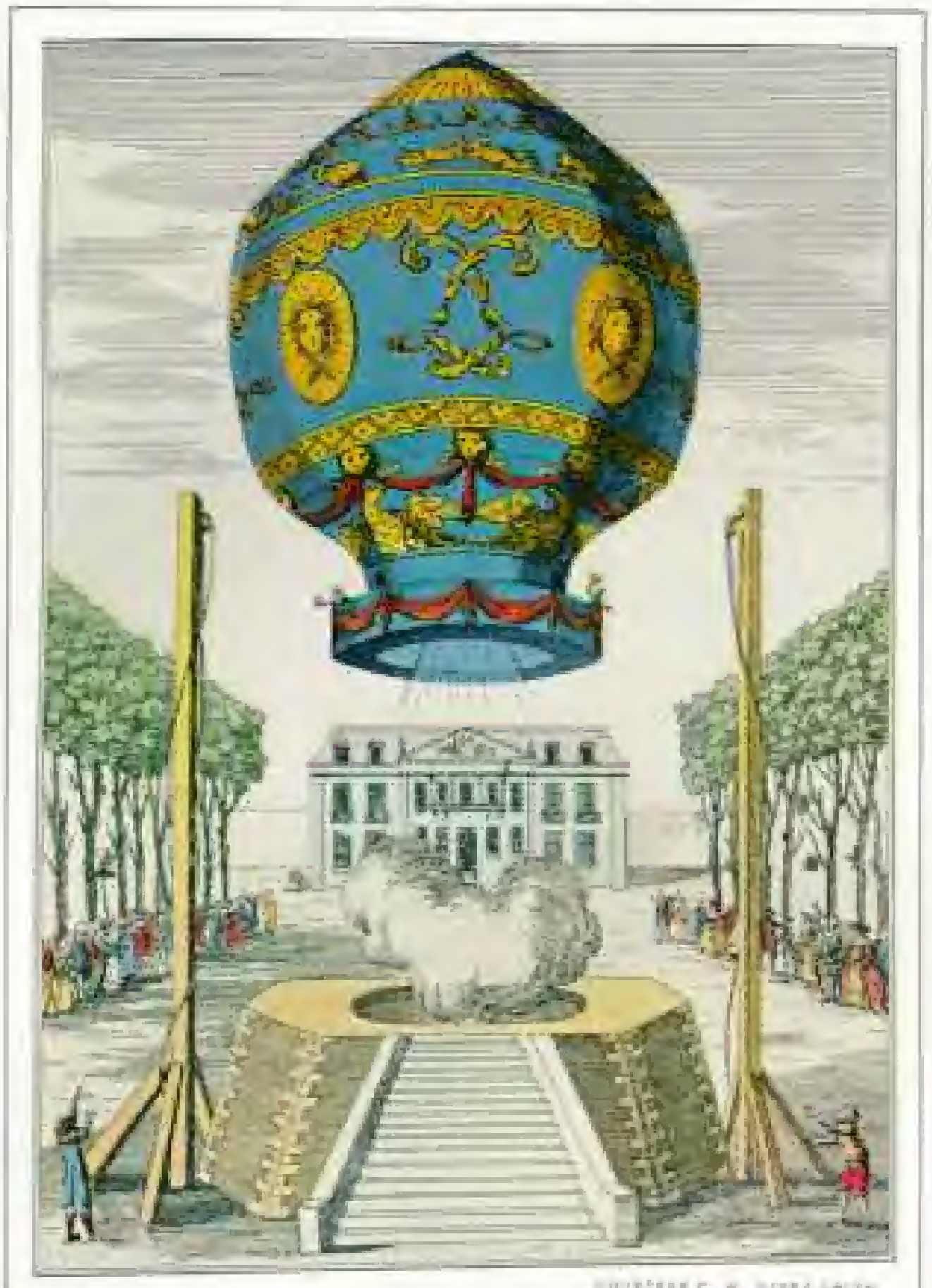
FOLLOWING PAGES

Dangling on a spiderweb of steel, the wicker basket rides heavenward below the rising balloon. Berry's gondola provides only enough room for the pilot and an infrequent passenger, plus two eight-gallon propane tanks—sufficient for two hours' flying. The ground swims dizzily below the balloon's mouth and vent. Burn hole at upper right—no hazard to flight—occurred during a previous inflation.

Camera hanging inside the bag, installed by Jones, captured this action photograph.


RAVEN


RAVEN



COURTESY C. F. BERRY, SMITH AND SMITH, PARIS, LONDON

Old idea wins new fans

PARIS CROWDS CHEERED on October 15, 1783, when the "aerostat" devised by the Montgolfier brothers lifted Pilâtre de Rozier more than 80 feet into the air. The long-sought secret of flight: A huge, fragile, linen-and-paper balloon filled with smoke and hot air from blazing straw and wool. But De Rozier was not the first balloonist. A month earlier, as Louis XVI and the glamorous Marie Antoinette watched, a duck, a rooster, and a sheep rode aloft for eight minutes, landing safely.

In November, De Rozier and the Marquis d'Arlandes became the first men to travel by free-flying balloon when they made a 25-minute flight across Paris. The aeronauts, above, proudly bow to the acclaiming throng.

Light gases soon supplanted hot air. Today, however, nylon bags and propane burners carry airmen in a new application of the Montgolfier principle. Of 64 balloons certified by the Federal Aviation Agency, more than half are hot-air bags. The sport centers principally in the western United States. The National Aeronautic Association sanctions meets such as the one last September near Reno, Nevada (described in the accompanying article), and another in November at Palm Springs, California.

Author Berry, a business executive in Oakland, California, nurtures a long-range ambition to soar beneath a hot-air bag across the United States—and eventually the Atlantic Ocean.

(Continued from page 395)

Finally, two miles from our take-off point, 11-year-old Danny Nowell of Mill Valley, California, hit the earth—a little hard, and terribly frightened, but miraculously unscathed. Ever since, I have checked my ground lines with extra care.

I now look for the other ten racers to see where the winds take them. Some soar above me; others still struggle to leave the ground.

Elevation at Reno Sky Ranch, our take-off point, nine miles northeast of Reno, is about 4,500 feet. My altimeter shows 8,500 feet, and I am

Biggest hot-air balloon, an 87,000-cubic-foot Semco competes in a spot-landing event in the Nevada air races. Four piles of burning tires like the one

climbing at just under 1,000 feet per minute —fast enough. If I rise too rapidly, the terrific resistance of air flattening the crown of my balloon could cause it to split.

I head for 17,000 feet. Up there, in the cold, brilliant sky, I hope to find the strongest winds. In this race, direction does not matter.

Below I see several antlike jeeps, following balloons as far as possible to measure their flight. The judges will plot distances on a map to determine the winner. I also look for the red truck that will try to follow my drift. I spot it far away, kicking up a cloud of dust along a penciled road.

Again I check my altimeter, now showing 15,000 feet, and I shut down the burners, leaving only the pilot lights on. The balloon will coast to altitude on its own momentum.

The ground below me spreads out in an endless pattern of firebreaks crisscrossing the desert sage (pages 398-9). To the north glistens Pyramid Lake—a cold, wet bath for anyone who lands there. Luckily, a 15- to 20-knot wind blows me away from the water, toward the Virginia Mountains, a rugged range just to the east.

With burners off at this high altitude, the sudden silence startles me, as it always does. Only up here have I heard such absolute quiet.

People sometimes ask me why I like ballooning. I find it hard to answer. I love the air —everything about it. For years I have flown

at left, marking the points of the compass, raise smoke beacons about two miles from the center take-off point. Pilots have an hour to land as close as possible to one of the markers. During the four-day meet, balloonists also played hare and hounds—a balloon chase —and vied in an altitude-control match, following preset up-and-down patterns.

Touching down, pilot Mal J. Fink releases his gondola and, with less weight, the balloon rises again. But two lines attached to the gondola pull taut and rip open side panels on the bag. A retaining line at the crown tips the balloon, and hot air spills out with a rush. The landing method differs from the author's, whose Raven balloon has a rip panel in the crown.

PHOTOGRAPHS © NATIONAL GEOGRAPHIC SOCIETY

light planes and gliders, and I'm a sports parachutist. Since I discovered ballooning three years ago, I go up in balloons whenever I can.*

For all my love of the air, however, I think it's the quiet that appeals to me most in ballooning—the quiet, and the sense of freedom, and the challenge. I am alone, and I must match myself against the deceptively peaceful sky and the waiting ground.

Return to Earth Requires Skill

I have now reached "17 grand"—17,000 feet—in my frail basket, dangling on steel cables from the nylon bag. I can still see three balloons; the rest have sailed out of sight, soaring on other winds, at other altitudes.

Every few minutes I turn up my burners. The air inside the envelope must be kept 100 or more degrees hotter than the air outside, or the balloon will begin a rapid descent. I watch my pyrometer carefully; if the air inside the bag gets much hotter than 250° F., the skin may become brittle and crack.

The mountain range passes far below me. Time, in this race, is running out, and I must find a place to land.

Now begins the tricky descent. I pull the cord that opens the maneuvering vent—popularly called the "hoo-hoo" (page 399). This slit high on the side of the envelope normally remains closed but, when open, allows hot air to escape and thus reduces the buoyancy of the balloon.

The rate-of-climb needle points down and the altimeter unwinds. If my balloon comes down too fast it will fill with cold air and smash into these boulder-strewn mountains. So I slacken the cord and the pressure of hot air in the bag automatically closes the valve. I turn up the burners and the balloon gently levels off. I have come down 1,000 feet on an invisible aerial staircase. Repeating the process, over and over, I take giant 1,000-foot steps toward the earth.

As I approach ground, an unexpected updraft holds me eerily just above a cliff—no place for landing. I fire up the burners and leap-frog past the hazard.

At least there are no wires strung across this open country. I think of my young friend

*For other NATIONAL GEOGRAPHIC accounts of the fascination of ballooning, see "Across the Alps in a Wicker Basket," by Phil Walker, January, 1963; and "Braving the Atlantic by Balloon," by Arnold Eiloart, July, 1959.

Like a limp dishrag, Mr. Fink's balloon drops toward desert sage. Below, Berry (white short-sleeved shirt) helps his crew portage gondola and balloon from a ravine where he landed.

Dick Pollard, of Denver, Colorado, killed two years ago when his balloon drifted across high-tension lines.

Now I detect a worrisome ground wind driving me into a deep, rocky ravine. Ground wind can drag a balloonist, shredding bag and gondola.

No Lions This Time

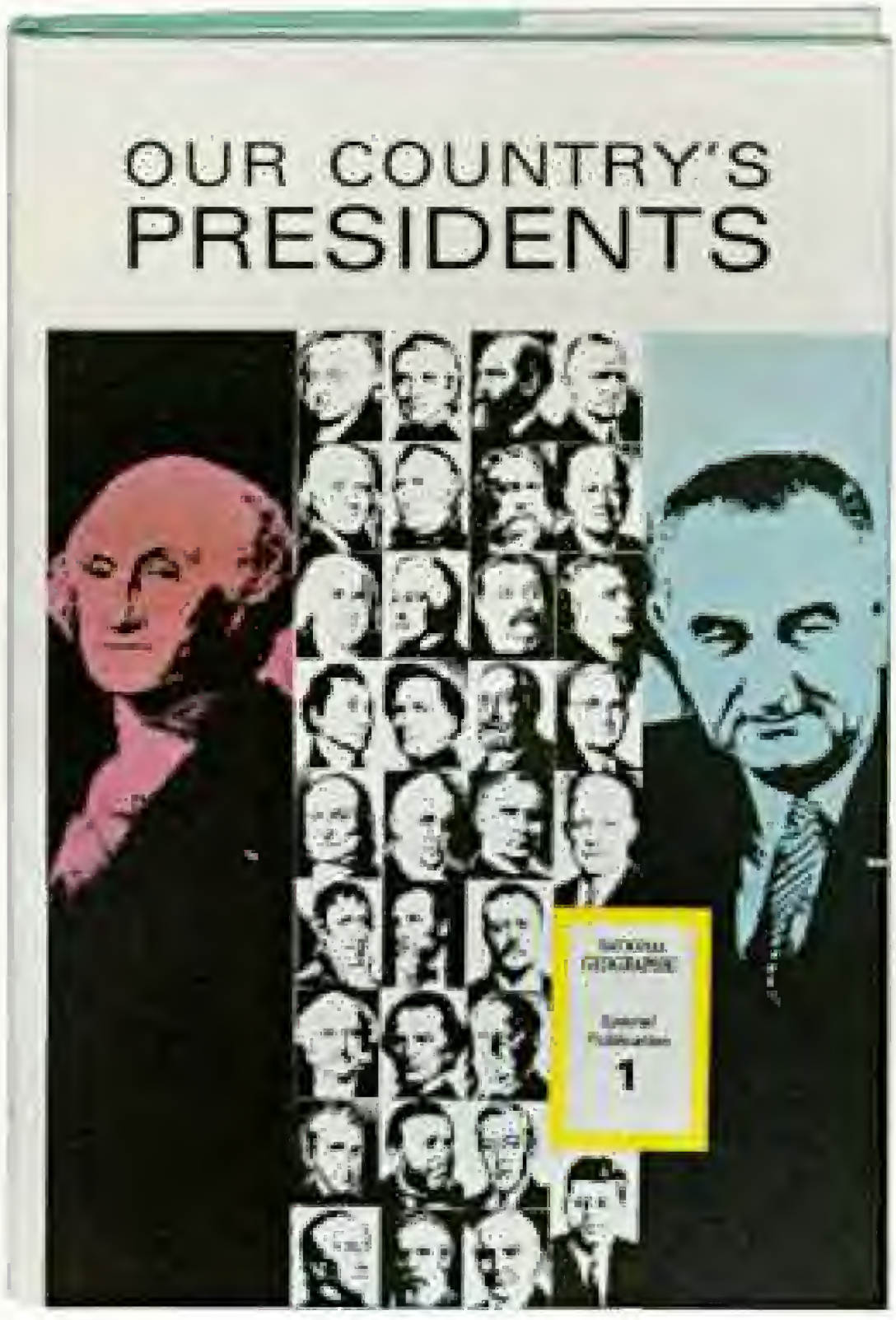
A few feet above ground . . . Now! I yank a line that pulls off the big rip panel in the crown. The balloon collapses, and I land with a jarring thud, dragging 30 yards.

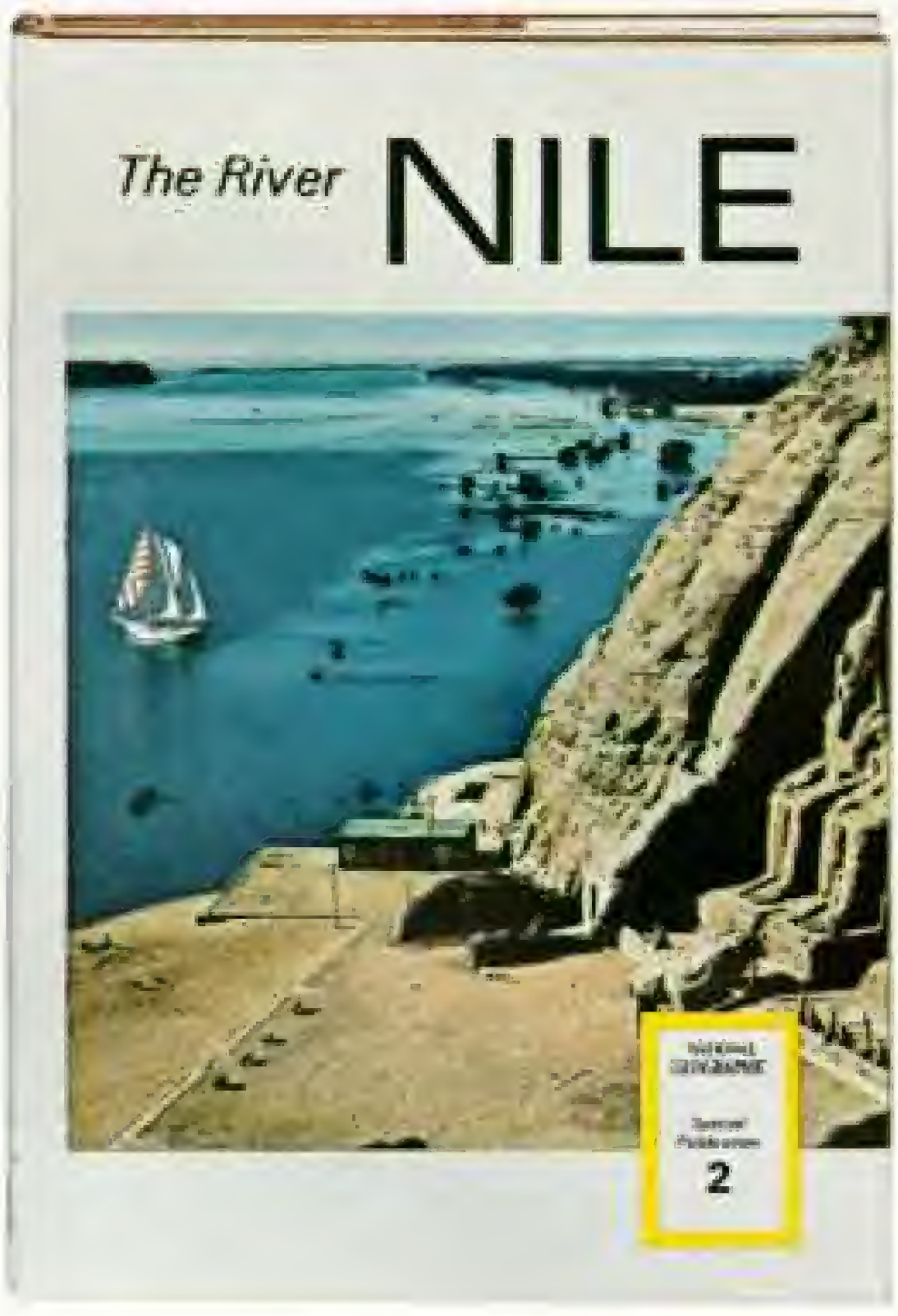
On other flights I have landed in water, among trees, and once right next to a lion pit in a zoo, but never in worse terrain than this. It takes my ground crew, who have been trying to follow the balloon by truck, four hours to catch up with me; we have to portage the balloon and gondola a quarter of a mile (right). Later I learn I have drifted 12 miles and tied for sixth place. Jim Craig of China Lake, California, went 15 miles and won the race.

Despite the rough landing, I can hardly wait to get back in the air, again to ride on silent winds beneath a nylon bag.

SPORT OF HOT-AIR BALLOONING
brings a bright new constellation to Nevada's daytime skies.

ENTACHROME BY DON W. JONES @ N.G.S.





Adventure, science, history, exploration spring to life in your Society's new program of

Special Publications

By MELVILLE BELL GROSVENOR
LL.D., Sc.D.
President and Editor, National Geographic Society

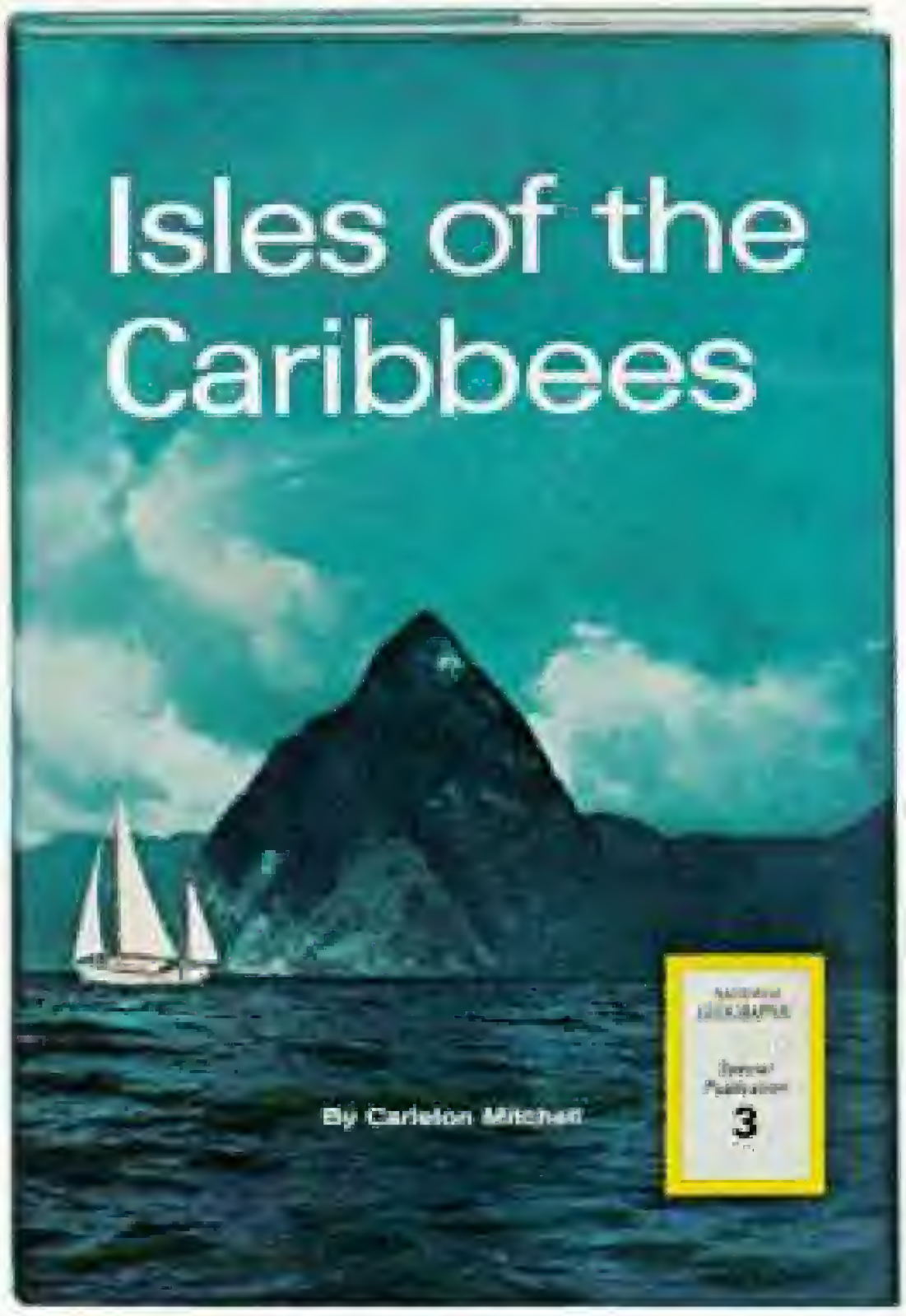
A GRATEFUL MOTHER in Louisville, Kentucky, not long ago wrote to the GEOGRAPHIC to tell us "how much your articles on the Presidents have helped our son in his 8th-grade work. . . . He has received an A-plus. . . ."

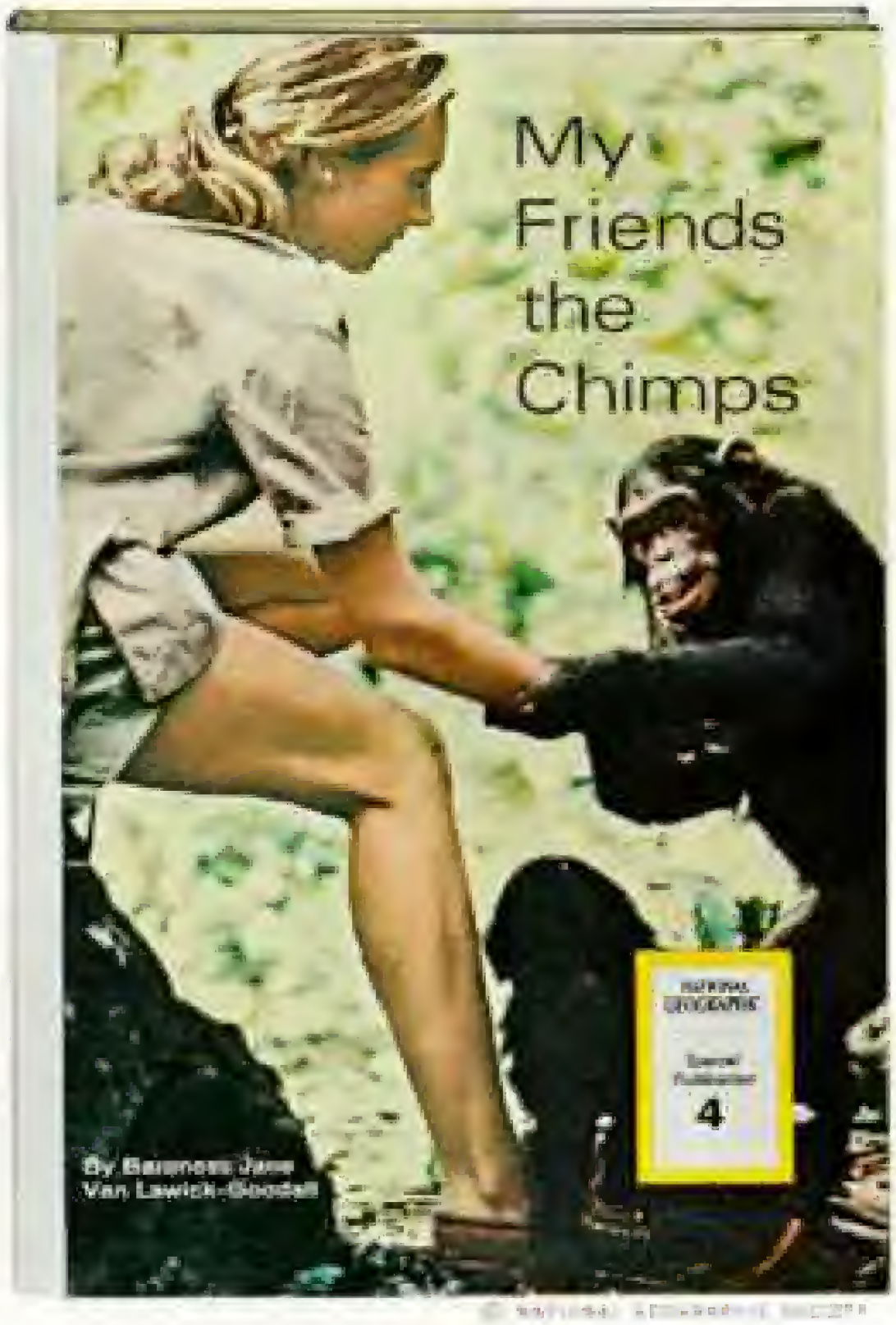
Her letter was typical of hundreds. So was one from "an ardent history reader" in Westminster, California, urging that "this series about the Presidents . . . be published in book form." An English member stated flatly, "I am going to get them made into a book." A Georgian requested a Presidents book "at a price I can afford."

The book they suggested is now available —*Our Country's Presidents*. With it the National Geographic Society inaugurates a new service—a series of Special Publications as rich in interest and varied in scope as the Society's magazine itself.

What President Sat His Horse Sideways?

Our Country's Presidents, in its 248 pages, combines the widely hailed series of five articles written for NATIONAL GEOGRAPHIC by Frank Freidel, professor of history at Harvard University. The book brings vividly before us each of the leaders of our Nation, from George Washington to Lyndon B. Johnson, as only dramatic illustrations and concise,





informative text can do. Zachary Taylor, for example, becomes far more than a name when we see the gruff, determined face of this warrior President—and read how the Mexican War hero directed battles while wearing a straw hat and sitting his horse sideways.

Every chapter presents a wealth of little-known fact. Which President was elected to the Confederate Congress? John Tyler—though he died before taking his seat as a Representative from Virginia. Which three became bridegrooms while living in the White House? Tyler, Cleveland, and Wilson. Who was the first "dark horse?" Polk in 1844. Who originated the "front-porch" campaign? McKinley in 1896.

During the Civil War, President Lincoln found late-night strolls relaxing. A young trumpeter of the 9th Massachusetts Battery has preserved such a moment for us on his sketch pad: the gaunt President pulling a wrap around his burdened shoulders. For years this rare drawing lay unappreciated in the archives of the Library of Congress—until its interest and importance were recognized by National Geographic picture editors.

Similarly, the Society's researchers studied a photograph of Harry Truman taking the oath of office—and completed the identification of witnesses both for the book and for the records of the Truman Library in Independence, Missouri.

Thus even the best-informed adult will find photographs and facts to enrich his knowledge of America, while the pictures lure his children into reading history brought to life.

Though these Special Publications represent a new effort by the Society, a further

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A PROMPT REQUEST will bring you first editions of the four books as they appear:

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The River Nile, by Bruce Brander, 200 pages. Available in July.

Isles of the Caribbees, by Carleton Mitchell, 200 pages. Available in October.

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means of "increasing and diffusing geographic knowledge," their editors are veteran members of the Society's staff. Headed by Robert L. Breeden, they have been responsible for production of such public-service projects as the official White House guidebook for the White House Historical Association; the guide to the United States Capitol, *We, the People;* and the new Supreme Court book, *Equal Justice Under Law.* Each has been received with superlatives.

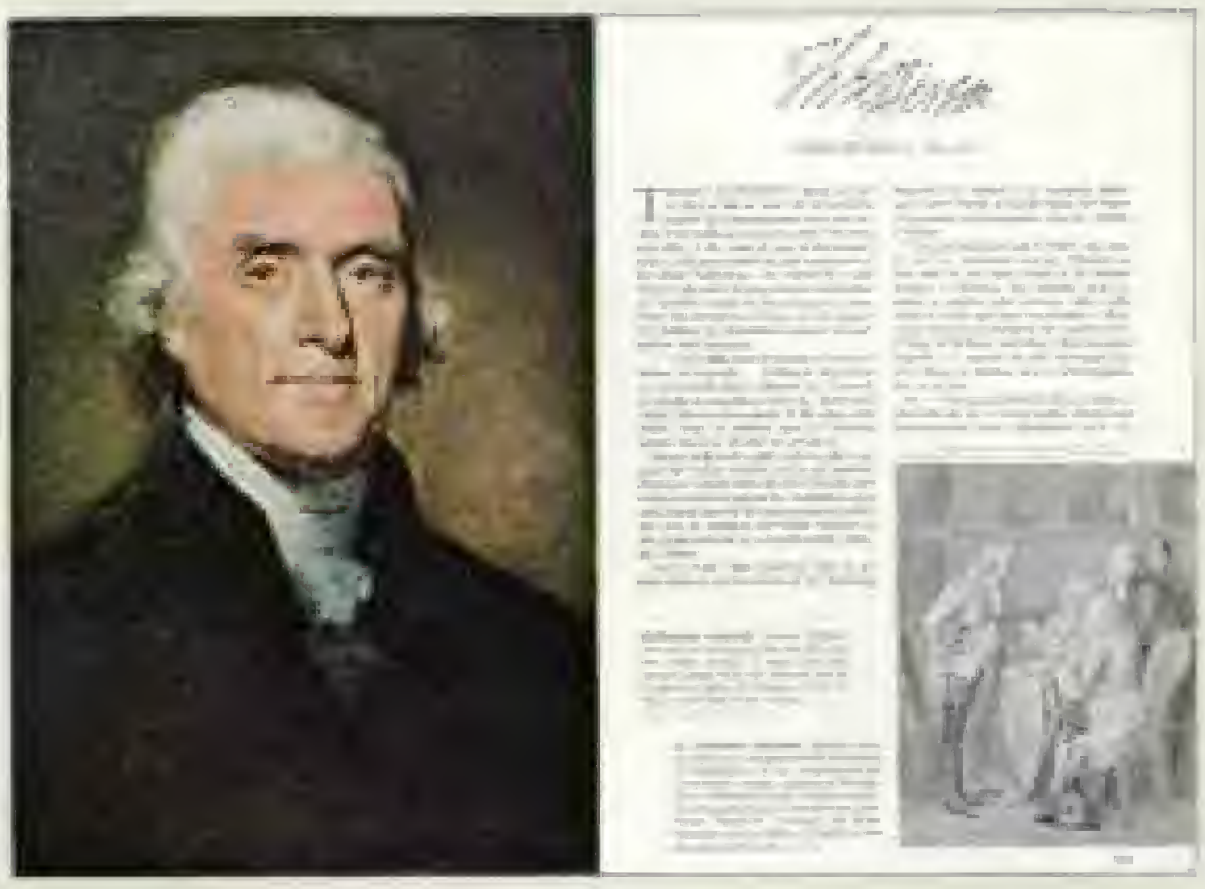
"Stunning," said the *Christian Science Monitor* as it praised "the superb craftsmanship of the National Geographic Society."

"An exacting quest for perfection," said the Washington *Star.*

But the compliment I personally value most highly came from Mrs. John F. Kennedy. In a letter of thanks for the White House guide, she lauded "the excellence of the book." And she added, "Only the NATIONAL GEOGRAPHIC could have done that."

The same pursuit of excellence marks the second volume in the new series—*The River Nile,* to be ready in July. Our editors are now racing both time and the river, for rising waters backed up by the Aswan High Dam are even at this moment drowning much of Egypt's past.

A few years ago my mother traveled 30,000 miles through Africa. "In all that trip," she said, "the most magnificent sight was the sunrise



From fledgling Nation to world leader, the United States has grown under the direction of 35 men, and their ambitions and achievements crowd the pages of *Our Country's Presidents.*

New Yorkers witnessed the oath-taking of George Washington, first Chief Executive. Thomas Jefferson, drafter of the Declaration of Independence, almost doubled the size of the country during his administration. Andrew Jackson leaped to prominence as hero of the War of 1812. A rail splitter in his youth, Abraham Lincoln gained a national reputation in debates with Stephen A. Douglas and, as President, preserved the Union during turbulent Civil War days. A century later President John F. Kennedy and his wife Jacqueline brought vitality, youth, and charm to the White House.

PHOTOGRAPHED BY NATIONAL GEOGRAPHIC PHOTOGRAPHER WINFIELD PARKS © N.G.S.

view of the rock-hewn temples at Abu Simbel."

In recent months those temples have presented an even more extraordinary sight. Engineers have been carving the great statues into pieces and lifting them 225 feet for reassembly above high water. Our Society photographers have filmed each step in this project. At the same time, they have photographed archeologists at work in the doomed valley and recorded their recent discoveries.

New Chapters in the Nile's Old Story

Capturing this intensive activity in pictures and words, *The River Nile* is a book both timely and timeless. It tells two giant stories. A part of the past never again to be seen, and a technological revolution about to change the face of this ancient valley.

Author of *The River Nile* is a widely traveled GEOGRAPHIC staff member, Bruce Brander, who did much of his research on the river itself. To visit archeological sites and to see the great stream from its mouth to its headwaters, he flew along it by jetliner, sailed it at the pleasure of the wind in a graceful felucca, and roamed its bordering deserts by camel and Land-Rover.

The book retells one of the world's oldest geographic stories—the quest for the source of the Nile. The ancients were tantalized by tales of the river's birthplace in great lakes and mountains to the south. Nero sent an expedition, to no avail. All through medieval times, the Nile's origin remained unknown. Not until 1862 did the English explorer John Hanning Speke finally trace the White Nile to Lake Victoria, on the Equator.

The River Nile takes us even farther south, to the true headwaters in the tiny republic of Rwanda. Moving downstream, we course past the Mountains of the Moon—the Ruwenzori—and through the country of pagan cattle worshipers in the Sudan.

We watch the upper Nile ooze through the swampy Sudd, where dry land is so scarce and bird life so plentiful that birds must sometimes take turns landing. In the wet season these swamps grow to the size of England; their changing channels and floating islands have baffled experienced river pilots. In 1881 the Italian explorer Romolo Gessi was trapped for three months in the watery maze. Most of his 400 men starved in the swamp, and he died shortly after reaching Egypt.

Today the longest river on earth serves as a mighty source of electrical energy, while still linking monuments of civilizations that flourished millenniums ago. *The River Nile* encompasses it all—4,145 miles and 5,000 years.

Carleton Mitchell's *Isles of the Caribbees*, third of the books, takes you on an armchair voyage of discovery. You will cruise under sail

Silent flows the lifeblood of Egypt, past remnants of vanished grandeur. A new NATIONAL GEOGRAPHIC book, *The River Nile*, captures the sweep and pageantry of the world's longest river.

Like ships of Pharaohs, a *gaiassa* slips by the crumbling Kôm Ombo Temple. The new Aswan High Dam, 35 miles upstream, poses no threat to it, but the rock temples of Abu Simbel in Nubia (right) would have been lost forever under Lake Nasser except for an international project to carve them into blocks for reassembly above the rising waters.

Skilled workmen shoe the crown from one of four colossi of Ramesses II that guard the entrance to the main temple of Abu Simbel. Children thrill to a ride down the gigantic sand pile that protects the façade during dismantling.

Golden funerary mask of King Tutankhamun preserves the features of the young Pharaoh. His tomb, discovered in 1922, revealed a treasure trove of precious artifacts buried with him 3,500 years ago. Today the Egyptian Museum in Cairo exhibits the unique collection.

To isles of winter sun

WARM WHISPERING WINDS, the fragrance of flamboyants, the lilting rhythms of a steel band —few can resist the spell of the Caribbean.

In *Isles of the Caribbees*, readers cruise in the yawl *Finisterre* with veteran yachtsman Carleton Mitchell (below), his face stung by spray. Sailing a turquoise sea, he drops anchor at the Virgin Islands, St. Kitts, Antigua, and Guadeloupe, glamorous names in the Leeward Islands. In the Windwards, he calls at the equally romantic Grenadines, St. Vincent, St. Lucia, and Martinique (above), where fishermen dry their nets on a palm-fringed beach.

On Grenada, southernmost of the Windward Islands, steep verdant hills enfold the harbor of St. George's, and fiery blossoms of royal poinciana cascade above a banana boat taking on cargo. Sails furled, an island yacht drowses at anchor.

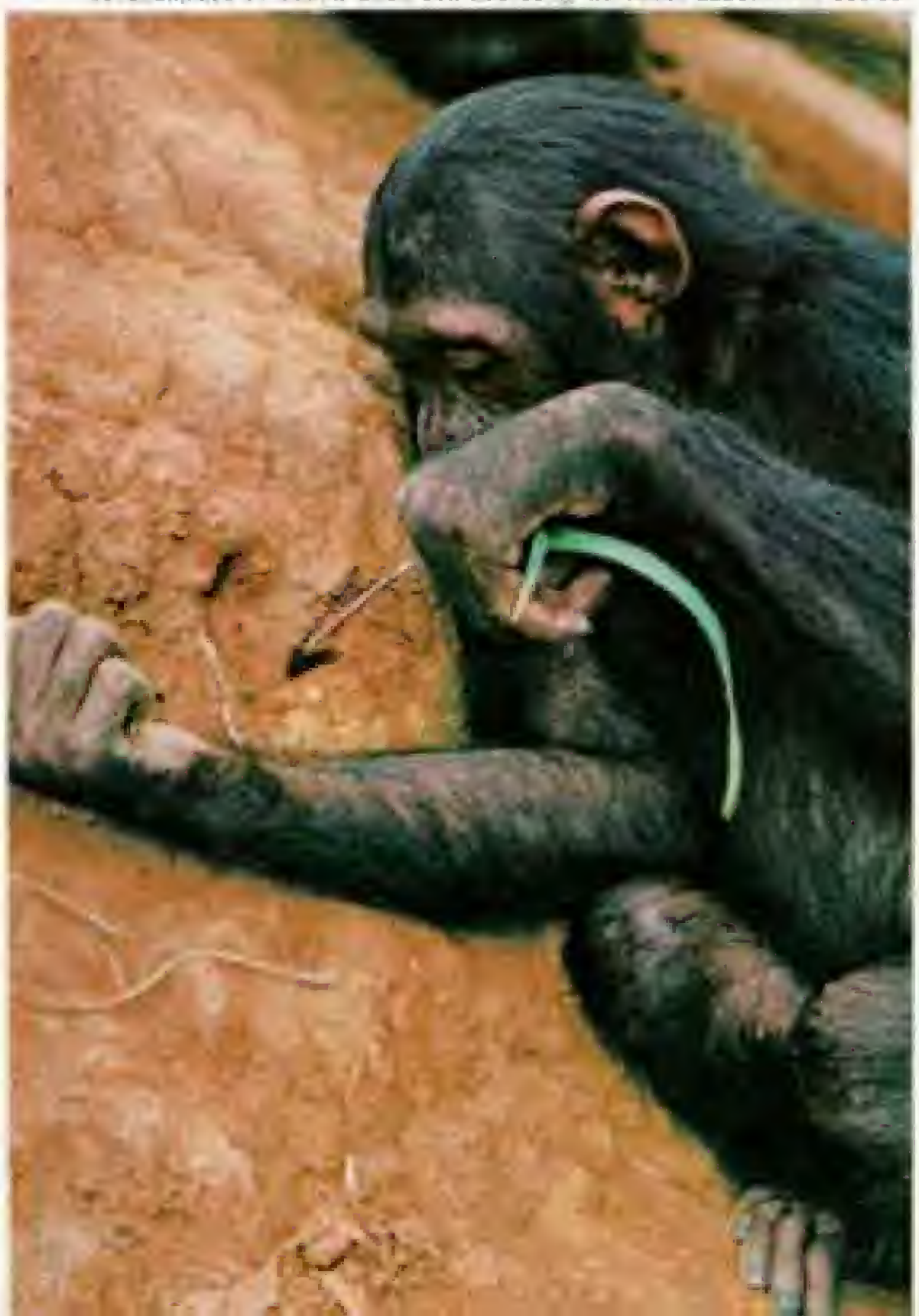
along the sun-washed crescent of Leeward and Windward Islands, the Lesser Antilles, which stretch in a 700-mile arc from Puerto Rico to the coast of South America.

It was my own good fortune to sail with Carleton Mitchell on his cup-winning ocean-racer *Finisterre* from St. Christopher—nicknamed St. Kitts—to St. Thomas in the Virgin Islands, as he gathered much of the material for this book. I shall always remember our first view of the Dutch island of Saba, rising from the sea like Napoleon's cocked hat. Strangely, you must climb 900 feet to reach Bottom, its largest town. "It really is a bottom," said skipper Mitchell, "the crater of a dead volcano."

With our yachtsman-author we meet the living history of half a dozen melded cultures from Europe, Africa, and Asia, brought to the shores of the New World by galleons, pirate ships, men-of-war, and slavers. On the French island of Guadeloupe, where a guillotine in 1794 beheaded 27 Royalist officers in one day during France's Reign of Terror, cane knives decapitate roosters and goats in a traditional East Indian ritual. Ghosts of British naval officers of Nelson's day seem to stalk a restored dockyard at English Harbour, Antigua, still under the Union Jack. The Dutch island of St. Eustatius dips its colors to *Finisterre*, a reminder that its salute in 1776 to a United States brig-of-war was the first official recognition of this infant nation.

With *Finisterre* you visit planter isles that time passed by, and tourist isles building new fortune on "fun in the sun." Anyone hoping to visit the West Indies should own *Isles of the Caribbees;* those who may never sail there

Friends from different worlds, Baroness June van Lawick-Goodall and burly Figan play together. *My Friends the Chimps* recounts the fascinating discoveries and experiences of the attractive British scientist studying these apes in the wilds of Tanzania.



Fishing for dinner, Fifi pokes a grass stem into a termite mound; she will pull it out laden with clinging insects. Her mother Flo (above) nibbles at choice large termites; small ones go free, rejected by the discriminating diners. Baroness van Lawick reported the animals modifying stems to fashion fishing poles for termites, proving that chimpanzees in the wild make crude tools. She found they also create sponges from chewed leaves and sop up drinking water with them.

will find this book the stuff of dreams.

In the fourth volume of the series, *My Friends the Chimps*, the Baroness Jane van Lawick-Goodall tells the full story of her life among wild chimpanzees in the Gombe Stream Game Reserve of Tanzania.

As Jane Goodall, she began her field study in 1960 at the suggestion of the noted anthropologist Dr. Louis S. B. Leakey of Nairobi, Kenya. "Chimps demonstrate the rudiments of reasoned thinking," she has written. "We hope that study of their social habits in the wild will throw new light on the growth of early human cultures."

For five years the Society has supported the research of this remarkable English girl, through her two GEOGRAPHIC articles and our Society's television documentary, millions have followed her as she moved into the bush alone, as she gradually won the confidence of wild chimpanzees and made scientific history with her observations.

Of first importance, she discovered that these chimpanzees make primitive tools—for extracting termites from nests (opposite) and for sopping up water for drinking. She found that chimpanzees, like humans, gain reassurance from a friendly touch and greet each other by embracing, even kissing.

A turning point—and a romance—came when the Society assigned an outstanding young photographer of African wildlife, Dutch Baron Hugo van Lawick, to record Miss Goodall's work on color film. They married and now conduct the study as a husband-wife team. Through the young scientist's eyes and her husband's extraordinary photographs we see the powerful Mike bolster his ego with wild bouts of kicking empty kerosene cans. We watch "charging" displays, in which excited apes rush about dragging branches, swaying on limbs, and stamping the ground.

With illustrations that also stand as major contributions to science, *My Friends the Chimps* will interest anyone who enjoys personal adventure, anthropology, or a trip to the zoo.

These, then, are the first four of our Society's Special Publications. By making a prompt reservation, your family can share these varied worlds (for details see page 409). THE END

PHOTOGRAPHED BY BARON HUGO VAN LAWICK
© NATIONAL GEOGRAPHIC SOCIETY

Human expressions—whimsy, complacency, humility, pride—flit across the faces of chimpanzees. Physical characteristics and mannerisms distinguish each animal, enabling the Baroness van Lawick to recognize and name many. David Greybeard's grizzled chin, for example, makes him easy to spot. White irises around his pupils identify Mr. Worzle. The scientist knows others by their long faces, short faces, bald shoulders, and body builds.

Making Friends With

PREPOSTEROUS PLAYMATES, *man and killer whale swim together for the first time, exploding the popular belief that the marine behemoth will attack any creature in the sea. Chin to chin with the author, 24-foot Namu accepts a slab of salmon. Underwater photographer's Fisheye lens records the antics in Rich Cove, on Puget Sound. Spectators peer from a floating dock above.*

FLIP SCHULKE © NATIONAL GEOGRAPHIC SOCIETY

MY HEART POUNDED with excitement, although I felt no genuine fear. The killer whale, all 24 feet and five tons of him, exhaled a cloud of vapor from his blowhole and swam toward me in a lazy arc.

Clad in a black neoprene wet suit, I squatted on a floating dock at Rich Cove, near Seattle, Washington, and dangled a 12-pound salmon enticingly over the water.

"Come on, whale!" I called, then switched to a nasal imitation of the beeps and squeals of whale talk.

I clung, as always, to my confidence that this dangerous animal somehow sensed and returned my friendly feeling. Yet with *Orcinus orca* there is no escaping—what shall I say?—apprehension. The

a Killer Whale

By EDWARD I. GRIFFIN

killer whale, also called orca from his Latin name, is like man in being one of the few mammals that kill for sport.

The tall dorsal fin cut the water like an ax blade as the whale glided across the fenced and net-enclosed pool. Up through the surface came the blunt head. The cool steel-gray eye blinked, the jaws gaped, the jagged array of conical teeth closed on the salmon.

Now for the new trick! I kept a firm grip on my end of the fish. The whale slid past, pulling me with him into the frigid water.

Deliberately, I hung onto the salmon until the killer had dragged me thirty feet or so. Then I released the fish, and the orca gulped it down.

The trick completed, I started to swim toward shore. But the animal had other ideas. He came up from below and, carrying me on his back like the boy on the dolphin in Greek myth, delivered me to the end of the dock. The greedy fellow wanted more salmon!

Learning to Trust a Killer

Killer whales, found in all the oceans of the world, are reputed to be the most bloodthirsty predators in salt water, yet this individual, through a strange set of circumstances, had become my playmate and won my trust. But it was always up to the whale, in the last analysis, to decide if I would emerge from the pool alive and unmarked.

"Either you're crazy, or you have courage running out your ears," a spectator said when I waded ashore.

I disclaim both lunacy and excessive cour-

Fame for Namu begins by a rocky headland of British Columbia. Caged behind nets close to shore, he receives visits from relatives at large, possibly his mother and younger brothers or sisters.

On a stormy June night in 1965, commercial fishermen William Lechkobit (top right) and Robert McGarvey (below) snared Namu in a salmon net. They promptly contacted marine scientists and exhibitors, hoping to sell their rare catch, one of the most intelligent of sea creatures.

Edward J. (Ted) Griffin, owner and director of the Seattle Public Aquarium, flew to the little cannery town of Namu that gave the whale his name (map, next page). For $8,000 he acquired what was then the world's only captive specimen of *Orcinus orca*; another killer, harpooned near Saturna Island a year earlier, had died after 87 days in captivity at Vancouver, British Columbia.

Now Griffin faced an almost impossible task: transporting his five-ton purchase to Seattle, Washington, 450 miles to the south.

age. I have simply wanted very much to get to know and understand this whale, and to have him accept me. For that, I have been willing to take certain chances.

I am owner and director of the Seattle Public Aquarium, and last summer I gambled $60,000—a sum I had to beg, borrow, and bargain for—to purchase, transport, and exhibit a bull killer whale called Namu.

Captain Ahab lost a leg, and later his life, trying to vanquish the white whale Moby Dick; getting my saw-toothed orca home safe to Seattle, I risked losing my shirt.

Just one item—400 pounds of salmon, my whale's daily ration—at 25 cents a pound multiplies out to $100 a day. That's $700 a week just to feed the animal, and my wife and children have to eat, too.

Namu got his name from the British Columbia cannery town near which he trapped himself by blundering into a salmon net (map, next page). For several months Namu was the only killer whale in captivity. Then last November we captured a 14-foot female. Though apparently too young to be a mate for Namu, the new calf romped happily with her more ponderous playmate, and the pair became great pals.

My biggest surprise has been Namu's friendly behavior—so far, at least. One reference work describes the killer whale as having "the appetite of a hog, the cruelty of a wolf, the courage of a bulldog, and the most terrible jaws afloat."

Orcas at sea feed exclusively on live or fresh-killed prey. They will eat fish, squid,

and birds, but for the main course they prefer red meat. From huge blue and gray whales as much as twenty times their size, killer packs strip the lips, tongues, and pectoral fins, then wait until their victims die from loss of blood before devouring the carcasses.

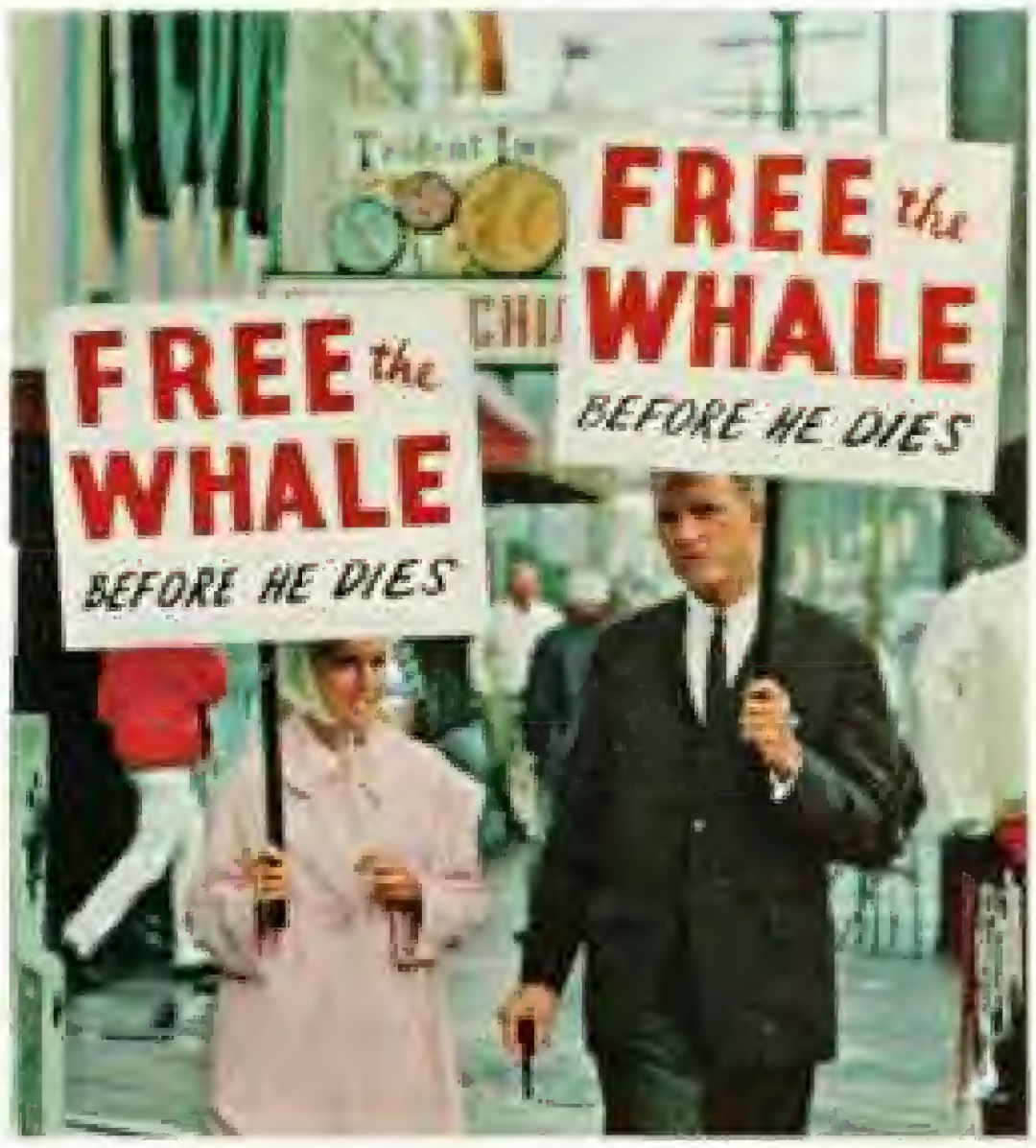
Or they swallow seals, dolphins, and penguins whole. One killer whale stomach, when opened, contained 13 dolphins and 14 seals. Another held 52 full-grown seals. Only the tusked adult walrus holds the orca at bay. Stories about human remains in killers' stomachs lack verification, but a photographer on Robert Falcon Scott's last Antarctic expedition in 1911 was threatened when killers, trying to get at dogs staked on an ice floe, bumped the ice from beneath, breaking it around man and dogs.

Like others of his species, Namu is a powerful, efficient killer. In this respect I find him fascinating. Yet some strange affinity has drawn me closer and closer to him over these past months. It is something I find impossible to explain.

"Aren't you risking death," friends ask, "every time you swim with that whale?"

In a way—yes. But from the very start I was convinced that neither Namu nor any orca associates man with his feeding pattern. I also knew that killer whales in the wild have few if any enemies and should feel no fear. Hence, I reasoned, orcas don't have to use their teeth defensively. So I counted on my whale's regarding me with curiosity, but not with hunger or with fear.

From our first meeting, in the swirling tidal waters of British Columbia, I began to prepare myself for swimming with Namu. I



Eager to spy Namu, thousands line the bridge at Deception Pass, Washington, backing up traffic for miles on each side. Tugboat *Ever Foss* pulls Namu's floating pen of steel mesh. A wait for suitable tides forced a day's layover here.

"**Namu's Navy,**" as reporters dubbed the bizarre convoy that towed the whale to Seattle, crossed some of the most treacherous waters on the Pacific coast: wind-whipped swells of Queen Charlotte Sound, whirlpools of Seymour Narrows, and open stretches of the Strait of Georgia.

Pod of killers overtakes the flotilla on the fourth day out. Dorsal fins poke menacingly from the sea. Trying to help the captive, they repeatedly charged the cage bar, warned by their own built-in sonar, stopped just short of it. After several hours, they vanished as suddenly as they had appeared. Only a cow and two calves, possibly Namu's family, stayed with the tow for 150 miles.

Not all Seattle welcomed Namu's arrival on July 28, 1963. Two placard-bearing pickets paraded the docks demanding his release.

Bow and arrow shoots a massive dose of vitamin-B complex into Namu to perk up a lagging appetite. Research technician Darrell Bills fires the syringe. Below, Mr. Griffin mans oars as an assistant removes the dart.

wanted to know this animal as intimately as a human could. Really close contact was possible only in the whale's medium—the sea.

In the water I would be relatively helpless. To be safe, I would have to be completely accepted by the animal. I must get him used to my presence, even to count on it.

After we finally got Namu to the aquarium at Pier 56 in Seattle, I spent long hours on the catwalk of his floating cage watching him, studying his behavior, noting his moods.

I began by rowing a small boat about the whale's pen. At first this made Namu nervous and he would sulk on the bottom. When the whale accepted the boat, I then approached him in a small rubber raft. Soon the animal allowed me to touch and pet him.

Within a few days, instead of my pursuing the orca, he was chasing me. Yet never did he make the slightest aggressive gesture with mouth, teeth, or mighty tail flukes. It was like

Prowling the jade-green waters of Puget Sound, Namu inspects photographer Schulke as he takes this rare underwater photograph at close quarters. Eyes far back on the head (under the white patch) enable the killer whale to see sideways as well as straight ahead.

being followed around by a big friendly dog.

On a memorable day—Friday, August 27, 1965—I ventured for the first time into the water with my whale. Clad in my wet suit, I slipped into one corner of the pen.

Was I frightened? Yes—plenty! But optimistic as well, and too busy to get panicky.

Whale Enjoys Scrub-brush Grooming

I put my masked head under water, so that I could see my quarry and cope with him somehow if he became an adversary. All O.K. I could see the burly black-and-white form holding position with a lazy rocking motion, fore and aft. His eye held mine. Gradually I felt secure.

With a short-handled brush I approached Namu under water. With a light touch, I scrubbed his head, nose, and chin. The whale made no move to withdraw or to attack me.

Later the same day I swam right around Namu. He stayed stock-still, seeming almost to disregard me.

I slid onto his back and tugged gently at his huge dorsal fin. He swam two or three times around the pen with his unfamiliar burden, then casually bucked me off, almost as if with a shrug and the thought, "That's enough of this nonsense for now."

From that point on it was like a honeymoon. We got along beautifully.

I found that my whale loved to have his hide scrubbed with a long-handled brush. Killers often rub against each other, perhaps to slough off dead skin and maintain their sleek smoothness. We began regular back- and stomach-scratching sessions that scraped and groomed Namu's skin.

Namu seemed ecstatic, and soon permitted me to row the boat right over his back. He could then scratch himself on its bottom. One day I happened to block Namu's blowhole

with the boat. He had to swim away to suck in a breath of air. Soon he learned to roll away upside down if this happened.

Within a few days he was actually chasing the boat while swimming upside down. He would go under the boat, clamp his disk-shaped pectoral fins on each side, and carry the cockleshell craft around the pool. Sometimes the only way to end this fantastic game was to throw a fish in front of him, then row like mad for the catwalk.

People on the pier clapped and cheered as Namu cavorted about, his curiosity guiding him to new experiences almost daily. I believe my constant presence reassured the whale during this trying period of adjustment.

To understand how I feel about Namu, you must realize that from earliest boyhood I have collected, cherished, and observed wild creatures, particularly fishes and other

(Continued on page 433)

Mate or mother—Namu's guardians could not tell which—circles the pen. Once when Namu squealed loudly, she charged the cage. Apparently satisfied as to his safety, she backed off.

Massive jaws agape, Namu dines on salmon. He rejects the roe of the female fish, a delicacy to humans, by squeezing it out the side of his mouth

Royal welcome to Seattle finds spectators jamming the waterfront as the *Robert E. Lee*, which shared the tow with the *Iver Foss*, pulls the pen between the reception barge and the author's aquarium on Pier 56. While press and pleasure boats provide escort, Namu rolls on his back and flashes his white underbelly. 427

TUXEDOED ACROBAT *catapults from the water with scarcely a ripple and lands with a mighty five-ton splash. Radiantly healthy, Nanu puts on this awesome show almost daily, often after devouring his $100 ration of salmon. Enclosed in Rich Cove, 12 miles west of Seattle, the whale began his first winter in captivity with plenty of room for exercise.*

OPPOSITE PAGE FOLDS OUT

inhabitants of the sea. Over the years it became my prime ambition—almost a ruling passion—to capture a killer whale alive.

In July, 1964, Dr. Murray A. Newman, Curator of the Vancouver Public Aquarium, sent a party to harpoon a killer whale for use in preparing an exhibition model. But the harpoon, while holding the 15-foot orca, inflicted no serious injury. This killer, called Moby Doll—although discovered later to be a male—unfortunately died after three months in captivity.

Once previously a killer had been taken alive: Marineland of the Pacific netted a sick orca in 1961 off southern California. It died two days later.

Months before Namu swam into my life, I had taken up the search for these magnificent mammals, hunting them with small boats, helicopters, and tranquilizer guns in the salmon-rich waters of Puget Sound.

But success eluded me until about midnight last June 23, when my phone rang.

"Mr. Griffin? This is Walter Piatocka. I'm a fisherman and I'm calling from Namu, British Columbia. Two men here have caught a pair of killer whales, and the animals are for sale. These fellows thought you might be interested."

I gulped. Live killers at last!

"How much?" I asked.

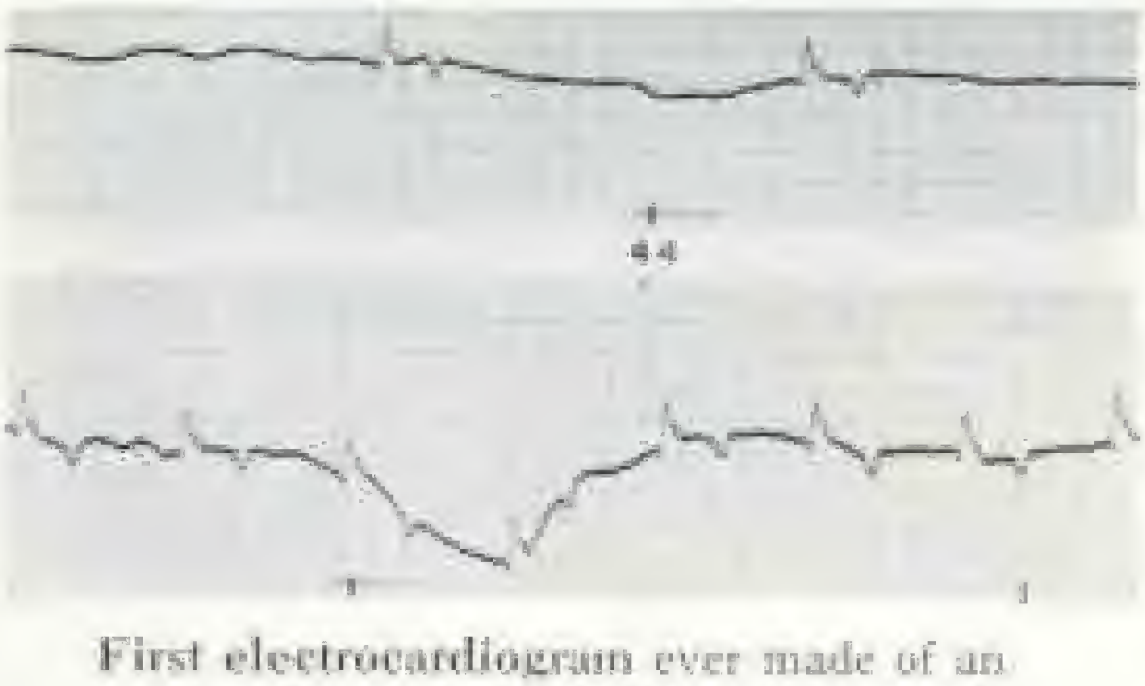
Mounting his sea steed for a thrilling 15-minute ride around Rich Cove, Ted Griffin kneels on Namu's back and holds tight to the high dorsal fin. "So sensitive is the fin," says Griffin, "that at first the touch of a finger alarmed Namu, and he would quickly shake me off. But later I could stay on as long as I desired. Sometimes he even goes to sleep with me on his back, and I have to swat him to make him go." The author wears a neoprene wet suit in the 47-degree water.

PAUL NICKLEN © NATIONAL GEOGRAPHIC SOCIETY

PHOTOGRAPHS (ABOVE) BY PAUL A. THOMAS; PHOTOGRAPHS BY REBECCA P. SPENCER

Bubbles rise from Namu's blowhole. Like dolphins, killers communicate with sonarlike high-frequency sounds, most of them originating in the larynx and many inaudible to human ears. Hydrophones have captured Namu's underwater signals from three miles away; whales probably detect them much farther.

Tuning in on Namu, an acoustic engineer from the Boeing Company records the whale's voice and imitates it. Research vessel *Maribo II* houses the instruments.



First electrocardiogram ever made of an uninjured, unrestrained killer whale reveals a surface heartbeat of 60 pulsations a minute (lower graph) but only 30 beats under water (upper). A medical team from Seattle's Virginia Mason Hospital Research Center, directed by Dr. Merrill P. Spencer, obtained Namu's cardiogram, using a suction cup to attach electric sensors directly over the whale's heart as he rolled on his back to take food. The instrument recorded Namu's heartbeat as squiggles on a roll of graph paper.

Technician (opposite) tests the suction power of the plungerlike cup before fastening it onto Namu's skin.

"Don't know exactly. The whales are up for grabs, but the fishermen think they're worth a lot of money."

"I'll be up there tomorrow," I replied.

Next day in a float plane of Lake Union Air Service, I flew to Namu, where I met red-bearded Robert McGarvey and husky William Lechkobit (page 421). They told me how they had come into possession of two orcas—"blackfish," they called them.

On the evening of June 22, 1965, Bob and Willie set their drift nets for spring salmon in Fitz Hugh Sound, in the mid-part of British Columbia's fiord-slashed coast. As they drifted with the tide, each in his own boat, they chatted by radiotelephone and prepared to turn in for the night.

Sunday Collection Saves the Day

Off Warrior Cove it began blowing up. Willie's net wrapped around a reef and he found himself drifting dangerously close to the breakers. Willie had no choice: To save his boat he cut the net loose. Then he headed for one of the cannery wharves at nearby Namu and tied up for the night.

Bob McGarvey's net drifted clear and he stayed out. In the morning he swung over to see how Willie's net was doing. He blinked when he saw what was inside: two killer whales—a big one and a baby.

"The big blackfish was kinda pushin' the little feller to get him out of there," Bob said. "But the baby wouldn't go, so the big one slipped out through a space between the net and the rocks, showing the young one the way to get free. The little one stayed put, so the big whale went back in behind the net.

"I called Willie by radiophone," Bob went on. "He came right out and saw those killers. His eyes bugged and he said, 'Give me a hand, and we'll get those things out of there.'

"'No you don't!' I said. 'We're going to sell those blackfish, Willie. They're worth more than any netful of salmon!'"

Word of the capture spread like prairie fire. "Whale Caught by a Fluke," headlined one newspaper. Other bidders were interested, and the best offer I could make was turned down. Heavyhearted, I flew back to Seattle.

Two days later the whale calf escaped. No one saw it go.

"With the little whale gone, we lost our best bargaining card," Bob McGarvey said later. "Everybody wanted that baby."

Fearful that the big whale also might escape, the fishermen phoned me. "The first fellow up here to Namu with $8,000 in cash

will get the whale," Bob said. Then he added, "The deadline is Sunday night—that's tomorrow. Otherwise, we let him go. We can't afford to keep feeding salmon to this brute, and besides, we've got fishing to do."

I was stunned. It was Saturday night, with the banks already closed, and they wouldn't reopen until Monday! I had only a few hundred dollars at the aquarium.

Friendly merchants saved the day. On Sunday I took a couple of shopping bags and ranged the Seattle waterfront. Everywhere I went cash drawers were emptied for me. I scraped together the required sum, mostly in small bills—ones, fives, tens, and twenties.

When I reached Namu, no other purchaser had arrived, and next morning, June 28, we closed the deal. My mood was ecstatic. I felt tremendous joy and relief. A live killer whale finally was mine!

Now all I had to do was to keep him alive for the 450-mile journey south. Seattle suddenly seemed very, very far away.

To guard and feed the whale, I posted Don Goldsberry, collector and keeper from Tacoma's Point Defiance Aquarium, who later entered my employ. My veteran seal trainer, Homer Snow, also was on hand to help.

British Columbia Packers, Ltd., generously offered the facilities of their cannery and a wharf at Namu as construction site for a floating pen in which to tow my prize home.

Brute Manpower Moves Three-ton Pen

From Seattle I flew up 4,000 pounds of precut structural steel. Our Tinkertoy pen took shape—a metal basket with angle-iron stiffeners, crisscrossed by quarter-inch rod welded on two-foot centers. The cage would be 60 by 40 feet, 16 feet deep, floated by 41 fuel drums, rimmed with a catwalk (page 427).

With forklifts and seine-boat booms we tried to lift the completed pen into the water. One side of it crumpled like spaghetti.

After repairs were made, I beckoned to the crowd of two or three hundred spectators.

"We aren't getting anywhere," I called out. "If any of you would like to volunteer, we'd surely appreciate your help."

The crowd moved in, mostly men, but a few women. They surrounded my Rube Goldberg contraption—it weighed three tons—and in minutes eased it into the water.

Robert Hardwick, Seattle disc jockey, brought up his yacht *Robert E. Lee* as escort vessel. For crew he had reporter Stan Patty and photographer Bruce McKim of the Seattle *Times*. The *Lee* towed the pen out to the reef, where Namu waited behind a triple wall of nets. Bob and Willie from the first day had thrown salmon to the whale, and he ate them with relish.

"He's even eating salmon that've gotten caught in the nets," Don Goldsberry told me. It was a relief that our captive was feeding.

Sonar Warning Stops Whale Charge

But trouble struck with an "attack" by a pod of 30 or 40 killer whales. The herd came, we can only suppose, in response to a cry for help from Namu. They would charge the nets, singly or in small groups, but they always pulled up just short of the flimsy barricade. Any of these huge animals could easily have burst right through the nets. Why did they always stop short?

I have come to the conclusion that we might have imprisoned Namu in a sack of tissue paper. It is evident that when an obstruction looms before this killer or his kin, something tells them, "You mustn't try it."

That "something" is the killer whale's marvelous sonar. Like dolphins, orcas use echo-location to zero in on prey and to avoid obstructions. Rapid-fire clicks, probably originating in the larynx, bounce off obstructions in the water and return to the whale. From the elapsed time and direction, the orca can compute the obstacle's position.

Always present, and often nose to nose with Namu on the other side of the nets, were an adult female and two calves (page 420).

"I'm sure those three are Namu's relatives," Don said. "One of the calves, I'll bet, is the little guy that escaped from the net."

The press, of course, made it a love story—captured father and solicitous mother and young. Perhaps so—science lacks enough data to say for sure. My view is that Namu is only 8 or 10 years old and not yet a father.

Contemptuous of the small perch darting about him, Namu heads topside for a more substantial meal of salmon, the only food he eats in captivity. To sustain their distinguished visitor, Washington State fisheries authorities waived a law prohibiting the use of salmon to feed animals. Namu gobbles 400 pounds a day. "He'd eat a ton if we let him," claims one of his keepers.

KODACHROME BY MERRILL F. SPENCER (UPPER); EKTACHROMES BY FLIP SCHULKE (OPPOSITE) AND PAUL V. THOMAS @ N.G.S.

PRANKSTER WHALE *takes his owner for a ride—then abruptly dumps him! "In roomy Rich Cove," says the author, "Namu quickly learned that by upsetting the skiff he could not only gain my companionship but also dine sooner when all the salmon spilled out." Diving below the boat (underwater view), Namu tips it with sure, swift motions, and the boatman ends in the brine (sequence at left). "Pray Namu remains captive all his life, or pity the unsuspecting sailors he meets," muses Mr. Griffin.*

More likely the others are his mother and two younger siblings.

At Warrior Cove, I entered the water close to Namu, but still with a net between us. The whale peered curiously at me, and here took place our first eyeball-to-eyeball talks.

All of us working above water with the animal had heard his strange noises—sometimes they resembled the wailings of a love-sick cat. Namu beeped and squealed both on and below the surface.

Now, swimming beside him there at the reef, I tried for the first time to match his sounds. This proved easier under water, for some reason, than in the air. By the time we had Namu in his pen, he was responding to me. Admittedly, these were strange conversations. I hadn't the faintest idea what I was saying to him with my own feeble vocalizing.

Whales "Home-in" on Namu From Afar

Finally the day came when the purse seiner we had hired, the *Chamiss Bay*, skippered by Capt. Vivian Wilson, arrived to tow Namu to Port Hardy, 100 miles away on Vancouver Island. There the *Chamiss Bay* left us to return to fishing. For the onward voyage, I chartered the *Iver Foss*, a harbor tug in the

"Just a little lower. That's the spot. Now scratch, please." As if giving directions, Namu rolls belly-up for a stomach rub from Ted Griffin.

Swimming on his back with pectoral fins in the air, Namu circles Rich Cove with Griffin astride his chest and holding his lower jaw. Minutes later the incongruous water sprites began a favorite game: cat-and-mouse. "I slip off and swim at full speed toward shore," Griffin explains, "but I never reach it. Namu races toward me, surfaces, and with me prone on his back, streaks to deep water again. I jump off, and we start all over. He never tires of the sport."

capable command of Capt. George Losey.

The morning our flotilla left Port Hardy, I had to make one of my frequent shuttle flights to Seattle. As my float plane took off, Namu was acting up—dashing around the pen, slapping his tail, swimming upside down, beeping and squealing. I guessed that he must be in contact with other killer whales.

We were several miles out, still climbing, when I caught sight of a pod of orcas broaching about five miles to the north (pages 422-3). They were swimming directly toward the tow.

So this was the cause of Namu's restlessness! The whales heading for Namu seemed to show the great range over which killers can communicate by underwater sounds.

Doubling back toward Port Hardy, we kept the moving pod in sight. When this group of whales neared the towing pen, they became much excited by Namu's presence. From our plane we could see them mill about madly. Namu, too, whipped the water in a frenzy.

I learned on my return that, although most of the pod soon moved on, a cow and two calves stayed behind.

"These were the same whales who kept us company at Warrior Cove," said Don. "I am positive, from scars and markings on them. Namu's family can't stay away from him."

For several days cow and calves stuck with the tow. The smaller calf slid over its mother's back, playful as an otter.

On July 15, near Kelsey Bay, Namu began thrashing, rolling, squealing, and lifting his head out of the water. We learned shortly what had stirred him up.

A powerful bull orca hove into sight and started cavorting with the cow and the calves. The interloper kept showing off. The *Robert E. Lee* finally drove off the troublemaker, and calm was restored. The cow and calves fell farther behind and soon were lost to sight. Probably they rejoined their herd.

Jazz Band Welcomes a Captive Killer

Our flotilla entered U.S. waters in Haro Strait on July 24, and on Wednesday, July 28, Namu's cage slowly edged into place beside Pier 56 on the Seattle waterfront (pages 426-7). A Dixieland band played, and in his floating pen Namu bobbed and splashed, showing off his handsome black tuxedo coat and white shirt front.

I leaned on the front of the cage and cried.

Men thrust microphones at me. "This is the most exciting moment of my life," I said.

Namu was an instant success. Record crowds pushed in to see the fearsome killer turned tame. The first Sunday nearly 5,000 spectators showed up! By the end of September, 120,000 visitors had come to see my whale.

Right away we placed a plastic liner in the pen, under and around the whale. This almost totally excluded the foul surface water of the harbor. Into the lined pen a hose poured clean water, pumped up from a depth of 60 feet.

During his first weeks in his new home, Namu ate hardly anything. To stimulate the whale's appetite, we gave him B-complex vitamin shots, using a bow and arrow firing a hypodermic dart to make the injection (page 424). Namu didn't even move.

Whether because of the shots, or for other

Lobtailing—thrashing the water with triangular flukes—Namu expresses displeasure. For an hour Griffin, in the skiff, has scrubbed the whale's hide with a long-handled brush. Now, like a child balking at bedtime, Namu refuses to accept the end of the grooming.

Surfacing to breathe, Namu sprays a rainbow. He can stay submerged for as long as 10 minutes, but normally comes up once a minute. Amazingly, he can blow to exhale and draw in fresh air in less than a second. A muscular flap locks the blowhole shut when he dives.

COURTESY OF JAMES H. PRUETT (ABOVE) AND MERRILL P. SPENCER © N.G.S.

reasons, the whale's hunger soon sharpened. By the first of September we were feeding him 200 to 400 pounds of salmon daily.

It was about this time that our ponderous pet displayed a craftiness I found amusing. One morning I noticed that he seemed greedier than usual. When I would throw him a salmon, he would sink down with the tidbit clamped in his bear-trap jaws and drop out of sight, which was unusual. Very quickly he was back, begging for another. I kept feeding him fish, and he kept wheeling back for more.

"I think that big devil's up to something," said Don.

Our suspicions aroused, I pulled on my wet suit and jumped into the water. It took only moments to discover a pile of fish, stacked like cordwood in a corner of the pen. Namu was hoarding rations, apparently for a quiet salmon break between regular feedings!

Many people have written begging me to set Namu free. Such an action, I believe, would be a disservice both to science and to the curious public.

Dr. Dixy Lee Ray, Director of the Pacific Science Center in Seattle, echoed my feeling when she spoke in an interview in defense of holding Namu for exhibit and research.

"Like timid animals in nature, we humans fear what we do not understand," she said. "By understanding Namu, learning more about him, there will be less wanton killing of his kind. He has much to teach us."

Namu Becomes a Science Project

To qualified people, I have, of course, made Namu available for study. Dr. Merrill P. Spencer, Director of the Virginia Mason Hospital Research Center in Seattle, had worked closely with me to develop techniques for capture and handling of killer whales. Namu gave Dr. Spencer a long-awaited opportunity to study the physiology of *Orcinus orca*.

"First thing I want to do," Merrill told me, "is to take an electrocardiogram of Namu."

Merrill and his assistant, Darrell Bills, brought to the pier an electrode set in a rubber suction cup. The pickup cup was mounted on the end of a long pole, with the wire leading to an electrocardiograph on the catwalk (pages 434–5).

During September and October two excellent heart readings were obtained, spanning several respiratory cycles, which last, usually, from 30 seconds to a minute and a half. The records showed that Namu's heartbeat speeds up sharply to 60 beats a minute for the few seconds when he comes up to blow. Between breaths, while the whale is diving, the heart slows to 30 beats a minute.*

Killers are strangely and wonderfully built. As warm-blooded mammals, their structure to some extent parallels that of land creatures. Orcas have vestigial hip bones. Flesh and muscle compose their tail flukes and dorsal fins, but five "hand" bones strengthen each round pectoral fin.

Mother orcas, like dolphins, have a remarkable way of nursing their young. When the

*For further background, see "Hunting the Heartbeat of a Whale," by Paul Dudley White, M.D., with Samuel W. Matthews, NATIONAL GEOGRAPHIC, July, 1956.

infant orca, about seven feet long at birth, wants to feed, it nuzzles its parent's abdomen near the tail, and with powerful muscles the mother whale, through an aperture, shoots a jet of milk directly into the youngster's mouth. Each squirt takes only a second or two.

Killer whales, of course, are close kin to dolphins. Both animals belong to the suborder Odontoceti, toothed whales. Orcas and dolphins share many characteristics of structure, behavior, and intelligence.

Killers, like dolphins, have unusually large brains in proportion to their bodies. Young Moby Doll, the ill-fated Vancouver aquarium captive, tipped the scale at slightly over a ton; his brain weighed 14 pounds. A 7-ton elephant has a brain of only about 12 pounds.

"The precise relationship between brain weight and intelligence is a rather slippery area of science," Merrill Spencer told me. "As yet we have no sure conclusions."

But that orcas, like dolphins, are astonishingly smart is beyond question.

Broad Vocabulary Marks "Whale Talk"

Dr. Thomas C. Poulter of the Stanford Research Institute came to make underwater recordings of Namu's remarkable vocabulary. Dr. Poulter has been interested in killers since his Antarctic days, when he was second in command and senior scientist of the Byrd expedition of 1933–35.* He told me that most of Namu's sounds originate in his larynx. When surfaced, he emits sounds through his blowhole. When submerged, however, the sounds travel through body tissue, which is a good conductor, directly into the water.

"We can now tell the sex of killer whales just from underwater tapes," Dr. Poulter said.

I sat spellbound for 45 minutes listening to the recordings. Rarely could I spot exact duplication of any sound or group of sounds, familiar as I was with Namu's chatter.

Whales can transmit sounds over a wide range, from 50 cycles per second to at least 40,000, and perhaps even 100,000. Humans can hear only within a range from 30 to 20,000 cycles per second. So we may be hearing only a fraction of the sounds Namu emits.

"The question is," says Merrill Spencer, "does a whale use the information from the sounds he generates in the higher frequency ranges? We just don't know—yet."

The sensitivity of the orca's sonar is extraordinary. Merrill stood beside me on the

With incredible familiarity, Griffin pries open Namu's mouth to reveal some 50 formidable teeth. As large as a man's thumb, they interlock like the jaws of a steel trap. "During his first months in captivity, I constantly worked and played with Namu, ever alert for some aggressive sign on his part," says the author. "I never saw one. He was always affable. Would all killers behave as well in captivity? I don't know. That's one reason I hope we get more—to find out."

*"The Society's Special Medal Is Awarded to Dr. Thomas C. Poulter," NATIONAL GEOGRAPHIC, July, 1937.

pen one afternoon when I tried to get Namu to accept albacore tuna. Naturally, he favored the more expensive fish—salmon!

We managed to get the whale to swallow two or three albacores only by luring him with salmon and then dropping the cheaper fish into his open mouth.

I continued the experiment with him at night, when he could not see the fish. I held an albacore in the water in front of him, perhaps 25 feet away. I pulled the tuna out of the water and then dunked it again with a splash. Namu showed no interest.

But as soon as I dipped a salmon in the water, Namu swung his head back and forth, apparently scanning the new target. Then he slowly swam over and helped himself to the choicer offering.

He was making a lot of audible sounds and probably more that we couldn't hear. The two fish were about the same size and shape. To me it was a striking display of the killer

whale's ability to discriminate and select solely by use of sonar.

Came the end of September and autumn's onset, and every day fewer people visited Pier 56. Namu's cage was beginning to fall apart, and I wanted to get the whale away from the harborside debris that would slop into his pen in winter gales.

At Rich Cove in Puget Sound, 12 miles away, I found a splendid wintering-over spot for my whale. By building wing fences and by stringing nets and boom logs across the mouth of the cove, we made an ideal enclosure.

At last Namu had room enough—a roughly circular pool 500 feet across—to disport himself freely. Often after feeding, he vaulted clear out of the water in great leaps that ended with explosive splashes (pages 428-30).

I wanted to capture more killers, and Namu's Rich Cove pool could hold another whale or two. Pods of orcas often range up and down this part of Puget Sound.

In November, as I mentioned earlier, Merrill Spencer and I caught a young killer whale in a net. It was a 14-foot female, which we named Shamu. She shared Namu's enclosure until late December, when she was moved to an aquarium in San Diego, California.

Namu Declines Swimmer's Leg

Before Thanksgiving, Namu had a chance to sample a human drumstick—but passed it up. I was feeding him under water. Namu slid up alongside on my left. I laid one hand on Namu's nose, and with the other I held out a salmon, tantalizingly, in front of his partly open mouth. I shouldn't have done it.

He gave a quick nod with his head, and I lost my hold on the whale's snout. This threw me off balance. Trying to straighten up, I slapped Namu in the face with the fish held in my other hand.

At this instant, Namu was pushing at my hip. Instantly he opened his mouth, feeling for the salmon, and sucked in my leg instead. It was all over before I had time to feel scared. Namu, by simply turning away his head, at once rejected my leg from his maw. I never even felt his teeth.

Although I now take liberties with Namu inconceivable a few months ago, in a way there is a keener edge of suspense each time I enter the water with him. I know more now, much more, about the killer's capabilities—his speed, his strength, and what he can do with those teeth.

The whale knows more about me, too: for instance, that I am slow in the water and speak his language atrociously. Today my friend, tomorrow he could pick up habits of disdain, carelessness, or even aggressiveness that would imperil our relationship.

Though I try not to let the whale know it, I have discovered that he has a mean side. Beware, I have taught myself, when he swings his head sharply or jerks it upward. Especially take care when he bobs his head up and down swiftly. This marks his most severe displeasure and peevishness. "Leave me alone now," it says, and I take the hint.

A Friend—but a Dangerous One

I am no longer the only individual who has entered the water with my whale. A few others have ventured to swim with him: Don Goldsberry, my brother Jim (not enthusiastically!), Flip Schulke to get photographs for this article, divers filming a motion picture written around Namu, and one scientist. Also a high-ranking naval officer. Yes—the U. S. Navy, too, is interested in killer whales.

I am convinced that Namu, Shamu, and their kind can be trained to match the agility and adroitness of dolphins in tricks involving controlled leaps and swimming maneuvers.

But anyone working with a killer whale still must realize that this is a dangerous and unpredictable creature. Its intelligence can be both a reassurance and a threat.

I have recently been in touch with the noted biologist Dr. A. Remington Kellogg, a member of the National Geographic Society's Committee for Research and Exploration. Formerly Assistant Secretary of the Smithsonian Institution and U. S. Commissioner to the International Whaling Commission, he is one of the world's leading authorities on whales.* Reviewing the photographs accompanying this article, he was amazed to see the prince of marine predators in effect playing pat-a-cake with humans.

"I'm afraid we must toss away some of our earlier preconceptions about these animals," said Dr. Kellogg. "This behavior of Namu is entirely contrary to what anyone could have expected. I would be cautious, though, about generalizing from the actions of this one killer whale. I wouldn't use my trust in this animal as a passport to familiarity with another."

Amen.

*See Dr. Kellogg's article, "Whales, Giants of the Sea," in NATIONAL GEOGRAPHIC, January, 1940.

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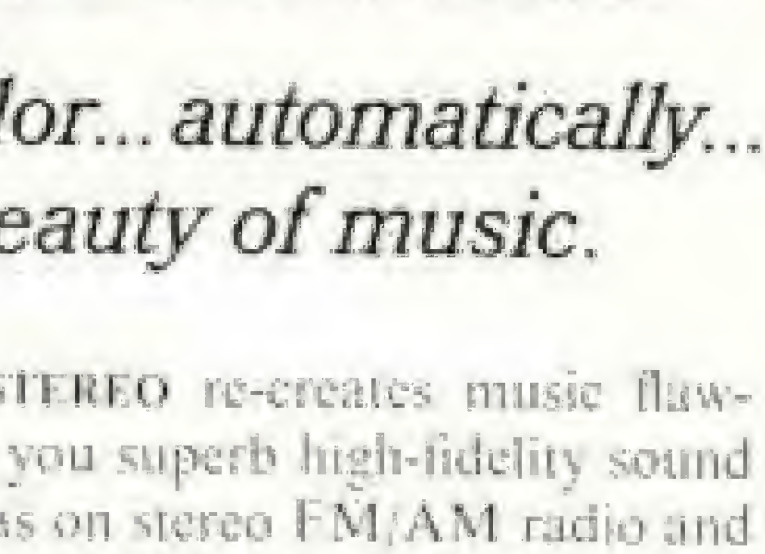

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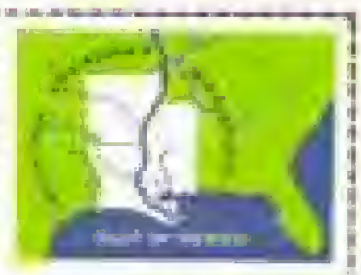

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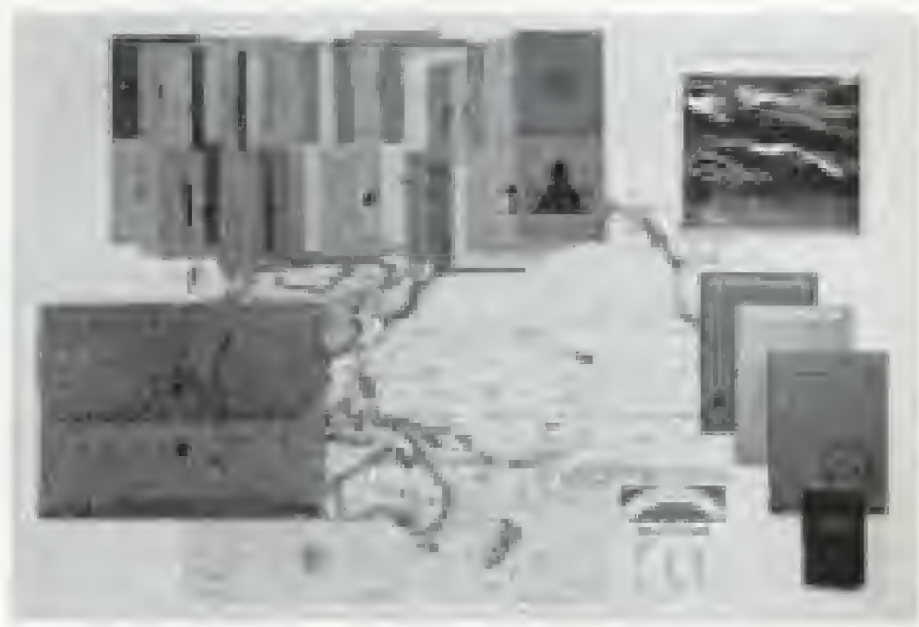

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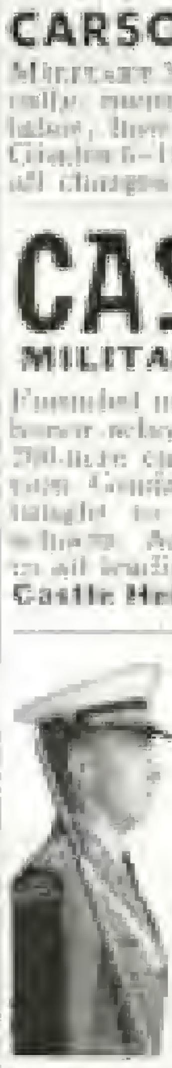

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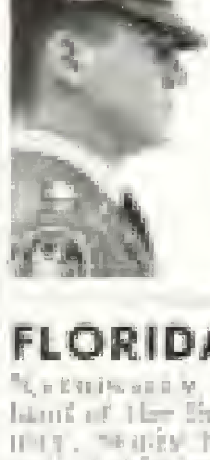

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