

# NATIONAL GEOGRAPHIC



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# NATIONAL GEOGRAPHIC

# Society

16th & M Streets N.W.

Washington 6, D. C.



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COVER: Banners of the world fly at the door of the United Nations (page 298).



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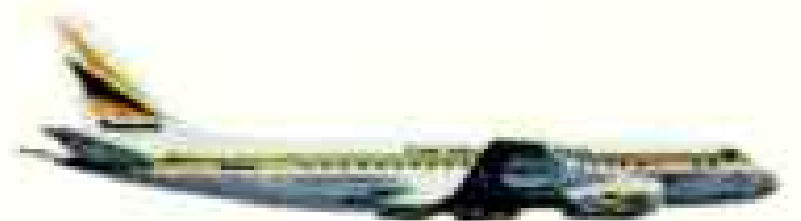
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AND CAMERAMAN  
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A MILESTONE IN SPACE**

Man's restless probing of the universe makes history—and sometimes you can see history coming. That was why, early last year, your Society's Committee for Research and Exploration donated the services of two top-flight staff photographers—Luis Marden and Dean Conger—to the National Aeronautics and Space Administration. Their assignment would be one of the most exciting ever handed out: to document NASA's efforts to send a man into space. The photographs, distributed to any publication that asked for them, would preserve for all time the excitement and wonder of one of mankind's supreme adventures.

Wherever you live in the world, you have seen the result: dramatic pictures in newspapers, in France's *Paris Match*, in Italy's *Epoca*, and on the cover of *Life*. Illustrating the articles on pages 416-444 of this issue of the *GEOGRAPHIC* are more: Dean Conger's historic portrayals of Alan B. Shepard, Jr.'s, rocket ride down the Atlantic Missile Range.

Friendship—and mutual respect—mark the faces of Conger (right) and Shepard as the two men congratulate each other on jobs well done. They talk together as their plane, plodding along



at a pace some 4,200 miles an hour slower than Shepard's capsule, transports them from the pickup carrier, U.S.S. *Lake Champlain*, to Grand Bahama Island.

Backed by research grants, NATIONAL GEOGRAPHIC's skilled cameramen continue to serve NASA. Society members can take pride in the thought that some day a GEOGRAPHIC photographer may record another, longer flight—and shake the hand of the first American ever to orbit the earth.

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Walt Whitman

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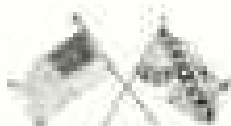
The military classic of the Shenandoah Campaign

is studied by generals and historians the world over. You'll find its study, and that of many Civil War battlefields so well preserved by our National Park Service, worthwhile, too, *as lessons in fortitude and determination that kept ordinary men marching and fighting and winning against odds.* You'll understand why America reveres Jackson, that prayerful professor who sucked lemons to ease his stomach, and who kept his plans to himself until he had made them good. His heroic deeds are reassurance to a free world that, in times of crisis, America always produces such great leaders... men of the hour who can rally this nation's manhood in defense of its ideals.

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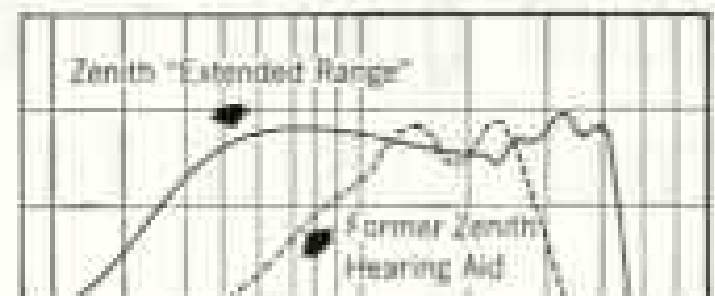
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Battle of The Alamo, San Antonio, Texas, 1836, Painting by F. C. Yohn.



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in the minds of men,  
it is in the minds of men  
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must be constructed.”

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VOL. 120, No. 3      SEPTEMBER, 1961

*Delegates from 99 nations convene in New York City this month for the 16th session of the U.N. General Assembly—to shape the headlines of today and write the history of tomorrow*

BY ADLAI E. STEVENSON

United States Ambassador to the United Nations

# The United Nations: Capital of the Family of Man

**F**OR ME, March of this year brought a happy reunion with the United Nations. I had been present in San Francisco in 1945 when delegates of fifty countries signed the charter that established the U.N.\* I had also served on the United States delegations during the early years of the international organization: at the Preparatory Commission in London, and later in New York.

\*Poland, then setting up a new government, was not represented at the San Francisco Conference. Space was left on the charter for the Polish delegate's signature, affixed nearly four months later, thus bringing charter membership to 51. — Editor.

When I returned to the United Nations, however, I found that in my absence time had wrought a startling transformation. Most obvious, of course, was the fact that the institution has doubled in size through the admission of almost fifty more nations, most of them in Africa and Asia. I found, too, that the U.N. has acquired crucial new powers that have magnified its scope and influence far beyond the original blueprint. All this has happened so gradually, so imperceptibly, that it is little understood or appreciated.

I well remember the hopes, the fears, the dreams that motivated the signers of the char-

*Photographs by B. ANTHONY STEWART and JOHN E. FLETCHER*

NATIONAL GEOGRAPHIC STAFF



ter in San Francisco 16 years ago. Final victory in World War II loomed on the horizon, and we, the victors, were determined to free the world from future holocausts. The springtime that brightened the city's steep streets seemed to symbolize the springtime of a new era in international relations.

But the first glow soon faded, and the world settled into the long winter of the cold war. The intervening years have seen the United Nations subjected to repeated stresses, almost irresistible strains. But the organization has never buckled, and it *has* kept the peace. Even today, troops flying the banner of the United Nations serve as the buffers of peace in no man's lands of international security like the Gaza Strip and the Congo.

The work of the U.N. has progressed apace in other spheres. The International Court of Justice sitting at The Hague has brought the rule of law to disputes involving nations. The United Nations Educational, Scientific and Cultural Organization fights illiteracy throughout the world. The Food and Agriculture Organization quietly revolutionizes farming in chronically underfed areas.

Waging a grim battle against man's common enemy, disease, the U.N.'s World Health Organization demonstrates the limitless possibilities inherent in genuine international cooperation. In only ten years WHO has managed to cut by one-half the number of deaths in the world attributable to malaria.

#### Young Members Bring New Spirit

To the casual visitor, United Nations headquarters, that great glass and marble edifice dominating New York City's eastern skyline, might suggest a melancholy Biblical parallel. The building reaches toward the clouds, people of alien appearance crowd its chambers, and its halls resound to diverse tongues.

But this is no present-day Tower of Babel, that monument to vanity which, according to the ancients, first divided mankind against itself. Rather, it is a monument to hope—to the hope that humanity will at last find the peace and brotherhood that have so long eluded us. It is the capital of the Family of Man.

Like any other capital, U.N. headquarters mirrors the shifting tides of politics. As United States Ambassador to the United Nations, I soon learned that the old balance of power altered sharply with the admission of the newborn African and Asian nations.

There was a time when the West could automatically muster a large majority in the General Assembly on virtually any question.



BY ESTALHANE (ABOVE) AND ROOCHROME © N.G.P.

United States Ambassador to the U.N., Adlai E. Stevenson has supported the organization since he served as adviser at the founders' meeting in 1945. Lawyer and newspaperman, he won the Illinois governorship in 1949 by overwhelming vote. In 1952 and 1956 he ran as Democratic candidate for President. Mr. Stevenson stands outside the new U. S. Mission building on U.N. Plaza.

Flags of 99 member nations, flown alphabetically, snap in the wind before the Secretariat. This view shows the banners of Canada (left) through the Republic of the Congo. For close-ups of all U.N. flags, see pages 332-45.

But the refusal of the new nations to take sides in the cold war has changed this.

We at the United States Mission welcome the independent spirit of the new nations. When our cause is just, when we present our case effectively and persuasively, I feel confident that we will be able to carry the day. Personally, I have always believed that the United Nations should be a truly universal body; the mass influx of young states promises to accomplish this end.

In our relations with these new members, time is on our side—at least, if we use it well. Whatever their original suspicions or skepticism, I think they will find us sincerely interested in their welfare.

### **Soviet Chair Never Empty Since Korea**

The Security Council, originally the most powerful organ of the United Nations, is a place where emotions flare with clocklike regularity. Mutual denunciation is often the currency of diplomacy in the Security Council, and the unrestrained use of the veto by the Soviet Union is a constant irritant to members. In the case of Korea, only a stroke of fortune—the absence of the Soviet representative—enabled the Council to vote to defend that unhappy country. Since then, the Soviet chair has never been empty while the Council was in session.

Because the veto has so often frustrated the Security Council, the General Assembly has moved further and further into the arena of action. Resolutions condemning the Russian intervention in Hungary and the British-French invasion of Suez passed the General Assembly after the Security Council had shown itself incapable of acting.

This capacity of the General Assembly to act—and act fast—bodes well for the world. The United Nations has demonstrated for the first time in history that an international organization can successfully mobilize funds and people for economic development, as well as bring order and security to areas ravaged by civil war and anarchy.

The direction of these global tasks has heavily taxed the Secretariat and the Secretary-General of the U.N. But it has also

given these administrators more power and discretion than they possessed in the early days of the organization.

This increased authority derives from the fact that very often the Secretariat receives only general orders from the Assembly, with instructions to “work out the details.” This latitude offers the administrators opportunities to conceive and execute plans of their own. We in the United States Mission regard every attempt to cripple this executive power—and I think specifically of the Soviet plan to replace the Secretary-General with a three-headed body drawn from the Western, Communist, and neutralist camps—as an attack upon the independence, the integrity, and the effectiveness of the United Nations.

A historian friend has found an interesting analogy for the Soviet proposal: At the time of the Reformation, he suggests, it would have made as much sense to set up an international organization administered by a triumvirate consisting of the Pope, the Sultan, and Martin Luther.

### **“Challenging . . . Exhilarating Work”**

We Americans have been hosts to the United Nations from its inception. As a result, ours is the privilege of watching from the wings as the great dramas of our age unfold on the bank of the East River. To many a citizen—confronted by daily reports of crisis abroad and concomitant wrangling in the councils of the United Nations—this may not appear to be an unmixed blessing. Playing host to those who assail us by fair means and foul must often seem a discouraging, even distasteful, responsibility.

However, we should not be discouraged. I believe that what is happening day by day at the United Nations represents the most challenging, the most original, even the most exhilarating work being done by man today.

Let us place the events of our time in perspective. In the second half of this 20th century, we are living through an experience which, throughout recorded history, has always proved desperately difficult. By force of arms and by calculated political coups, the Soviet Union has extended its domination

### **Bang of a Gavel Opening the 15th General Assembly Echoes Around the World**

As spokesmen for nations old and new, big and small, rich and poor, delegates gather here to voice the sentiments of nearly 2½ billion people. Ireland's Frederick H. Boland, Assembly President, shares the dais with Secretary-General Dag Hammarskjöld of Sweden (left) and Andrew W. Cordier (right), executive assistant to Mr. Hammarskjöld. Olive branches, symbol of peace, frame the globe in the U.N. emblem.







HE KATAGORIDES © NATIONAL GEOGRAPHIC SOCIETY

### Diplomats Debate Over Tea in the Delegates' Lounge, "Heart of the House"

Ideas that might mold history generate in this informal, glass-walled room overlooking Manhattan's busy East River. Here U.N. representative Jaja Wachuku of Nigeria (left) and India's Executive Director of the World Bank, Braj Kumar Nehru, listen intently as V. K. Krishna Menon, chief delegate from India, discusses U.N. technical assistance. A table away Finland and Australia may be exchanging views on trade.

across all of Eastern Europe. The Baltic States, Poland, East Germany, Czechoslovakia, Hungary, Romania, Bulgaria—all have felt the turn of the Russian screw. In Asia, the new frontiers of imperialism encompass North Korea and North Viet Nam. Soviet and Chinese aggression has brought war to Laos and threatens South Viet Nam.

While this chill shadow broods on the horizon, former colonies of the Western nations in Asia and Africa are emerging into the bright sunlight of freedom. Dozens of independent states have been born. Some achieved liberty through struggle, others—like India and Ghana—through mutual good will.

The record of the past tells us that such vast disturbances in the earth's political crust have always bred disorder, catastrophe, and war. Thus, the turbulence that racks the world is neither surprising nor new. What is surprising and new, however, is the attempt of the United Nations to alter this sad pattern of history.

The collective voice of the United Nations has proclaimed the inalienable right of small states to be free. As a result, millions of God's children have attained liberty within the past decade. Within the spirit of its charter, the U.N. stands ready to guarantee that liberty.

This identity of the U.N. with man's

deepest yearnings for peace and plenty is something we Americans must bear in mind through the troubled days ahead. The great expansion of membership and the unwillingness of most of the newly admitted nations to take sides in the cold war will complicate our tasks. We will certainly encounter rebuffs and disappointments.

#### Weaker Nations Need U.N. Most

As something of an expert in rebuffs and disappointments, I may be permitted to emphasize that our actions in the United Nations must not be based upon passing gains or setbacks, but rather upon the basic concepts of our faith in democracy. We should remember that the United Nations offers not a formula for "stability" but a framework for change. All the world's tensions are not bad; drives for self-expression and self-government form the dynamics of democracy.

I would say to our own people: Support the United Nations with your sympathetic

attention and your prayers. To the smaller powers, especially the emergent states of Africa, I would repeat that the United Nations is of first importance above all to weaker states, since, without it, they have no ultimate protection against the force of more powerful and predatory governments.

More frontiers of what we call progress have probably been crossed under the pressure of necessity than by the power of reason. Now necessity prods once again. A dark mushroom-shaped cloud hovers above the world, and the very survival of the human race demands that we tame it.

We will, I am confident, respond wisely to the threat. But our deliverance from the terrible shadow of the unleashed atom depends upon international agreement, and we must bargain for it through the United Nations. Once we attain it — and I am sure that eventually we will — we should remember that, after all, people are best cemented together not by mutual fear but by mutual hope.

One ear tuned to his aides, the other to an interpreter's translation, Ambassador Stevenson epitomizes the hectic pace of a Political Committee debate on Cuba. Delegates' desks are aligned alphabetically. Thus Mr. Stevenson is flanked by Frederic Guirma (left) of Upper Volta, one of the world's youngest democracies, and Sir Patrick Dean (right), representing the United Kingdom, one of the oldest.







# Date Line: United Nations New York

By CAROLYN BENNETT PATTERSON  
National Geographic Staff

*Photographs by*  
*B. ANTHONY STEWART and*  
*JOHN E. FLETCHER*  
National Geographic Staff

**T**HE BALLOT BOX in the gymnasium of New York City's Hunter College was as new and untried as the United Nations in the spring of 1946.

Security Council delegates, assembled in their makeshift home in the Bronx, saw the box merely as part of the furniture of a democratic assembly.

But to everyone's surprise, the box spoke first. A vote was called; the box was opened for preballoting inspection. Inside lay a piece of paper bearing these words:

"May I, who have had the privilege of fabricating this ballot box, cast the first vote? May God be with every member of the United Nations Organization and through your noble efforts bring lasting peace to us all—

"All over the world.

Paul Antonio, Mechanic"

Fifteen years and many ballots later I

Little world unto itself, the U.N. complex overlooking the East River includes the 39-story Secretariat, rectangular Conference Building, and domed General Assembly. Stone latticework distinguishes the new home of the U. S. Mission (right).



PHOTOGRAPHS BY NATIONAL GEOGRAPHIC

stood near the East River in the sun of another spring. At my back rose the towers of Manhattan, a jagged wall against the sky.

Before me lay a no man's land that everyman claims; a meeting ground for the peoples of the world; a voluntary organization of 99 nations working under charter for the peace and betterment of mankind.

#### Morning Rush Brings Varied Throng

Here at once was a thought-provoking symbol and an international city, a dazzling palace of glass and stone and the home of hope for the humblest in the family of man: headquarters of the United Nations.

The green-tinted wall of the 505-foot Sec-

retariat Building soared before my eyes, its windows reflecting the passing clouds (page 304). At its feet stood the white stone General Assembly Building, its roof domed and gently curved. A rectangular, four-story Conference Building linked the two.

Just above my head the bright-hued flags of member nations snapped in the wind. And standing behind the national banners, flying above all, was the azure and white standard of the U.N. itself.

It was exciting to stand and look. Taxis and small foreign cars loaded with international civil servants reporting for work swirled around the Secretariat fountain. Limousines swept into the delegates' drive



PHOTOGRAPHERS: E. ANTHONY STEWART AND JOHN S. FLETCHER © N.A.A.

### Visitors Stare at a Staircase That Only the Great May Climb

Only heads of state and their parties may ascend the General Assembly's ceremonial staircase (right). President Dwight D. Eisenhower climbed it when he spoke before the U.N. on atomic energy in 1953, as did Queen Elizabeth II on her visit in 1957, and Russia's Nikita Khrushchev during his American tour in 1959. A major tourist attraction in New York, the U.N. draws nearly a million sightseers a year. In May, 1961, 133,868 trailed behind their guides—a record to that date.

**Supple Zeus**, king of the gods, adorns the lobby of the General Assembly. A gift from Greece, the figure copies a classical work created in 460 B.C.



with representatives in turbans, saris, and the ubiquitous Western business suit. Buses by the dozen discharged school children by the hundreds at the visitors' entrance.

#### Assembly Echoes Boxmaker's Hopes

Officially, this entrance is on the border between Manhattan and an international enclave, and U.N. guards control the gates. New York policemen patrol United Nations Plaza, where First Avenue dives under 42d Street, and keep watch over a small park near by, where demonstrators come, as they did during the Hungarian, Congo, and Cuban crises, to wave placards and to shout slogans (aerial photograph, page 328).

The first look at anything has special enchantment. I hated to lose the feeling of discovery, but I also had a curiosity to satisfy. What had happened, I wondered, to that vote for peace cast by the boxmaker? Had it and millions like it really counted? I had to go inside the House of the United Nations to find out.

To begin the search, I put my questions to the President of the 15th General Assembly, Frederick H. Boland of Ireland. Elected by majority vote of the Assembly the previous September, he was then nearing the close of his one-session term.

"It's interesting that you should recall the boxmaker at this time," the genial, ruddy-

faced Irishman mused. "Today many new nations have come to take seats in the General Assembly, and they speak as he did—with the voice of peoples, not powers.

"Remember that in 1945 most of earth's citizens were governed by great nations. But since then the world community has evolved from a semifeudal society into a democracy of mankind. Differences among the member states loom large, of course," he said, "but the U.N.'s chief interest remains the common aspirations, needs, and rights of all the world's peoples."

Mr. Boland smiled. "I'm reminded of the little girl who visited headquarters and, hearing about the United Nations Children's Fund, asked with some concern: 'If UNICEF looks after the mothers and children, who takes care of the fathers?'

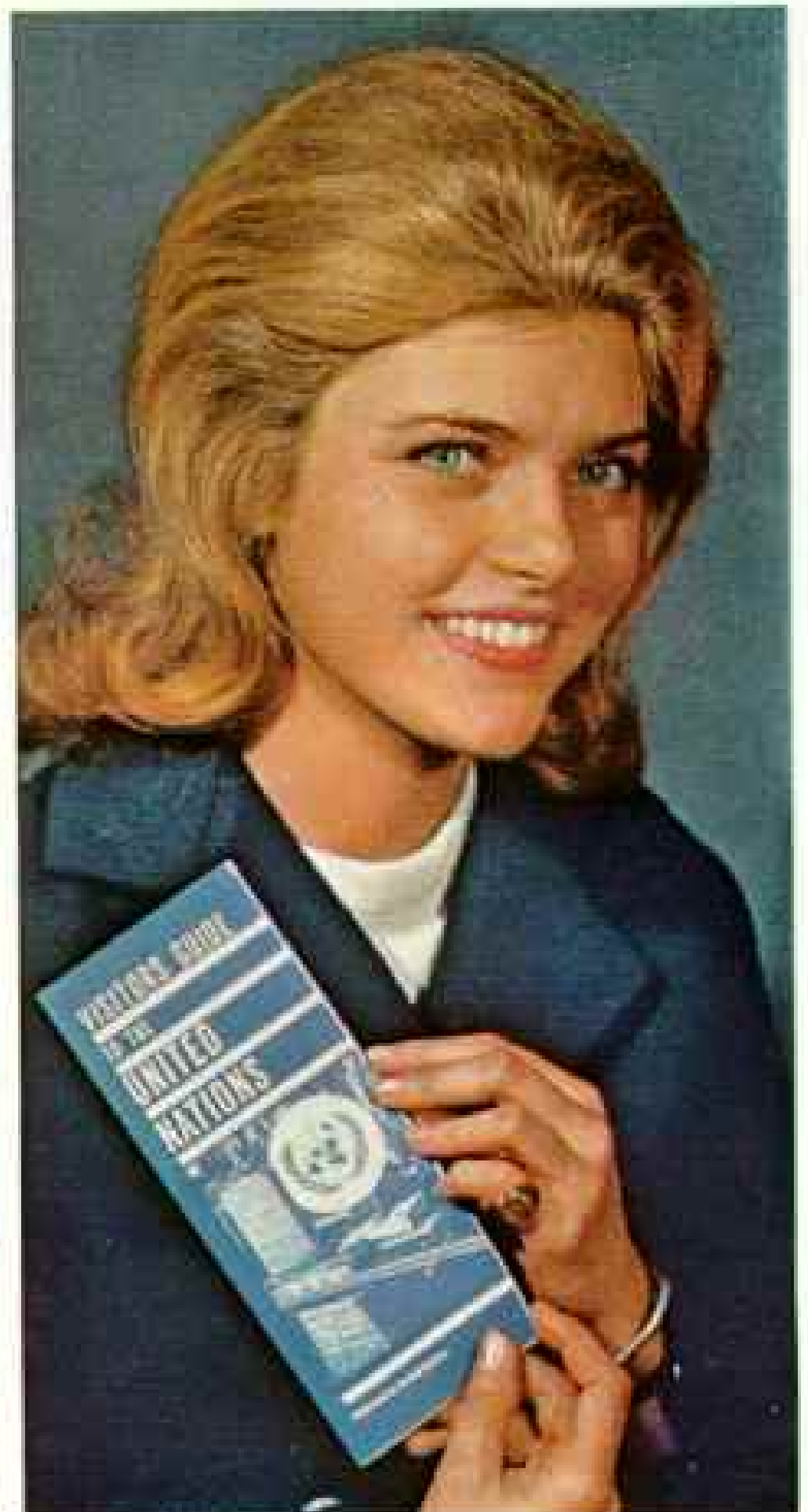
"Find out," he suggested. "Tour the headquarters, visit the councils, the committees, the General Assembly. Talk with Secretariat people who make the U.N. machinery work. I think you'll discover that while every vote

for peace counts, peace itself has many faces."

Following Ambassador Boland's suggestion, I began my study of the U.N. in the simplest possible way. I paid a dollar and joined a group of sightseers on a guided tour. We were a mixed lot: a Cleveland, Ohio, businessman, his wife, and three young sons; schoolteachers from Richmond, Virginia; dark-suited boys from a Connecticut prep school; a newly wed couple from California; and two Russians, visiting the United States to observe facilities for youth.

Miss Valentina Iwanowa, our U.N. guide, gave us a smile that made each of us her slave, and said in lilting broken English, "Now, I explain you. Follow me."

The 28-year-old Valentina was a kind of U.N. within herself. A Brazilian citizen, she was born in Yugoslavia of Russian parents and educated in Germany. She came to the United States to visit friends and took work at the U.N., where her knowledge of languages and interest in world affairs could be put to use.



Multilingual guides represent many lands. India claims turbaned Amarnohan Singh Dhingra (left); Denmark, Barbara Siebsager; Hong Kong, Sybil Wong; and Argentina, Susana Salas.



We stopped first at a model of the United Nations, its plaza, and park. Here Valentina told us that the stretch along the East River between 42d and 48th Streets had been one of slums, slaughterhouses, and breweries. John D. Rockefeller, Jr., donated \$8,500,000 in 1946 to buy the property for the U.N. New York City gave some of the land and deeded street and waterfront rights. Ten famous architects, headed by an American, Wallace K. Harrison, designed the U.N.'s home.

To finance the buildings, the U. S. Government loaned 65 million dollars, interest free. Some 19 million has now been repaid out of the member nations' annual assessments.

These assessments, based on each country's per capita income, yield nearly 61 million dollars annually. Of this amount, the United States contributes almost 20 million. The three Soviet member states—the U.S.S.R., the Ukraine, and White Russia—pay a combined total of more than 9½ million. Some smaller countries, such as Albania and Cambodia, give only \$24,000 each.

Like the cost of running any government today, the operation of an international body is an expensive undertaking. More than three million dollars has been allocated this year simply for travel costs of delegates and U.N. staff members. Salaries will total more than 35 million; maintaining and improving U.N. buildings, more than eight million. The bill for printing the thousands of United Nations publications will exceed one and a quarter million dollars.

### Delegates Meet in General Assembly, the Parliament of Mankind

In this domed, blue and gold room, men of all races seek accord. Though each nation voices but one vote, it may be represented by five delegates and five alternates. A two-thirds majority decides issues. Booths in the far wall house interpreters, television cameras, and radio commentators. More than 400 news correspondents and 100 photographers cover United Nations activities.



BY STEPHENSON (PAGE 288-11) © NATIONAL GEOGRAPHIC SOCIETY







### The World's Statesmen Gather for the 15th General Assembly

Ten heads of state, 13 chiefs of government, and more than 60 foreign ministers sat in on the opening of the U.N.'s General Assembly last September.

Here India's Prime Minister Jawaharlal Nehru (in white hat) and Defense Minister V. K. Krishna Menon confer in the Assembly Hall.

In a strategy conference, Henry Cabot Lodge (right) consults Sir Pierson Dixon, U. K. Ambassador (left), and French Ambassador Armand Bérard in the Security Council last year.

Mr. Lodge served a record 7½ years as head of the United States delegation before resigning in 1960 to run for Vice President.

Russia exercises only a single vote in the Security Council, but three Soviet countries have votes in the General Assembly. The U.S.S.R., the Ukraine, and White Russia won admission as separate states as the result of a concession granted by President Roosevelt to Premier Stalin at Yalta.

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UNITED NATIONS (LEFT); ABE RORER/REUTERS; MAGNUM



The staggering expense of maintaining U.N. forces in crisis-stricken areas is met by special assessments levied on member nations. In 1961, 100 million dollars has been appropriated for the Congo alone.

Valentina paused for breath after this background briefing, smiled again, and embarked on her favorite theme. Pointing out the window toward a statue in the garden, she announced: "Yugoslavia gave statue of woman on horse. She represents peace; the horse have no bridle, he means freedom. They pick woman to be peace because man is soldier, fighter. Woman never fights. Never. Never."

We all laughed at this little joke, as Valentina had intended. Nevertheless, I felt that our guide was serious, like a mother teaching her children a simple but profound fact.

As we stepped briskly along to our next stop, Valentina compared the United Nations to the hand of a man.

"General Assembly is palm. The three great Councils—Security, Trusteeship, Social-Economic—fingers. The Secretariat, fourth finger. International Court of Justice in The Hague, thumb. Simple, yes? Now we visit fingers."

#### **Security Council Task: Keep the Peace**

In the Security Council we sat in awe before an immense mural symbolizing man's rebirth after war (page 314). Dark silk adorned with golden emblems of peace covers the surrounding walls.

The Security Council's primary responsibility is keeping the peace. Technically it is in continuous session; representatives live near by so they can meet at any hour, day or night. The Secretary-General of the U.N., or any nation, may call the Council into session if war threatens.

Security Council members include five permanent representatives—the United States, the United Kingdom, France, Soviet Russia, and China—and six nations elected for two-year terms by the General Assembly.

The actions of the grave-faced men who meet in this chamber have profound and far-reaching effects. Like ripples in calm water, they widen as they spread, and they lap against distant shores.

Even as I stood there, U.N. observers in white Jeeps patrolled the uneasy borders of Israel, half a world away. Jouncing in sight of mine fields and barbed wire, they threaded between the Israeli Army and bristling Arab outposts. But no rifle cracked across the emptiness, because, in May of 1948, the Security

Council had met—and passed—its first decisive test.

When the British mandate over Palestine expired in that month, Jewish authorities formed the State of Israel. Arab armies promptly poured across the borders, and the Holy Land writhed in a savage war.

The U.N. Security Council had been set up two years before to cope with just such a crisis. To its members, Secretary-General of the U.N. Trygve Lie reported: "A failure . . . to act under these circumstances can only result in the most serious injury to the prestige of the United Nations and the hopes for its future effectiveness in keeping the peace elsewhere in the world."

Two weeks of sharp debate followed, as divided members of the Council mustered argument and counterargument. But accord was reached; on May 29 the Council issued an appeal for a truce, with the threat of U.N. sanctions if Arabs and Jews failed to comply. Count Folke Bernadotte of Sweden was appointed mediator; he flew to Israel to negotiate with both sides. Thirteen days after the Council's truce appeal, the guns fell silent.

The seven months that followed saw sporadic renewal of fighting, but in each case the U.N. restored the truce. On September 17 terrorist guns cut down Count Bernadotte in Jerusalem. The Secretary-General quickly named an American member of the Secretariat, Dr. Ralph Bunche, to succeed him. Conferring tirelessly with leaders of all parties in the dispute—Israel, Jordan, Lebanon, Syria, and Egypt—Bunche managed to conclude armistice agreements by the summer of 1949—a feat that won him a Nobel Peace Prize.

Since then, save for a slashing Israeli attack on the Sinai Peninsula that the U.N. also halted, troops of the international organization have managed to keep the peace in the seething Middle East.

#### **Freedom Beckons Trust Territories**

Through the good offices of the Security Council, cease fires were arranged between the Dutch and Indonesians, and the North and South Koreans. Today, U.N. forces also help keep order in the Republic of the Congo.

Valentina reduced the immense complexities of the Council to a serene line. "Here men work for peace. But work never finish."

In the Trusteeship Council chamber, Valentina called attention to a nine-foot teal statue of a child holding arms up to a blue bird (page 321). The child, our guide ex-



RODALPHINE (ABOVE) AND HE ESTACHEME BY NATIONAL SEMINARY

plained, represents Trust Territories under the U.N.'s care; the bird, enlightenment through which the territories will one day achieve nationhood.

Countries administering former League of Nations mandates asked the U.N. to accept such dependencies as Trust Territories; it has similarly taken over former colonies of nations defeated in World War II. The Trusteeship Council is charged with promoting the territories' ultimate goal: independence.

Of the original 11 Trust Territories, four have already become nations and members of the U.N.—Cameroun, Togo, Somali Republic, and British Togoland, which joined the Gold Coast to form Ghana. Northern British Cameroons in June, 1961, merged with Nigeria; the Southern Cameroons has voted to join Cameroun. Territories scheduled to achieve their freedom shortly include West-

ern Samoa, Ruanda-Urundi, and Tanganyika.

The other Trust Territories are New Guinea and the phosphate island of Nauru, under Australian control, and a group of Pacific islands administered by the United States. The people of these lands can petition directly to the Council for redress of any wrong.

#### Petitioners Become Prime Ministers

"One wife in Africa wrote U.N. her husband had been put in prison," Valentina recalled. "That's all right, wife said, because he deserved jail. But jail bad—bad food, no good water, dirty. U.N. investigate and prison get much better."

A single petition may reflect the worry of one woman or the distress of many thousands. Speaking to me on the subject, Ambassador Boland had said: "For years men from Trust Territories in Africa came to the



PHOTOGRAPHERS S. ARTHUR STEWART AND JOHN C. FLETCHER © R.A.S.

Security Council, sitting under a mural by Norway's Per Krohg, debates a violation of the 11-year-old U.N.-supervised armistice between Israel and her Arab neighbors. United Nations troops still patrol the Gaza Strip, between Israel and Egypt.

Ceylon presides over the Council. Last April, T. B. Subasinghe held the presidency, which rotates monthly.



U.N. as petitioners. Today these same men have returned to the U.N. as prime ministers, cabinet officers, and ambassadors of their new nations."

Valentina and her audience moved on to the Economic and Social Council chamber, bathed in the warm glow of light strained through voluminous pink curtains.

Here delegates plan peaceful revolutions to better the lives of men everywhere.

Through the Technical Assistance Committee and various commissions and agencies, the Council helps nations do things they could not do by themselves. Always the emphasis is on people and their living conditions.

"If man have nice house, good job, no sickness, and children go to school, he is happy," Valentina said. "Happy man not want fighting. No fighting, no war. Peace."

Finally we came to the mighty palm of the

United Nations, the General Assembly (page 310). Here the nearest thing to a congress of mankind meets each September to debate the great issues of our time. Using the moral force of world public opinion, the General Assembly urges governments toward peaceful solutions to myriad problems.

The great hall, splendid in blue and gold, reminded me of Tennyson's prophetic lines written more than 100 years ago:

*Till the war-drum throb'd no longer,  
and the battle-flags were furl'd  
In the Parliament of man, the  
Federation of the world.*

*There the common sense of most shall  
hold a fretful realm in awe,  
And the kindly earth shall slumber,  
lapt in universal law.*

To this General Assembly all the far-flung

agencies of the U.N. bring reports of progress; from it, they take direction.

When a veto prevents the Security Council from taking action on a war or peace issue, the General Assembly can step in and may order armed forces to the troubled area, as was done during the Suez crisis in 1956.

As in the Congress of the United States, committees do most of the Assembly's work. Every U.N. member can send a representative to each committee: Political, Special Political, Economic, Social, Trusteeship, Administrative, and Legal.

Committee resolutions go to the Assembly for debate, followed by votes that result in recommendations whose moral force often compensates for their lack of teeth. No nation, of course, is willing to surrender its sovereignty completely to the U.N.

"This palm of hand moves all fingers," Valentina concluded. "But fingers often move world."

Our tour ended in the concourse of the General Assembly Building, where the Postal Administration sells U.N. stamps and shops offer handicraft wares from every corner of the earth (page 320).

It was in the bookshop, however, that I glimpsed how U.N. fingers move the world. Sampling only the newest titles, all products of the U.N.'s work, I found *Study of Discrimination in the Matter of Religious Rights and Practices*, *African Labour Survey*, *World Bank Loans at Work*, *Housing in Ghana*, *Radioactive Materials in Food and Agriculture*, *Training for Town and Country Planning*.

Mr. Robert Godsoe, the bookstore's manager, told me that in a single year a thousand new titles go on the shelves.

#### Ideas Tested in Delegates' Lounge

What Valentina had simplified for me, the range of titles now complicated. It was time to go behind the scenes to find a fuller explanation of the meaning of the United Nations.

"This is the heart of the house," said a Delegates' Aide, Contessa Manuela Serra, her green eyes sweeping the North Delegates' Lounge. The Countess has seen the leaders of the world come and go since the U.N. started work at Hunter College in 1946.

"This is where the ambassadors to the U.N. test ideas and enlist support for them," she told me. "Speeches and votes in the councils, the committees, and the General Assembly often reflect spadework done here."

We sat in a room that resembled the grand saloon of an ocean liner; and I was reminded of the early proposal that U.N. headquarters be a ship and sail from country to country. The



Eleanor Roosevelt, a U. S. delegate to the 15th General Assembly, describes the U.N. as "the only place in history where the whole world has hung its hat and gone to work on the common problems of mankind."





Interpreters translate a delegate's speech from English into French. Basile Yakovlev and Monique de Gravelaine work in a glass booth flanking a conference room where the Political Committee met last April to discuss Cuba.

Delegates and spectators can dial any of the U.N.'s five official languages — French, English, Russian, Spanish, and Chinese — and listen to a simultaneous translation through earphones.

Cuban crisis absorbs the Political Committee, powerful arm of the General Assembly, in a debate lasting five days.

BY BATAKUNIKY © NATIONAL GEOGRAPHIC SOCIETY





nautical effect was heightened by a sweeping view of the East River (page 302). Tugs, barges, and freighters churned past, bound for Long Island Sound or the open sea.

Inside, muted gray walls, rugs, and deep lounge chairs created a comfortable climate of serenity. But the scene was far from serene.

Over against the windows six delegates sat in a huddle, arguing and gesturing, their eyes intense with interest, their faces serious and young, like the new African nations they represented.

In other chairs I saw other faces, some lined with the weariness of disillusion, some

wise and benign, some bland. They were the faces of the earth's people, dark Africans, fair Nordics, tall Westerners, short Orientals.

Everywhere there was movement. Men and women, arriving with brief cases bulging, crowded to the bar for refreshment, hailed friends, found chairs with one group, then moved to another. Through the din I heard a dozen languages, with words spoken in the excitement of a Latin temperament and words spoken sparingly, in thought.

Over the loud-speaker came the voices of the Delegates' Aides, ceaselessly paging name after name. Like the Countess, who speaks



**Turbaned dignitary,** His Highness Amir Talib Bin Ali of Oman, strides out of the delegates' entrance. He typifies the parade of nonmembers who call on the U.N. for assistance.

**Security officers** search every inch of the Assembly Hall in a daily inspection that seeks out hidden danger to delegates. When the Assembly convenes, guards scan the rows of spectators. Training for two years, each man learns to fight fires, prevent accidents, and practice hand-to-hand defense. No visitor may raise a camera lest it conceal a gun.

Italian, French, Spanish, English, and Swahili, they work in several languages.

"Do you know all the delegates?" I inquired.

"It's part of the job," Countess Serra answered. She pointed to a row of booths at the side of the lounge. "Through those telephones come instructions to delegates from the capitals of the world. It's our task to locate the delegates and get them to the phone.

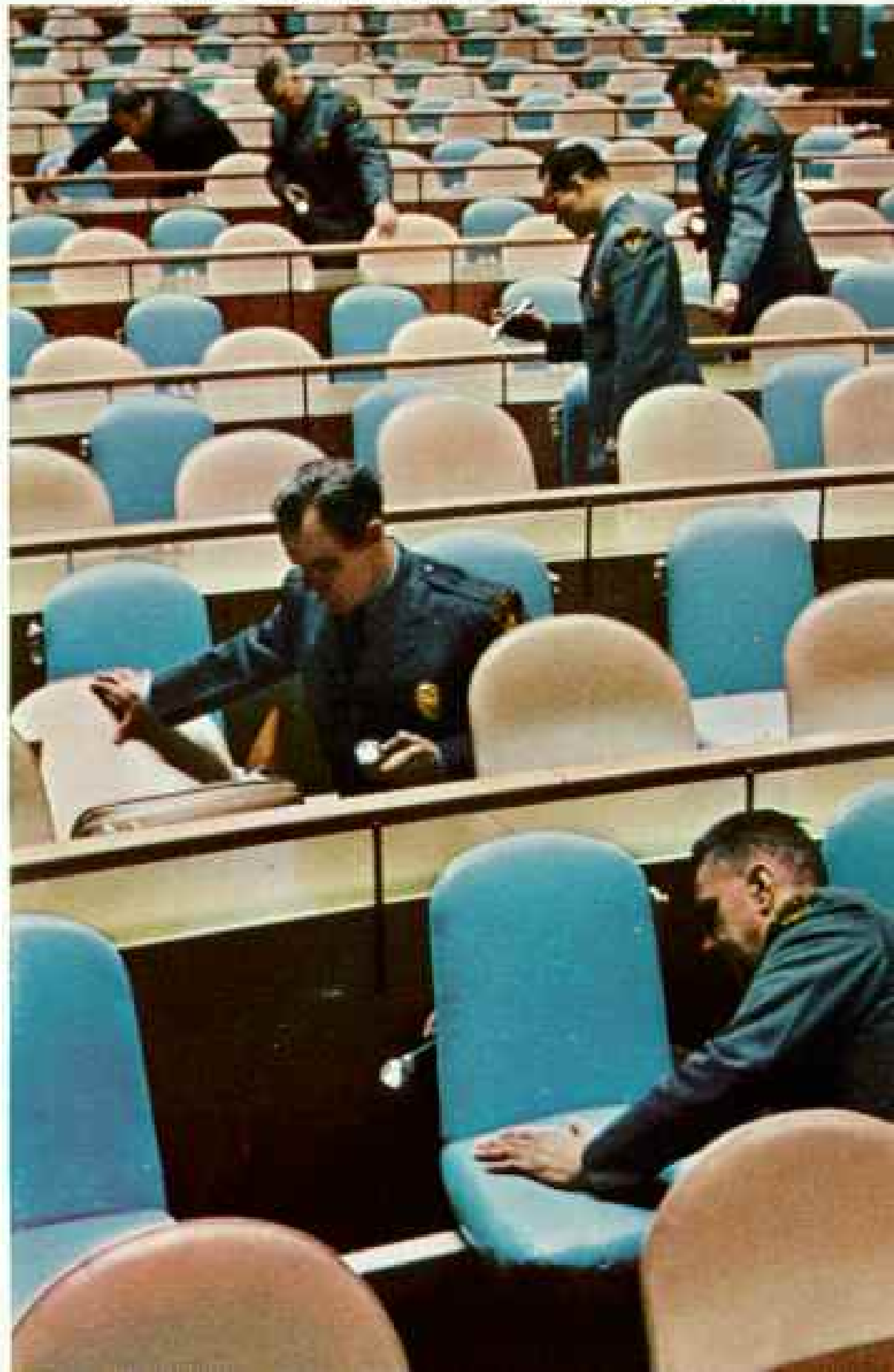
"By now, I know them all so well I can tell when a man walks into the room how he's feeling. Sometimes when I see that a representative is tired and discouraged, I just wait until he's had time to unwind a few minutes before passing on a message that isn't urgent."

#### Hungarian Leaves Poignant Message

I thumbed through a leather-bound book filled with the Countess's own sketches of famous men she has met. The autographs of many, including Soviet Premier Nikita Khrushchev, accompanied the penciled heads.

A message in the book from Maj. Gen. Bela Kiraly, a leader in the ill-fated Hungarian revolt, provided a sad

HE EXAMINES THE (BELOW) AND KUSHCHINE © NATIONAL GEOGRAPHIC SOCIETY





KODACHROME (ABOVE) AND IN RETROCHROME © NATIONAL GEOGRAPHIC SOCIETY

### Dolls Earn Dollars for Have-not Nations

The U.N. gift shop imports wares from everywhere, thus encouraging cottage industries in underdeveloped countries. A world fair in miniature, the shop displays wood carvings from Africa, brasses from India, chess sets from France, silver jewelry from Mexico, enameled vases from Israel, and pottery from California.

Stamp sale on the first day of issue draws philatelists in swarms to the General Assembly's lobby.

An agreement between the U. S. and U.N. in 1951 permitted the first postage stamps by any organization of nations.

The U.N. Postal Administration issues stamps in denominations from 1 cent to \$1; only the U.N.'s post office accepts them for mailing. Philatelists yearly buy nearly \$1,500,000 worth of the special postage.



footnote to history. "We Hungarians," he wrote, "have our last hope in what is going on in this building. It is very encouraging to know we have friends here...."

The business of winning friends and influencing votes keeps delegates on a continuous round of luncheons, dinners, and receptions. Adlai Stevenson, in the few months he has been the United States Ambassador to the United Nations, has invited the heads of 95 missions to his Waldorf Towers suite.

But much of the official entertaining goes on in the United Nations headquarters itself, in the Delegates' Dining Room, the West Terrace, and private dining rooms. The job of providing food and refreshment to delegates, Secretariat staff, press, and visiting public is immense, and it is complicated by the culinary tastes and taboos of nearly every culture on earth.

#### Recipes Offered by Delegates' Wives

I toured the kitchen with Mr. Frank W. Reickert, general manager of catering on loan to the U.N. from the Knott Hotel Corporation of New York. We watched the chef and 32 assistants operating a food factory with assembly-line efficiency.

"We work in the frame of a French-American cuisine," Mr. Reickert told me, "but the special-of-the-day is always a dish from a different part of the world. Every three months we circle the globe by menu."

"How do you get your recipes for foreign dishes?" I asked.

"Well, the wives of delegates have a standing invitation to submit recipes. Not long ago one delegate's wife even insisted on coming to the kitchen and personally cooking her favorite.

"Our chef isn't infallible," Mr. Reickert recalled. "Once we had a request to serve *adobo*, a Philippine national dish. When I inquired, the chef said certainly, he knew how to fix it.

"Adobo, a concoction of chicken and pork seasoned with garlic, duly appeared on the menu, and a luncheon party of Filipinos ordered it.

"'It was simply marvelous,' one diner said, folding his napkin. 'It wasn't adobo, of course, but it couldn't have been more delicious.'"



COLLEGGHE/GETTY IMAGES

Blue bird, symbolizing enlightenment leading to nationhood, soars above the teak image of a child that represents the U.N. Trust Territories. The sculpture, carved by Denmark's Henrik Starcke, adorns the Trusteeship Council chamber. Japanese guide Hiroko Shiokawa shows it to sixth-grade students from Long Island.



KODACHROME (ABOVE) AND ITS ESTACHEROME BY NATIONAL GEOGRAPHIC PHOTOGRAPHERS E. ANTHON

Mr. Reickert's working day matches that of the delegates, as I discovered at the Japanese Mission's party in honor of the Emperor's birthday (above). Seeing my friends supervising the service, I congratulated him on the way the Delegates' Dining Room had been transformed since noon into a spacious reception hall.

All the tables except those beside ceiling-to-floor windows overlooking the river had been removed. A flower-gay buffet offered boiled shrimp, smoked salmon, Swedish meat balls, and a dozen other delicacies.

In brocaded kimonos and satin obis, wives and daughters of Japanese diplomats bowed low to Ambassador Koto Matsudaira, then moved gracefully about, smiling a greeting to everyone. A red-jacketed orchestra played Strauss waltzes.

To me the scene appeared festive and care-free. But strolling between small groups of

guests, I overheard snatches of conversation: "The First Committee . . . in Gaza . . . when ECOSOC meets at Geneva . . . Cuba's problem . . . I have reason to believe that Hammarskjöld . . . Now, consider our position. . ."

It was clear that even here the United Nations was hard at work.

#### World Listens in Five Languages

Although U.N. delegates may spend hours in private conferences, the results of such conversations become apparent only in the public sessions of councils, committees, and the General Assembly. Then the whole world looks on.

To cover a meeting of the General Assembly's Political Committee, where the Castro government of Cuba was attacking the United States, I joined one of the U.N.'s interpreters, Ted Fagan, in his small glass-fronted booth at one side of the room.



ENKERT AND JOHN E. FLETCHER © R.G.S.

### Kimonoed Beauties From Japan Celebrate Their Emperor's Birthday at a Reception

Japanese representatives to the United Nations and their wives greet their guests in the Delegates' Dining Room. Musicians in red jackets and gold braid play Viennese waltzes.

The reception was one of some 200 held last year in the spacious halls of U.N. headquarters.

Ruffle of icing decorates an anniversary cake baked in the U.N. kitchen. During General Assembly sessions, cooks prepare nearly 7,000 luncheons daily.



A cheerful, intense Argentine in his late thirties, Mr. Fagan spoke sharply to me at first.

"When the gavel pounds to open the session, you must be absolutely quiet. Every sound in this booth will be broadcast to the delegates, press, and public listening to the English translation of Spanish."

I promised to obey. "But first," I begged, "please tell me the how and why of simultaneous interpretation."

The United Nations, Mr. Fagan explained, uses five official languages: French, English, Russian, Spanish, and Chinese. What a delegate says in any one of these languages is reproduced, with no perceptible interval, in the four other languages.

I asked Mr. Fagan: "Suppose a delegate speaks only Swahili or Urdu?"



### U.A.R. Duels Yugoslavia in Rapid-transit Chess

Players clock their moves; anyone who exceeds the time limit forfeits the game.

Here Marjam Stopar-Babsek of Yugoslavia, who moves the black pieces, weighs a maneuver against Shankri Mohammed of the United Arab Republic. They play in the fifth-floor lounge of the Secretariat, where staff members relax during off-duty hours.

Organized activities for U.N. employees and families include a jazz society and softball league, women's guild and co-op, and ballet, bowling, bridge, cricket, and skiing clubs.





"He can't address the chamber directly," Mr. Fagan replied. "He must either have his speech translated into one of the five official languages or provide an interpreter to do so."

Spectators and delegates, wearing earphones, may dial the language of their choice on an instrument attached to their chairs.

Mr. Fagan, one of 55 immensely gifted interpreters who know at least three of the official languages, specializes in instantaneous conversion of Spanish into English.

"In the fall session of the 15th General Assembly," he said, "Castro made the longest continuous speech ever made in the U.N. It was also the longest I ever interpreted. He spoke four and a half hours without a break, and so did I."

"How can you do it?" I asked.

He grinned. "I'm like Hilaire Belloc's water insect. If I ever stopped to think of how I did it, I would sink."

The job, he went on, requires absolute concentration

**Visiting Guggenheim Museum,** wives and daughters of U.N. employees gaze up at corkscrew ramps designed by Frank Lloyd Wright. Guide at right, a member of Volunteer Services, arranged the tour; 20 volunteers, mostly housewives, give an average two days a week to the U.N.

**Daughter Samina needs help** with homework; son Aamir plays cowboy. Ghulam Qadir Farid of Pakistan discovers home life on Long Island can be as demanding as his duties as U.N. information specialist. In the background, daughter Shaheena models a sari for her mother.





Hospital kits for health centers in Ethiopia move along a conveyor belt in the UNICEF packing room at U.N. headquarters. Each kit contains 87 items, including baby bath, feeding cup, instrument tray, stethoscope, and bedpans.

### Malayan Field Nurses Examine a Sick Child

Under its policy of fighting disease and hunger as well as war, the U.N. helped Malaya set up a health demonstration center in the State of Kedah.

Here, in a village near Jitra, worried mother and midwife (extreme right) seek advice from visiting nurses.

PHOTOGRAPHS BY R. ANTHONY STEWART AND JOHN E. FLETCHER (1951) AND ROBERTO NENDELLES FOR WHO © W.H.O.



and a broad knowledge of the subject under discussion by the delegates. Interpreters assigned to cover the 1955 "Peaceful Uses of Atomic Energy" conference in Geneva took a six-month course in nuclear physics to prepare for it.

Mr. Fagan waved a sheaf of press clippings.

"To cover this meeting, I bone up on Cuba. The first speech this afternoon will be by Dr. Victor Andrés Belaúnde of Peru, who was President of the 14th General Assembly. He's likely to quote anything from the Bible to Spinoza to Kerouac."

I heard the crack of a gavel, and shortly, through my earphone tuned to Spanish, came the voice of Dr. Belaúnde, in a speech on the Cuban situation. Instantly Mr. Fagan began speaking in English, in the warm dramatic tones of an actor. His action was like a reflex.

Dr. Belaúnde began by expressing his sympathy for the Cuban people.

Eyes glistening, he poured out: "*Con un corazón lleno de emoción*," and Fagan followed, almost in the same breath, "With a heart filled with emotion..."

The interpreter's eyes glistened like Belaúnde's. When the speaker raised clenched fists to heaven, Fagan eloquently shook a fist. In the speaker's every emotion, Fagan shared. He was a mirror in the color of another language.

At one point Dr. Belaúnde referred to a U.N. document. Without pausing in his interpretation, Fagan searched with one hand for the document, lighted a cigarette with the other, and, noticing my cigarette was out, held a match for me — all in the same moment.

Preparing to leave, I wrote a note: "I'm speechless with admiration, but of course I must be speechless anyway..."

He smiled and waved goodbye in the middle of a sentence.

### Staff Recruited From Member Nations

Ted Fagan and fellow specialists who service the conferences belong to the Secretariat staff—4,000 international civil servants responsible for the U.N.'s day-to-day operations.

Although recruited from among all member nations, Secretariat people must swear to give their first allegiance to the United Nations.

The Secretariat sends experts to every corner of the globe to wrestle with problems affecting millions. Delegates base decisions on the experts' reports, and then the Secretariat helps carry out the programs.

To see how the system works, I called at office after office, piled one upon another for 39 floors. Dozens of men had just returned from the Congo; other dozens were just leaving for the Congo. A woman lawyer got ready to attend a seminar in Romania on the legal rights of women. An economist scheduled an Economic and Social meeting in Geneva.

A mission to a Trusteeship territory was on the verge of departure; a mission fresh from observing a referendum in the British Cameroons checked in. Somebody was writing a firsthand account of conditions in the Palestinian refugee camps; somebody else was off for an on-the-spot survey of the technical assistance program among Andean Indians.

### Expert Found by Canadian Mounties

"Do you keep your bags packed all the time?" I asked Brian Urquhart, a slender, wiry Britisher in the Office of Special Political Affairs.

"It's a thought," he answered with a smile. "At 3:25 a.m. on July 14, 1960, the Security Council voted to send troops to the Congo. Twenty-four hours later I was flying to Africa with several others to join Dr. Ralph Bunche, U.N. Under-Secretary for Special Political Affairs. He was already there with a small technical assistance mission.

"The Congo, after independence was granted and the Belgians left, was like a large, fully equipped ship from which the crew had vanished," Mr. Urquhart recalled ruefully. "Practically no Congolese were trained to take over. We had to find a new crew in a hurry.

"Eleven security guards from headquarters volunteered to fly out immediately. An information chap we needed was fishing in Canada; the Mounties found him and sent him on his way. Experts at the U.N. and specialized agencies—doctors, engineers, administrators, communications and aviation personnel—jumped at the call for help."

"What was a day in the Congo like?" I asked.

"Twenty-four and a half hours long," Mr. Urquhart answered. "We set up headquarters in the Stanley Hotel in Léopoldville. Scores of people converged like homing pigeons on Room 410. On one occasion, it was the scene of an armed incursion by the mutinous Congo army, and on others the place where U.N. commanders received their orders. It was also Dr. Bunche's bedroom.

"For most of us the operation became an obsession—a constant source of enthusiasm,



EDDACHROME © NATIONAL GEOGRAPHIC SOCIETY

fascination, amazement, exasperation, and, sometimes, wry laughter.”

From Miss Aline Fenwick I learned that even a U.N. seminar on a peaceful subject like “Participation of Women in Public Life” can be exciting—especially if the seminar is held during a revolt, as happened in Addis Ababa, Ethiopia, last December.

A tall, blond Australian, Miss Fenwick works in the Secretariat’s Division of Human Rights.

The meeting drew an enthusiastic—and colorfully dressed—group of African women representing 35 countries and territories. The United States, the United Kingdom, France, Belgium, and the U.S.S.R. sent observers, as did 23 nongovernmental organizations. Four staff members came from the Secretariat.

Background studies on the problems of women in general and African women in par-

ticular had been prepared for the seminar.

“We got off to a fine start in the Haile Selassie I Theatre,” Miss Fenwick recalled. “But soon shooting started in the square across the street.” Loyal army units and rebel army officers attempting to overthrow the Emperor fought back and forth across the square. Participants in the seminar decided to meet in their hotels.

#### Gunfire Fails to Halt Seminar

The hotels didn’t prove much safer. Mrs. Oswald Lord, former United States delegate to the U.N. and an observer at the seminar, was sitting in the dining room of the Hotel Ghion when bullets whizzed through. Her Ethiopian waiter, deadpan and thoroughly composed, bowed and said to her, “This is an international hotel. No bullets are allowed.”

The hotel stood directly in the line of fire

## U.N. Stone and Glass Replace Slums and Slaughterhouses

A homeless wanderer in early years, the U.N. had various temporary addresses — London's Central Hall and Church House, Hunter College in New York's Bronx, and Flushing Meadow and Lake Success on Long Island. Choice of a permanent site finally narrowed to the six-block-long tract in Manhattan. When Premier Khrushchev last year suggested that the headquarters should be moved from the United States, many recalled that Russia had been among the first to agree to an American location.

Anchored in bedrock, the 505-foot Secretariat Building dominates a 17-acre enclave beside the East River. A new library in four tiers borders 42d Street where First Avenue goes underground to make room for United Nations Plaza. The promenade passes a park where demonstrators sometimes gather.

Sight-seeing boats ply the river. Queensboro Bridge leaps Welfare Island, a shabby municipal property where city planners contemplate a vast rebuilding project.

**In pre-U.N. days,** breweries, slaughterhouses, and tenements cluttered this area along the East River. During the Revolution the section, known as Turtle Bay, saw skirmishes between patriots and British. Near present-day 46th Street, royalist troops hanged Nathan Hale as a spy.



WIDE WORLD

between attacking loyalist soldiers and the rebels. Told that U.N. women were staying at the hotel, the loyalists ordered delegates to come out with their hands up.

Finally satisfied about the ladies' identity, the commanding officer warmly shook hands with each of them, murmuring over and over, "United Nations, United Nations."

"But the seminar sessions continued?" I asked Miss Fenwick.

"Oh, yes, everyone was keen to press on. We discussed how women could enter public life to improve schools, living conditions, and government. People had a chance to speak up and air their problems."

"It took nerve to go on talking in the midst of a revolution," I observed.

"One of the participants, Madame Aoua Keita from the new African state of Mali, did more than talk," Miss Fenwick said.

"She's a trained nurse, and when the emergency started, she volunteered to help with the wounded. The Emperor later decorated her for heroism."

### "Trick or Treat" Works for UNICEF

Despite the U.N. crises proclaimed in headlines, most members of the Secretariat work for peace in an atmosphere of peace.

Maurice Pate, the tall, snowy-haired Director of the United Nations Children's Fund, UNICEF, has traveled in 93 countries and territories on a heart-warming mission.

To the world's hundreds of millions of children who face a short life, a sick life, a hungry life, Mr. Pate and UNICEF offer hope — hope for body-building milk, for penicillin to treat yaws, for DDT to fight mosquitoes, for drugs to arrest leprosy, for antibiotics to cure trachoma (page 326).

I was lucky to catch Mr. Pate at work on a Saturday morning just before he flew off to Paris for a round of European meetings.

"UNICEF is not a charity; it's a self-help program," he explained. "In every country we assist, the local government puts up, on an average, two and a half times the money we do. UNICEF only furnishes tools and supplies that must be imported."

I told Mr. Pate how my nine-year-old son had managed to collect \$10 for UNICEF on two trick-or-treat nights last Halloween.

"Imagine, Halloween a *peaceful* occasion!" Mr. Pate exclaimed, smiling broadly. "It's my favorite holiday after Christmas."

"Last year American youngsters like your son, disguised as witches, goblins, and assorted ghosts, collected \$1,750,000 in nickels and dimes for the Children's Fund."

"Just consider: One penny will buy five glasses of surplus milk, five pennies will provide vaccine to help protect five children from tuberculosis, twenty-five pennies will buy penicillin to treat six cases of yaws. That Halloween treat will go a long way."

The director explained that UNICEF pays only the ocean freight on dried skim milk given by the United States and Canada. Drugs are procured cheaply because UNICEF buys in such large quantities.

"We are currently receiving 26 million dollars in voluntary contributions from 100 countries," he said. "Last year we translated such grants into aid for 56 million mothers and children."

Mr. Pate rose and reached for his brief case. "But our work to prevent the needless crippling of the world's children has just begun," he said. "We need more Halloweens."

#### Specialists Answer 1,500 Queries a Day

Checking on U.N. stay-at-homes, I found the people in the information unit of Conference Services busy at telephone and desk.

"During General Assembly we receive 1,500 telephone calls a day," said Mrs. Shin-Ping Cho, the chic Chinese who heads the information and reception unit.

Mrs. Cho and her 22 assistants answer anything from "Who catered for the U.N. dining room in 1946?" to "How did the General Assembly vote this morning?"

Those who man the telephones constantly consult cards on wheel files bearing all manner of up-to-date U.N. information.

"Even if the files fail to help," Mrs. Cho said, "the girls must get a clearance from me before they can say we don't know."

Other members of the unit staff the information desks at delegates', Secretariat, and visitors' entrances.

"One day recently a well-dressed woman stopped at the visitors' desk," Mrs. Cho recalled. "She seemed to know a lot about the U.N. and asked some intelligent questions. Then, before leaving, she pointed in the direction of the East River and said brightly, 'Isn't Lake Success beautiful at this time of the year?'"

"Our receptionist didn't have the heart to tell the visitor that the U.N. moved from Lake Success, on Long Island, to its permanent headquarters early in the 1950's."

#### Fifth-grader Offers to Help

Written requests for information go to the Public Inquiries section where Miss Alice Smith and seven assistants answer about 9,000 letters a month. Most are from school children in the United States, since the bulk of foreign mail is handled at U.N. Information Centers in 35 cities around the world.

"Letters from the children encourage us all," said Dr. Hernane Tavares de Sá, the distinguished Brazilian journalist who heads the U.N.'s globe-circling Office of Public Information. A contributor to the NATIONAL GEOGRAPHIC, he greeted me as a friend.

"I remember one letter from a youngster in the fifth grade," he said. "The boy wrote: 'I have read that the United Nations has many troubles. I know I am very small but is there any way in the world I can help?'"

Footsore from walking miles of marble corridors, my mind whirling with countless conversations, I sought at last what might be called the Office of Private Information.

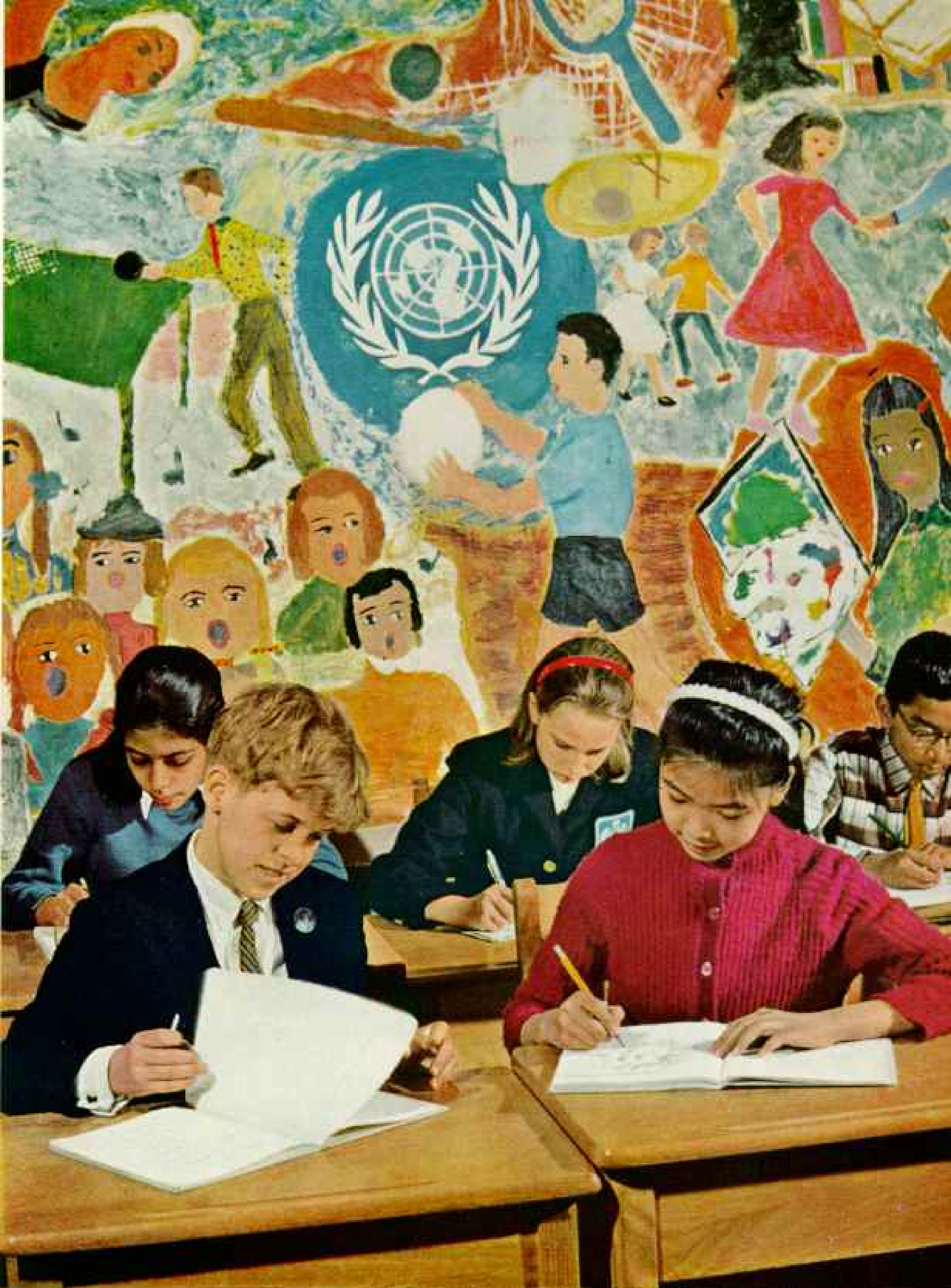
Slipping into the U.N.'s Meditation Room, I was soothed by its utter simplicity. A single shaft of light strikes the surface of a solid block of iron ore, shaped like an altar. At one end of the narrow wall, a fresco of geometric designs appeals to the eye but makes no intruding suggestion to thought.

Secretary-General Dag Hammarskjöld once wrote words that gave added meaning to my moment of meditation:

"We all have within us a center of stillness surrounded by silence.

"This house, dedicated to work and debate in the service of peace, should have one room dedicated to silence in the outward sense and stillness in the inner sense. . . ."

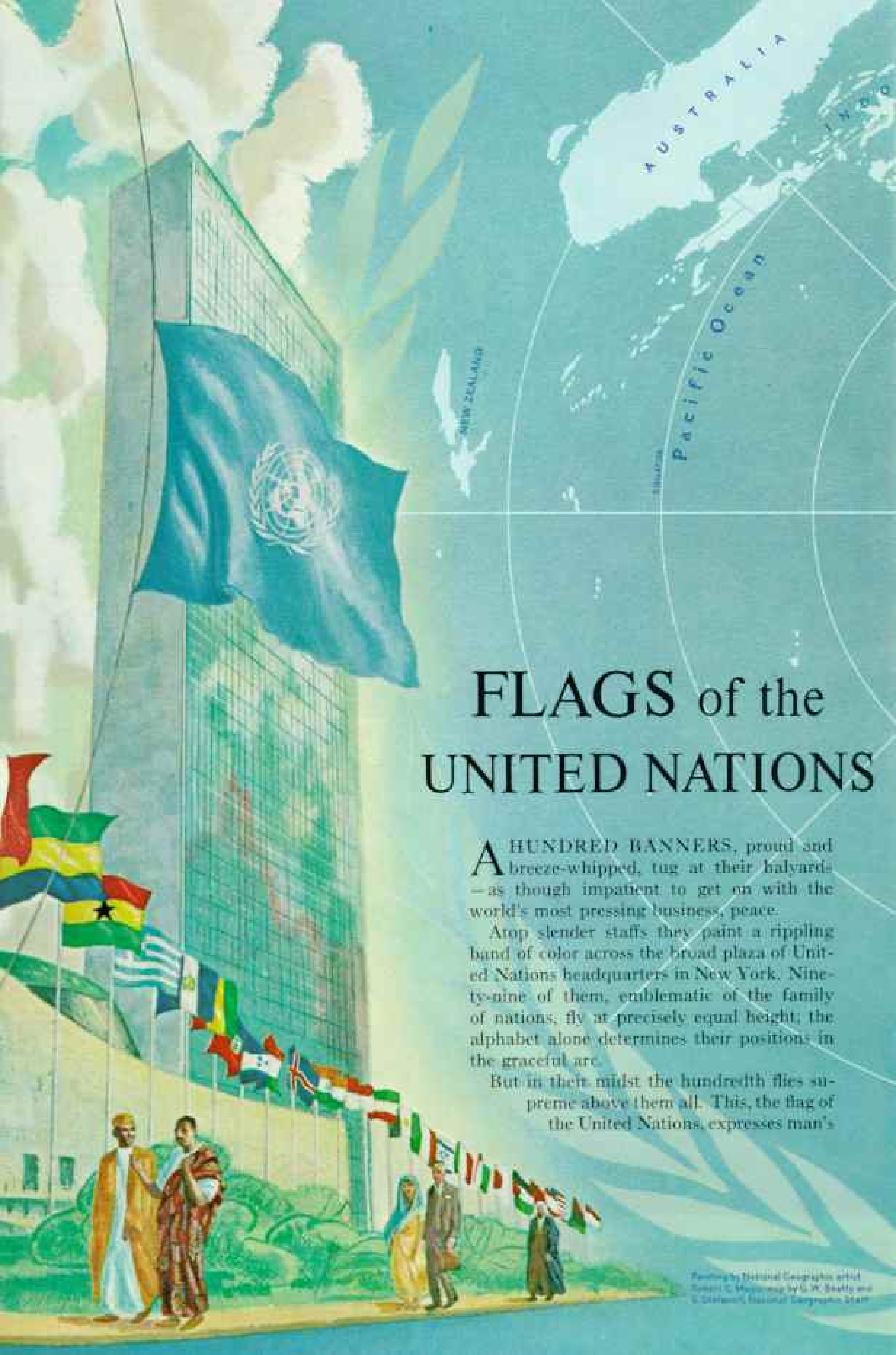
I ended my quest of the U.N., and the finite world it represents, here in the infinite lands of thought and prayer.



PHOTOGRAPHS BY S. ANTHONY STEWART AND JOHN E. FLETCHER. © NATIONAL GEOGRAPHIC SOCIETY

### Imaginative Pupils in a Junior United Nations Decorated Their Classroom

Some 370 students in the U.N.'s 1961 day-school represent 52 lands. Denmark rubs elbows with Viet Nam in the front row; Ceylon, Yugoslavia, and India occupy seats in the rear. English and French serve as the school's basic languages.



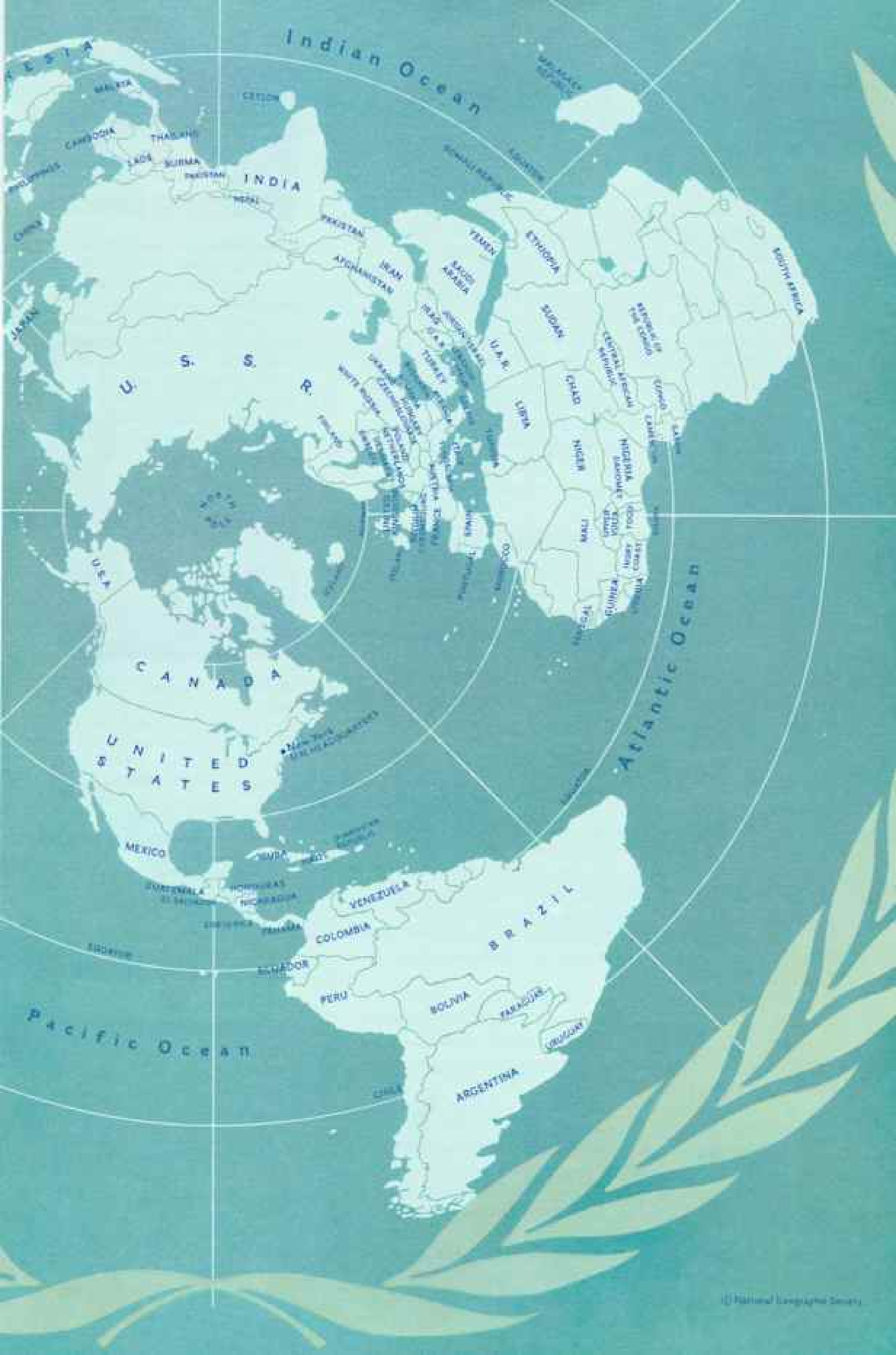
# FLAGS of the UNITED NATIONS

**A** HUNDRED BANNERS, proud and breeze-whipped, tug at their halyards — as though impatient to get on with the world's most pressing business, peace.

Atop slender staffs they paint a rippling band of color across the broad plaza of United Nations headquarters in New York. Ninety-nine of them, emblematic of the family of nations, fly at precisely equal height; the alphabet alone determines their positions in the graceful arc.

But in their midst the hundredth flies supreme above them all. This, the flag of the United Nations, expresses man's





Indian Ocean

Atlantic Ocean

Pacific Ocean

AUSTRIA, BELARUS, BELGIUM, BERMUDA, BHOJIPUR, BULGARIA, CAMBODIA, CANADA, CAYMAN ISLANDS, CHINA, CUBA, CZECH REPUBLIC, DENMARK, DOMINICAN REPUBLIC, ECUADOR, EGYPT, ESTONIA, FINLAND, FRANCE, GERMANY, GIBRALTAR, GREECE, HONG KONG, HUNGARY, ICELAND, INDIA, INDONESIA, ITALY, JAPAN, JORDAN, KAZAKHSTAN, KENYA, KOREA, KUWAIT, KYRGYZSTAN, LAOS, LITHUANIA, LUXEMBOURG, MACAU, MALAYSIA, MALDIVES, MALTA, MEXICO, MONTENEGRO, MOROCCO, NETHERLANDS, NEW ZEALAND, NIGERIA, NORWAY, OMAN, PAKISTAN, PANAMA, PARAGUAY, PERU, POLAND, PORTUGAL, ROMANIA, RUSSIA, SAUDI ARABIA, SERBIA, SLOVAKIA, SLOVENIA, SOUTH AFRICA, SOUTH KOREA, SPAIN, SWEDEN, SWITZERLAND, SYRIA, TAIWAN, TAIWAN, THAILAND, TURKEY, U.S.S.R., U.A.E., UKRAINE, UNITED STATES, UYIGURISTAN, VANUATU, VIETNAM, YEMEN, YUGOSLAVIA, ZAMBIA, ZIMBABWE.

highest hopes for brotherhood on earth. Inspired by a symbol designed for the San Francisco Conference of 1945, when the United Nations was born, the pale-blue banner bears an emblem befitting the greatness, and the simplicity, of its cause.

The map in its center depicts the globe, viewed from the North Pole; projected to 60° south latitude, it embraces every continent except Antarctica. Olive branches, age-old token of peace, wreath the insignia.

To nations throughout the world, the simple blue and white U.N. banner stands for human dignity, wherever it flies: atop a thatch hut in the Congo; along a boundary line in Jerusalem; above a cemetery in Korea.

Soldiers have raised it above battlefield armistice lines; scientists have hoisted it at Antarctic research stations; doctors have flown it above jungle hospitals. The United Nations emblem has become a battle flag, a universal rallying point, in the crusade against turmoil, poverty, and disease. So highly regarded is the ensign that U.N. member nations have decreed it "shall not be subordinated to any other flag."

#### On Statesman's Death, U.N. Banner Flies Alone

Strict rules govern the handling of the flags flown in a 420-foot arc in the United Nations Plaza. Six members of the Security Guard raise the 100 banners each morning of the year, except when heavy rain or high winds threaten. On the death of a chief of state or officer of the United Nations, all national ensigns—including that of the official's own country—are run down for a full day, and only the United Nations colors remain flying, at appropriate half-staff.

The Secretary-General of the United Nations commemorates the election of a new member state by raising the country's flag in the plaza. For one day it flies at a place of honor in the center of the array, then takes its place in alphabetical order. There it stands, to remind each delegate or visitor from the home country—whether it be the smallest of states or one of the giants of the world—that all voices shall be heard in this forum.

The nylon banners, although durable and dyed with care, must be replaced twice each year, as a result of wind and weather.

To present the 99 national flags in full color, together with their histories, the National Geographic Society's staff spent nearly a year gathering data and designs from ministries, embassies, and heraldic experts of the countries concerned.

Countless problems arose: In some of the newly independent nations, for example, flag regulations were still in the drafting stage. Other countries commonly use two emblems: the national flag and the government flag—usually identical except for a coat of arms. In such cases the Society has presented the government design.

Finally, six artists of the Society's cartographic division reproduced each one to the last detail. The result, on the following pages, is the most accurate and up-to-date record ever presented of the flags of the United Nations.



**AFGHANISTAN's** flag mirrors a turbulent past. Black stands for centuries of hardship wrought by foreign invasions; red symbolizes wars for independence. Green stripe signifies prosperity. The mosque in the center reflects the nation's Islamic character. *Area: 251,000 square miles. Population: 13,150,000. Capital: Kabul. Joined U.N. 1946.*



**ALBANIA** Legend says Albanians descended from an eagle; the bird adorns the colors in two-headed form, surmounted by a star added in 1945. A member of the Soviet bloc since World War II, Albania recently strengthened its ties with Communist China. *Area: 11,100 square miles. Population: 1,581,000. Capital: Tirane. Joined U.N. 1955.*



**ARGENTINA** Emblazoned with the "Sun of May," the standard commemorates freedom from Spain; liberty's rays burst upon Argentinians on May 25, 1810. Blue and white bands honor the 19th-century "Patricios" regiment. *Area: 1,072,745 square miles. Population: 20,956,000. Capital: Buenos Aires. U.N. charter member.*



**AUSTRALIA** At night the Southern Cross shines over vast and nearly empty Australia, a continent almost the size of the United States with fewer people than California. The constellation's five stars also appear on the nation's blue ensign (see United Kingdom). The Union Jack symbolizes the British Commonwealth; the large star, federation. Australians are accustomed to size. One ranch is larger than Belgium. *Area: 2,974,579 square miles. Population: 10,332,000. Capital: Canberra. U.N. charter member.*



**AUSTRIA** A warrior's blood-soaked uniform suggested today's colors. In the 12th century, Duke Leopold of Austria wore a white coat into battle. Blood stained all but a narrow band protected by his belt; thus, a white stripe divides Austria's red banner. *Area: 32,374 square miles. Population: 7,066,000. Capital: Vienna. Joined U.N. 1955.*



**BELGIUM** retains in vertical stripes the colors of the old Duchy of Brabant, raised in revolt against the Austrians in 1789. The country gained free-

dom from Dutch rule in 1830. Belgians speak three languages: French, Flemish, and Walloon, a dialect of French. *Area: 11,779 square miles. Population: 9,129,000. Capital: Brussels. U.N. charter member.*



**BOLIVIA's** tricolor of red, yellow, and green represents animal, mineral, and vegetable kingdoms. Yellow also symbolizes wealth: Bolivia's deposits of tin, silver, and other valuable ores. *Area: 424,163 square miles. Population: 3,462,000. Capitals: La Paz, Sucre. U.N. charter member.*



**BRAZIL** Blue globe represents the sky. The symbol of vastness is appropriate; the only Portuguese-speaking nation in the New World sprawls over nearly half of South America. The 22 stars refer to Brazil's 21 states and the new capital, Brasilia. Yellow and green signify the country's mineral and forest wealth. *Area: 3,287,198 square miles. Population: 65,743,000. Capital: Brasilia. U.N. charter member.*



**BULGARIA** The colors of this

Communist nation exalt peace (white), agriculture (green), and military courage (red). The state emblem, a lion framed by wheat stalks, adorns the white stripe near the hoist. *Area: 42,729 square miles. Population: 7,829,000. Capital: Sofia. Joined U.N. 1955.*



**BURMA** A large star commemorates the resistance movement in World War II; the five smaller stars represent the unity of Burma's principal ethnic strains. Red denotes courage; blue, the night sky. White stands for purity, truth, and steadfastness. *Area: 261,757 square miles. Population: 20,662,000. Capital: Rangoon. Joined U.N. 1948.*



**CAMBODIA** The emblem represents the great temple of Angkor Wat. This massive structure is the masterpiece of the Khmers, rulers of Southeast Asia between the 9th and 15th centuries. Cambodian farmers still use irrigation works built in that era. *Area: 66,607 square miles. Population: 4,845,000. Capital: Phnom Penh. Joined U.N. 1955.*



**CAMEROUN** citizens last year

adopted an unadorned tricolor: green for the luxuriant vegetation of the south, red for sovereignty, and yellow for the sunshine of this new African nation's northern region. *Area: 166,795 square miles. Population: 3,225,000. Capital: Yaoundé. Joined U.N. 1960.*



**CANADA'S** red, white, and blue stems from Britain's red ensign (see United Kingdom). The Union Jack symbolizes association with the British Commonwealth. The badge comes from the Canadian coat of arms, whose maple leaves form the nation's unique emblem. Canada, larger than the United States, is rich in forest and mineral resources. Most Canadians live along their nation's southern border. *Area: 3,851,809 square miles. Population: 18,041,000. Capital: Ottawa. U.N. charter member.*



**CENTRAL AFRICAN REPUBLIC** Premier Barthélemy Boganda designed the flag before his death in a 1959 air crash. It adds blue and white to the popular African tricolor of red, yellow, and green. *Area: 238,224 square miles. Population: 1,103,000. Capital: Bangui. Joined U.N. 1960.*



**CEYLON** adapted its banner

from the Lion Flag of the ancient kings of Kandy. A stylized Singhalese pinnacle adorns each corner. Stripes added in 1950 honor regions of the country. Famous as a tea-grower, Ceylon imports a third of its food. *Area: 25,332 square miles. Population: 9,612,000. Capital: Colombo. Joined U.N. 1955.*



**CHAD'S** Assembly of 85 deputies proposed as many designs before agreeing on a popular African tricolor, slightly changed: Islam's green also stands for a minority party; deputies substituted blue. *Area: 495,753 square miles. Population: 2,600,000. Capital: Fort Lamy. Joined U.N. 1960.*



**CHILE** Red represents blood shed for liberty; white, the snows of the Andes; blue, the heavens. Solitary star, once used on Indian pennants, guides the country's destiny. Three regions—hot northern desert, fertile central valley, and southern rain forest—divide Chile, which boasts the world's southernmost town, Puerto Williams. *Area: 286,396 square miles. Population: 7,627,000. Capital: Santiago. U.N. charter member.*

**CHINA** Since 1949 the colors of the Chinese Republic have flown in exile on Formosa, less than 100 miles from the Asian mainland. The sun symbolizes the Kuomintang Party; the 12



rays, progressive spirit. Red, white, and blue bespeak sacrifice, justice, and fraternity. *Area: 13,885 square miles. Population: 10,661,000. Capital: Taipei. U.N. charter member.*



**COLOMBIA** Designed in 1806, this red, blue, and yellow banner symbolized defiance of Spain. Simón Bolívar's union of South American states later adopted it, and members of his short-lived republic—Ecuador, Venezuela, and Colombia—retain its colors. *Area: 439,519 square miles. Population: 14,132,000. Capital: Bogotá. U.N. charter member.*



**CONGO** Green, yellow, and red tricolors signify African unity among former French colonies: Congo, Cameroun, Dahomey, Guinea, Mali, and Senegal. Diagonal stripe flies only on Congo's standard. *Area: 132,000 square miles. Population: 795,000. Capital: Brazzaville. Joined U.N. 1960.*

**CONGO, REPUBLIC OF THE** In 1884 King Leopold II of Belgium established the Congo Free State as a rich rubber-producing region in Central



**AFRICA** Gold star on blue symbolized the plan. Belgium made the Congo a colony in 1908; 52 years later the stormy infant republic adopted the Free State flag, adding six small stars for the provinces. The large star symbolizes the explorer Stanley: a bright hope in African darkness. *Area: 905,380 square miles. Population: 13,984,000. Capital: Leopoldville. Joined U.N. 1960.*



**COSTA RICA** In 1823 five Central American countries adopted a blue and white design after gaining freedom from Spain (see El Salvador, Guatemala, Honduras, and Nicaragua). Costa Rica's flag, with coat of arms, retains the pattern but adds a red stripe. *Area: 19,653 square miles. Population: 1,171,000. Capital: San José. U.N. charter member.*



**CUBA** Before the Spanish-American War an exiled patriot conceived *La Estrella Solitaria*—Cuba's "Lone Star"—to represent glory and independence. The largest West Indies island, Cuba lies less than 100 miles from the United States. Despite economic upheaval after Fidel Castro seized power in 1959, Cuba still leads the world in growing sugar

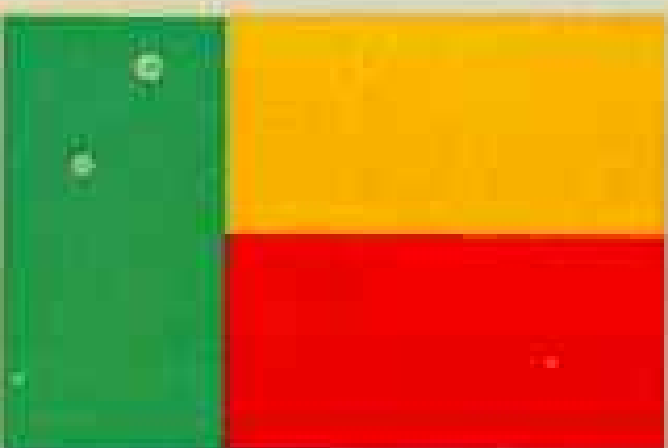
cane. *Area: 44,218 square miles. Population: 6,743,000. Capital: Havana. U.N. charter member.*



**CYPRUS** Greek and Turkish Cypriots share the green, gold, and white of their newly independent island nation in the eastern Mediterranean. Among U.N. flags, only that of Cyprus bears a map of the country. Crossed olive branches signify peace. *Area: 3,572 square miles. Population: 579,000. Capital: Nicosia. Joined U.N. 1960.*

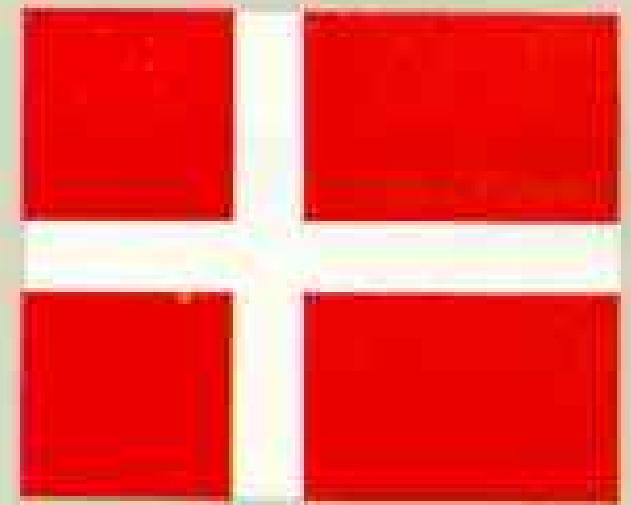


**CZECHOSLOVAKIA** The banner of this Communist bloc member commemorates the union after World War I of Bohemians and Slovaks. Bohemians adopted red and white in the 12th century. Slovakia symbolizes its hills with a blue triangle. *Area: 49,366 square miles. Population: 13,675,000. Capital: Prague. U.N. charter member.*



**DAHOMEY** This former French colony's tricolor repeats the popular red, yellow, and green theme in an unusual vertical-horizontal design. Dahomey's economy rests chiefly on

30,000,000 oil palms. *Area: 44,695 square miles. Population: 2,000,000. Capital: Porto Novo. Joined U.N. 1960.*



**DENMARK** One legend says the Dannebrog, Denmark's flag, fell from heaven when King Waldemar II defeated Estonians in 1219; another, that he had a battlefield vision of a white cross against a red sky. The flag is among the oldest in continuous use. *Area: 16,619 square miles. Population: 4,547,000. Capital: Copenhagen. U.N. charter member.*



**DOMINICAN REPUBLIC** Red signifies the blood of heroes; white, redemption; blue, liberty. The Spanish-speaking Dominican Republic shares the island of Hispaniola with French-speaking Haiti. *Area: 18,816 square miles. Population: 2,994,000. Capital: Ciudad Trujillo. U.N. charter member.*



**ECUADOR** Part of Greater Colombia until 1830, Ecuador retained that country's colors, adding arms. Condor, symbol of strength, and lance-tipped banners frame the emblem. *Area: 104,506 square miles.*

*Population: 4,298,000. Capital: Quito. U.N. charter member.*



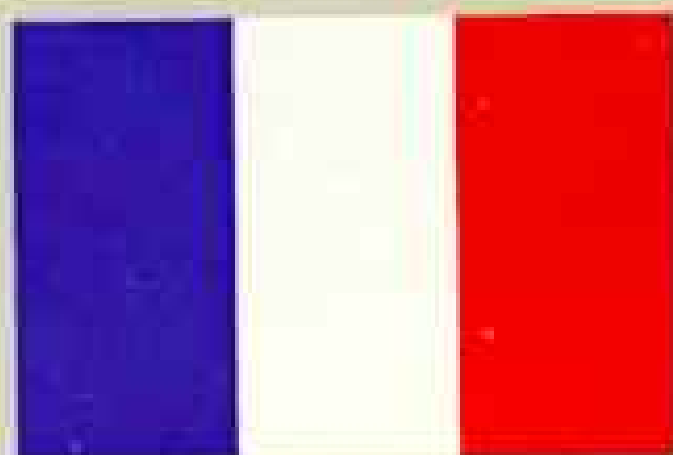
**EL SALVADOR** Modified from the original United Provinces flag (see Nicaragua), the colors of Central America's smallest nation bear a coat of arms inscribed "1821," date of independence from Spain. *Area: 7,722 square miles. Population: 2,613,000. Capital: San Salvador. U.N. charter member.*



**ETHIOPIA** A tricolor representing the Holy Trinity flies over this ancient Christian empire. The standard may also symbolize rainbows that appear above its isolated plateaus. Another tradition says that red, yellow, and green stand for three major sections of the nation and for faith, hope, and charity. *Area: 457,266 square miles. Population: 21,800,000. Capital: Addis Ababa. U.N. charter member.*



**FINLAND** The flag exalts the country's beautiful landscape: A blue cross represents Finland's myriad lakes; white stands for the deep snows of its long winters. *Area: 130,119 square miles. Population: 4,478,000. Capital: Helsinki. Joined U.N. 1955.*



**FRANCE's** tricolor, replacing the royal fleurs-de-lis on a white background, was a symbol of revolution and the rights of man. An official decree of 1794 ordered a square flag with three equal vertical bands. In a later version an optical illusion appeared; the stripes differed slightly in width yet seemed at a distance to be equal. Original symmetry was restored in 1946, but French ships still fly the unequal stripes for better visibility. *Area: 212,822 square miles. Population: 45,660,000. Capital: Paris. U.N. charter member.*



**GABON** A touch of poetry enhances this horizontal tricolor. The yellow band signifies the Equator running between green forests and deep-blue sea. Gabon exports mainly valuable woods. *Area: 103,088 square miles. Population: 420,000. Capital: Libreville. Joined U.N. 1960.*



**GHANA** In 1957, the Gold Coast and British Togoland joined to form this independent state, opening Africa's drive toward self-government. Red stripe honors independence;

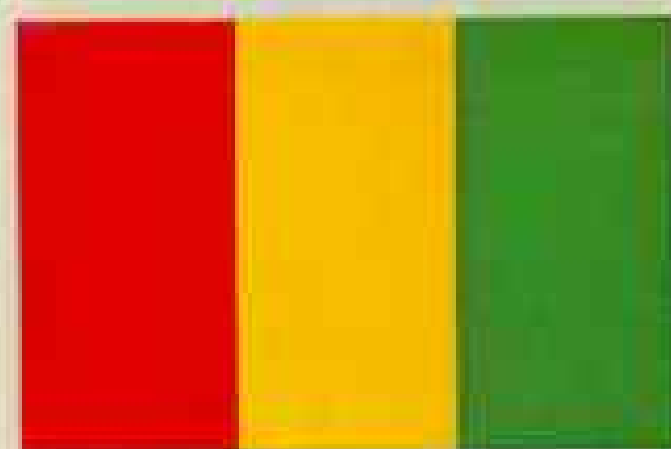
gold, wealth; green, forests and farms. Black star represents the lodestar of African freedom. *Area: 91,843 square miles. Population: 6,691,000. Capital: Accra. Joined U.N. 1957.*



**GREECE**, cradle of liberty and Western culture, commemorates her struggle for freedom in her blue and white national emblem, adopted in 1822 during the War of Independence which ended more than three centuries of Turkish rule under the Ottoman Empire. The cross symbolizes Greece's Christian faith. *Area: 51,182 square miles. Population: 8,300,000. Capital: Athens. U.N. charter member.*



**GUATEMALA** The republic's coat of arms dominates Guatemala's blue and white banner. Exotic green and scarlet quetzal, the national bird, perches above a scroll proclaiming independence from Spain on September 15, 1821. A wreath frames the insignia. *Area: 42,042 square miles. Population: 3,759,000. Capital: Guatemala. U.N. charter member.*



**GUINEA's** tricolor repeats

Africa's popular red, yellow, and green. The nation, loosely federated with Ghana, is mainly agricultural; grassy uplands rise from a humid coastal plain. Formerly part of French West Africa, Guinea possesses much of the world's bauxite, source of aluminum. *Area: 94,925 square miles. Population: 3,000,000. Capital: Conakry. Joined U.N. 1958.*



**HAITI** Fighting Napoleon Bonaparte for freedom, Haitians used variations of the French colors. Since 1807 the horizontal bicolor has prevailed. Palm tree signifies pride. *Area: 10,714 square miles. Population: 3,505,000. Capital: Port au Prince. U.N. charter member.*

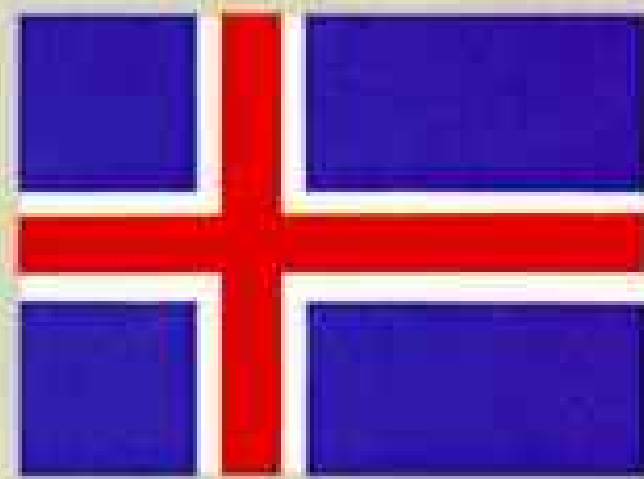


**HONDURAS** In Spanish the name means "depths," referring to the country's deep coastal waters. Stars symbolize five United Provinces of Central America (see Costa Rica). *Area: 43,277 square miles. Population: 1,950,000. Capital: Tegucigalpa. U.N. charter member.*



**HUNGARY** A red, white, and green carpet laid down for a

17th-century Hungarian king inspired the colors. Communist rulers in 1949 added a Socialist emblem to the white stripe; outraged Hungarians managed its removal eight years later. *Area: 55,919 square miles. Population: 10,024,000. Capital: Budapest. Joined U.N. 1955.*



**ICELAND** Colors of this island nation's flag were chosen as characteristic of the land. Blue stands for its mountains; white, its glaciers; red, the fire of its volcanoes. The cross proclaims a Christian people. *Area: 39,765 square miles. Population: 174,000. Capital: Reykjavik. Joined U.N. 1946.*



**INDIA** Upon attaining independence from Britain in 1947, India adopted the flag of the Congress Party, the leader for independence, except for a slight variation. The saffron band symbolizes courage and sacrifice; the white, peace and truth. Green stands for faith and chivalry. The spoked wheel—a spinning wheel on the Congress Party flag—symbolizes India's ancient culture. *Area: 1,259,900 square miles. Population: 438,000,000. Capital: New Delhi. U.N. charter member.*

**INDONESIA** The plain red-over-white banner, the reverse of Poland's white-over-red, first flew during the Madjopahit Empire (1200-1475). Under



Netherlands rule the flag became a revolutionary symbol of independence, achieved in 1949. It now flies over some 3,000 islands of the world's largest archipelago. *Area: 575,893 square miles. Population: 92,600,000. Capital: Djakarta. Joined U.N. 1950.*

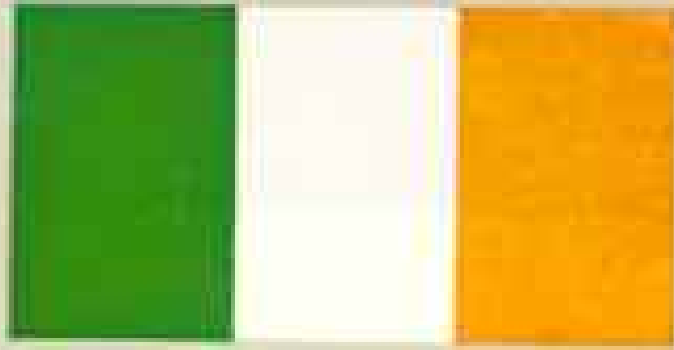


**IRAN**'s emblem—a sun rising over a lion brandishing a sword—was an ancient Persian badge of royalty; a Shah still reigns in modern Iran. Green band proclaims Islam. White stands for peace, red for valor. The flag frequently is flown without the emblem. *Area: 636,293 square miles. Population: 29,780,000. Capital: Teheran. U.N. charter member.*



**IRAQ** Revolt in 1958 resulted in a new flag with old colors. Black, white, and green represent periods of Arab rule in Iraqi history. Eight-pointed star and yellow orb represent Iraq's Arab and Kurdish peoples; the star's red points honor the revolution. *Area: 171,600 square miles. Population: 6,952,000. Capital: Baghdad. U.N. charter member.*

**IRELAND** The Emerald Isle, rich with the green of grass and



shamrock, includes green in its tricolor. Orange refers to Northern Ireland, part of the United Kingdom. White symbolizes peace and understanding between the two countries. The design dates from Ireland's 19th-century independence movement. *Area: 27,136 square miles. Population: 2,834,000. Capital: Dublin. Joined U.N. 1955.*



**ISRAEL'S** banner evokes the land's religious traditions. Adapted in 1948 from the Zionist flag, the blue and white pattern uses colors traditional in the Jewish prayer shawl. The six-pointed center design, called the Star of David, actually represents a shield symbolic of the protection implicit in a national flag. *Area: 7,992 square miles. Population: 2,150,000. Capital: Jerusalem. Joined U.N. 1949.*



**ITALY** When Napoleon invaded Italy in 1796, his soldiers carried a green, white, and red tricolor which he reputedly designed. A variation of the French revolutionary flag, it flew over the Italian boot during the Napoleonic period. The country later adopted it. Col-

ors symbolize democracy, independence, and unity. *Area: 116,300 square miles. Population: 49,368,000. Capital: Rome. Joined U.N. 1955.*



**IVORY COAST** The tricolor of the Ivory Coast reflects geographical diversity. Orange stands for the savanna of the north; green, the coastal forest belt. White represents unity between them. *Area: 124,303 square miles. Population: 3,103,000. Capital: Abidjan. Joined U.N. 1960.*



**JAPAN** According to legend, the sun goddess was an ancestor of the imperial family, and early chronicles mention images of the sun as emblems on banners. Adoption in 1870 of a national flag, with the present design, represented a new era in the country's history: No longer shut off from the rest of the world, Japan was rising like the sun to assume a place among nations. *Area: 142,726 square miles. Population: 93,820,000. Capital: Tôkyô. Joined U.N. 1956.*



**JORDAN** The desert kingdom adopted traditional Arab colors: White and black survive from early Arabian caliphs,

Green is sacred to Mohammed. The star stands for unity among Arab states. Red honors the reigning king, Hussein. *Area: 37,300 square miles. Population: 1,658,000. Capital: Amman. Joined U.N. 1955.*



**LAOS** A three-headed white elephant exemplifies the country's title—Land of a Million Elephants—and signifies three ancient principalities. Stylized parasol above symbolizes monarchy. Five steps below represent Buddhism's five commandments against murder, theft, falsehood, adultery, and abuse of drink. *Area: 91,428 square miles. Population: 1,700,000. Capital: Vientiane. Joined U.N. 1955.*



**LEBANON**, a former French mandate, flies red and white stripes adapted from the French tricolor. The eternal cedar, ancient symbol of this eastern Mediterranean land, stands on the flag as it has stood on Lebanese soil since before the time of King Solomon. *Area: 4,015 square miles. Population: 1,555,000. Capital: Beirut. U.N. charter member.*





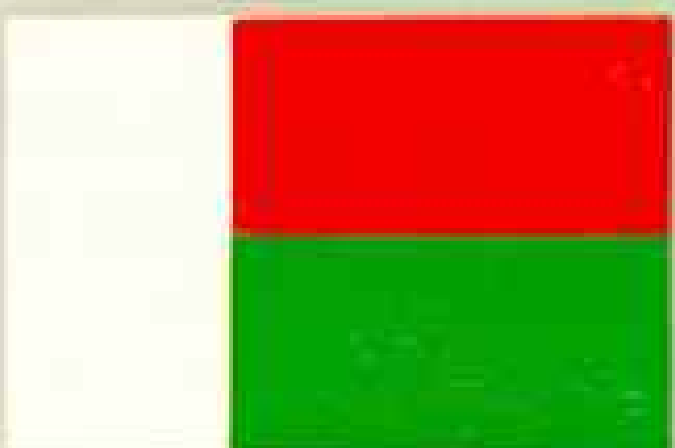
**LIBERIA** Founded in 1822 by free American Negroes, Liberia adopted a variation of Old Glory's stars-and-stripes design. At that time the single star represented the only free Negro state in Africa. Eleven stripes stand for signers of the country's Declaration of Independence; colors honor its three regions. *Area: 43,000 square miles. Population: 1,250,000. Capital: Monrovia. U.N. charter member.*



**LIBYA** Among the first to win independence by a United Nations resolution, Libya in 1951 chose a tricolor of red, black, and green to honor the three North African provinces of Fezzan, Cyrenaica, and Tripolitania. Crescent and star proclaim Islam. *Area: 679,359 square miles. Population: 1,172,000. Capitals: Tripoli, Benghazi. Joined U.N. 1955.*



**LUXEMBOURG** The colors in the flag of this tiny Grand Duchy date from 1235, when the Counts of Luxembourg adopted a coat of arms that displayed a red lion on a white field with blue stripes. *Area: 998 square miles. Population: 325,000. Capital: Luxembourg. U.N. charter member.*



**MALAGASY REPUBLIC** A schoolteacher won the flag-designing contest held in 1960, year of independence from France. In blocklike design, white symbolizes purity, red, sovereignty, and green, hope. *Area: 227,800 square miles. Population: 5,287,000. Capital: Tananarive. Joined U.N. 1960.*



**MALAYA, FEDERATION OF** Malaysians in 1957 selected a flag pattern resembling that of the United States. The star and crescent of Islam shine in the canton. Red and white stripes and the star's 11 points stand for the federation. Red, white, and blue signify association with the British Commonwealth of Nations. *Area: 50,700 square miles. Population: 6,815,000. Capital: Kuala Lumpur. Joined U.N. 1957.*



**MALI** Only this former French possession uses a human figure on its standard. The stylized symbol of a man, arms raised to heaven and feet planted on earth, signifies faith and devotion to the soil. *Area: 464,873 square miles. Population: 4,300,000. Capital: Bamako. Joined U.N. 1960.*



**MEXICO** Coat of arms on the Mexican tricolor illustrates

an old Aztec legend: The wandering nation was to find an island home in a lake by whose shores cactus grew. On one cactus the Aztecs would see an eagle holding a snake in its beak. Green, white, and red stripes represent independence, religion, and union. *Area: 760,336 square miles. Population: 34,300,000. Capital: Mexico. U.N. charter member.*



**MOROCCO** To distinguish their plain banner from all other red flags, Moroccans in 1912 added a five-pointed star; its green proclaims Islam. In 1956 the country gained freedom from France and Spain. *Area: 171,305 square miles. Population: 11,598,000. Capital: Rabat. Joined U.N. 1956.*



**NEPAL** This Himalaya-crowned land memorializes its mountains in the unique, double-peaked shape of its standard. Human faces in the two triangles represent the moon and the sun. Nepal's mountains include seven of the world's ten highest, among them Everest. *Area: 54,362 square miles. Population: 9,180,000. Capital: Katmandu. Joined U.N. 1955.*

**NETHERLANDS** Fighting under the orange, white, and blue colors of William the Silent, Prince of Orange, the Dutch won independence from Spain in the 17th century. William's banner, the *Prinsenvlag* (Prince's



Flag thus inspired The Netherlands' standard. After 1630, red and dark blue replaced orange and light blue for greater visibility when flown at sea. *Area: 12,529 square miles. Population: 11,555,000. Capital: The Hague, Amsterdam. U.N. charter member.*



**NEW ZEALAND** Stars of the Southern Cross emblazon the national banner. This South Pacific member of the British Commonwealth depicts the flag of its mother country in the top left quarter. *Area: 103,736 square miles. Population: 2,403,000. Capital: Wellington. U.N. charter member.*

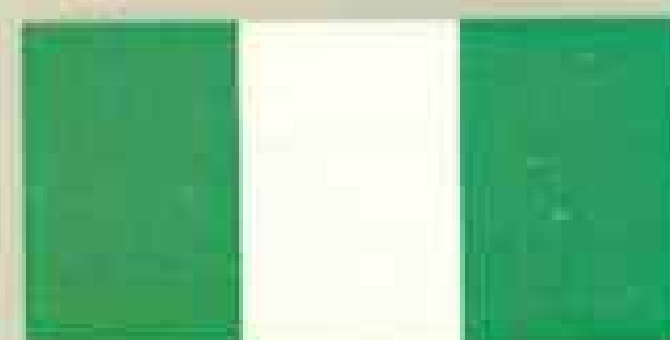


**NICARAGUA** Like several neighboring countries, this largest of Central American nations derived its colors from the flag adopted in 1823 by the United Provinces of Central America. Nicaragua became a republic in 1838. The encircled triangle denotes justice, truth, and right. *Area: 57,143 square miles. Population: 1,471,000. Capital: Managua. U.N. charter member.*

**NIGER** This former French colony flies a horizontal tricolor of orange, white, and green, with an orange orb for



the sun. Now independent, Niger elected to remain outside the French Community. *Area: 458,994 square miles. Population: 2,850,000. Capital: Niamey. Joined U.N. 1960.*



**NIGERIA** Among thousands of entries, that of a 22-year-old student won the national competition to design the emblem of Nigeria. Most populous nation in Africa, this former British colony proclaims its agricultural character by means of two green stripes. A central white stripe on the banner signifies unity and peace. *Area: 330,169 square miles. Population: 34,296,000. Capital: Lagos. Joined U.N. 1960.*



**NORWAY** Like all Scandinavian colors, Norway's includes a cross. From 1381 to 1814, Norwegians flew the Dannebrog, ruling Denmark's white cross on a red field. United with Sweden until 1905, Norway later added a blue inner cross to signify self-rule. *Area: 125,065 square miles. Population: 3,602,000. Capital: Oslo. U.N. charter member.*

**PAKISTAN** Two color panels reflect the nation's physical division: India separates East



and West Pakistan. Green field and Islamic symbols honor the predominant Moslem faith; white represents non-Moslem minorities. Formerly part of India, Pakistan became a British Commonwealth Dominion in 1947; a republic in 1956. *Area: 364,797 square miles. Population: 93,812,000. Capital: Rawalpindi. Joined U.N. 1947.*



**PANAMA** The first president's son designed Panama's quartered emblem in 1903, year of independence from Colombia. White stands for peace, red and blue for Panama's two political parties. Stars in the white blocks symbolize faith and strength. *Area: 28,753 square miles. Population: 1,053,000. Capital: Panama. U.N. charter member. (Canal Zone, leased to U.S.—Area: 553 square miles. Population: 42,000.)*



**PARAGUAY** alone among the United Nations has a separate design on each side of its banner. The obverse, shown here, bears the national coat of arms—a star encircled by palm and olive branches—on the central stripe. The reverse carries the design of the Treasury Seal. *Area: 157,047 square miles.*

*Population: 1,768,000. Capital: Asunción. U.N. charter member.*



**PERU** Legend has it that the colors, red and white, came in a dream to General José de San Martín of Argentina, who in 1821 helped Peru win freedom from Spain. The coat of arms depicts llama, cinchona tree, and golden cornucopia. Laurel and crown honor Lima. *Area: 496,222 square miles. Population: 10,857,000. Capital: Lima. U.N. charter member.*



**PHILIPPINES** The design includes features of early revolutionary flags. The eight-rayed sun, a beacon toward freedom, honors the first Philippine provinces to revolt against Spain. Three stars signify the territorial divisions of Luzon, the Visayas, and Mindanao. In wartime, red stripe flies above the blue. *Area: 115,707 square miles. Population: 27,456,000. Capital: Quezon City. U.N. charter member.*



**POLAND** Severe red and white colors date from 1919, after Poles formed their own republic. The unusual narrow shape was decreed in 1955. Once the national arms bore a white eagle perched in a tree. According to Polish legend, the bird stood as a marker for the capital, Warsaw. *Area: 120,359*

*square miles. Population: 29,731,000. Capital: Warsaw. U.N. charter member.*



**PORTUGAL** Seven castles and seven shields adorn the national coat of arms. The castles hail victories of early Portuguese; the shields, defeats of Moorish rulers. A golden sphere, symbolic of the world Portuguese navigators explored, surrounds the insignia. *Area: 35,598 square miles. Population: 9,167,000. Capital: Lisbon. Joined U.N. 1955.*



**ROMANIA** The red star atop the emblem proclaims a Communist state. Coat of arms depicts mountain, forest, and wheat field. Blue stands for sky, yellow for wealth of the soil, and red for courage. *Area: 91,700 square miles. Population: 18,352,000. Capital: Bucharest. Joined U.N. 1955.*



**SAUDI ARABIA** Kingdom of sand and oil, the birthplace of Mohammed flies an unmistakable green banner. Arabic script filling the field reads from right to left: "There is no God but God, and Mohammed is His Prophet." The sword of Islam

*underlines the motto. Area: 617,760 square miles. Population: 6,036,000. Capital: Ar Riyāḍ. U.N. charter member.*



**SENEGAL** Independent Senegal, once French, adopted the red, green, and yellow of other new West African nations to suggest unity and to represent its three political parties. Star symbolizes hope. *Area: 76,123 square miles. Population: 2,550,000. Capital: Dakar. Joined U.N. 1960.*



**SOMALI REPUBLIC** The blue of African skies shines in the Somali flag. It also deliberately matches the color of the U.N. flag. Five-pointed star signifies the five regions inhabited by Somali peoples. *Area: 246,200 square miles. Population: 1,990,000. Capital: Mogadishu. Joined U.N. 1960.*



**SOUTH AFRICA, REPUBLIC OF** Dutch settlers' colors and British Union Jack outline South Africa's history under two European powers, climaxed this year by withdrawal from the British Commonwealth. *Area:*

472,359 square miles. Population: 15,841,000. Capitals: Pretoria, Cape Town. U.N. charter member.



**SPAIN** In legend, a Spanish warrior-king drew bloody fingers over a yellow shield, thus conceiving the banner. Its colors match those of Spain's old kingdom of Aragon. National arms show an eagle flanked by the Pillars of Hercules. Area: 194,396 square miles. Population: 10,128,000. Capital: Madrid. Joined U.N. 1955.



**SUDAN** Blue represents the Nile River, which splits the country; yellow, the Nubian desert; green, agriculture. Sudanese in 1956 chose independence over dual British-Egyptian administration. Area: 967,500 square miles. Population: 11,615,000. Capital: Khartoum. Joined U.N. 1956.



**SWEDEN** Legend attributes the banner's origin to a revelation. When King Erik IX knelt in prayer before battle during his 12th-century crusade to Finland, he saw a yellow cross radiating from the sun against the blue sky. Area: 173,622 square

miles. Population: 7,480,000. Capital: Stockholm. Joined U.N. 1946.



**THAILAND** Blue stripe represents royalty; the white stripes, Buddhism. Red stands for Thailand (formerly called Siam) itself, whose name means Free Nation. Area: 198,456 square miles. Population: 25,520,000. Capital: Bangkok. Joined U.N. 1946.



**TOGO** A white star lights the way to progress for this former French U.N. Trust Territory. Red field honors patriotism. Green and yellow match the color scheme of other new West African republics. Area: 22,008 square miles. Population: 1,442,000. Capital: Lomé. Joined U.N. 1960.



**TUNISIA** Once a fief of the Ottoman Empire, later a French protectorate, Tunisia flies the crescent and star of Turkey in a white orb representing the sun. The red of the field once led Turks into battle. Tunisia became a republic in 1957. Area: 48,332 square miles. Population: 3,965,000. Capital: Tunis. Joined U.N. 1956.



**TURKEY** A crescent moon's light, says a legend, saved Byzantium in 339 B.C. from attack by Philip of Macedon, father of Alexander the Great. Crescent frames Al Tarek, the Koran's morning star. Area: 301,380 square miles. Population: 27,803,000. Capital: Ankara. U.N. charter member.



**UKRAINIAN S.S.R.** One of 15 constituent republics of the U.S.S.R., the Ukraine reproduces the Soviet banner in the larger band. Blue symbolizes the rich soil of Russia's chief wheat-growing region. Area: 222,625 square miles. Population: 41,869,000. Capital: Kiev. U.N. charter member.



**U.S.S.R.** The Soviet Union adopted the red flag of revolution to honor the Communist Party and to imply blood brotherhood. The star represents the authority of the state; its five points, the five continents, admitted goals of Communist expansion. Crossed hammer and sickle represent the union of factory and farm. Area: 8,650,000 square miles. Population: 214,400,000. Capital: Moscow. U.N. charter member.

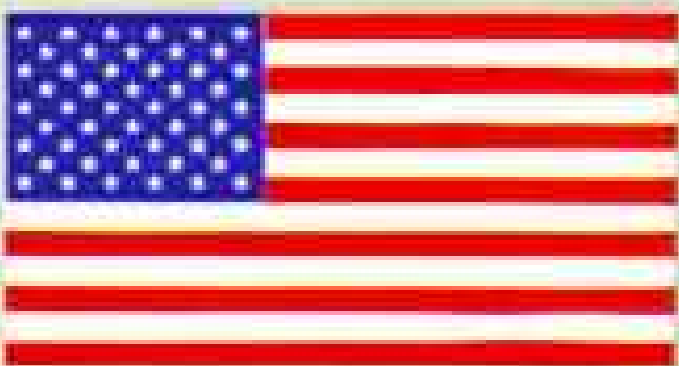
**UNITED ARAB REPUBLIC** Prerevolutionary days are recalled by black; red denotes the



revolution; white, future peace. Twin stars honor Egypt and Syria, separate republics until 1958. *Area: 457,328 square miles. Population: 30,641,000. Capital: Cairo. Egypt and Syria both U.N. charter members; after merging as the United Arab Republic, they rejoined in 1958 as a single member.*



**UNITED KINGDOM** The British Union Jack combines crosses of the patron saints of England, Scotland, and Ireland. The red ensign with Union Flag in the canton flies above merchant ships commanded by civilians; the blue ensign, above those under Royal Navy command. Warships fly the white ensign. *Area: 94,214 square miles. Population: 52,539,000. Capital: London. U.N. charter member.*



**UNITED STATES** In early 1776 revolutionary American colonists raised their own proud colors, retaining Great Britain's Union Jack but adding 13 red and white stripes. Congress adopted an official flag in June, 1777, replacing the Union Jack with a canton of white stars on a blue field. A final flag law in 1818 decreed 13 stripes and a canton of 20 stars representing the Union. Each new State admitted adds a star. Alaska and Hawaii brought the total to 50.

*Area: 3,628,130 square miles. Population: 183,127,000. Capital: Washington, D.C. U.N. charter member.*



**UPPER VOLTA** Symbolic of precious water in an arid land, formerly part of French West Africa, the tricolor's bands stand for the Black, White, and Red branches of Africa's Volta River. *Area: 105,838 square miles. Population: 3,567,000. Capital: Ouagadougou. Joined U.N. 1960.*



**URUGUAY** The people of Uruguay adopted this national ensign in 1830. Nine blue and white stripes represent political divisions of that day. The "Sun of May" symbolizes independence. *Area: 72,172 square miles. Population: 2,803,000. Capital: Montevideo. U.N. charter member.*



**VENEZUELA**'s tricolor comes from the banner flown by the liberator of South America, Simón Bolívar. In 1830, Venezuela withdrew from his union but retained the colors in his flag. Stars on the blue stripe symbolize the nation's original seven provinces. *Area: 352,-*

*142 square miles. Population: 6,700,000. Capital: Caracas. U.N. charter member.*



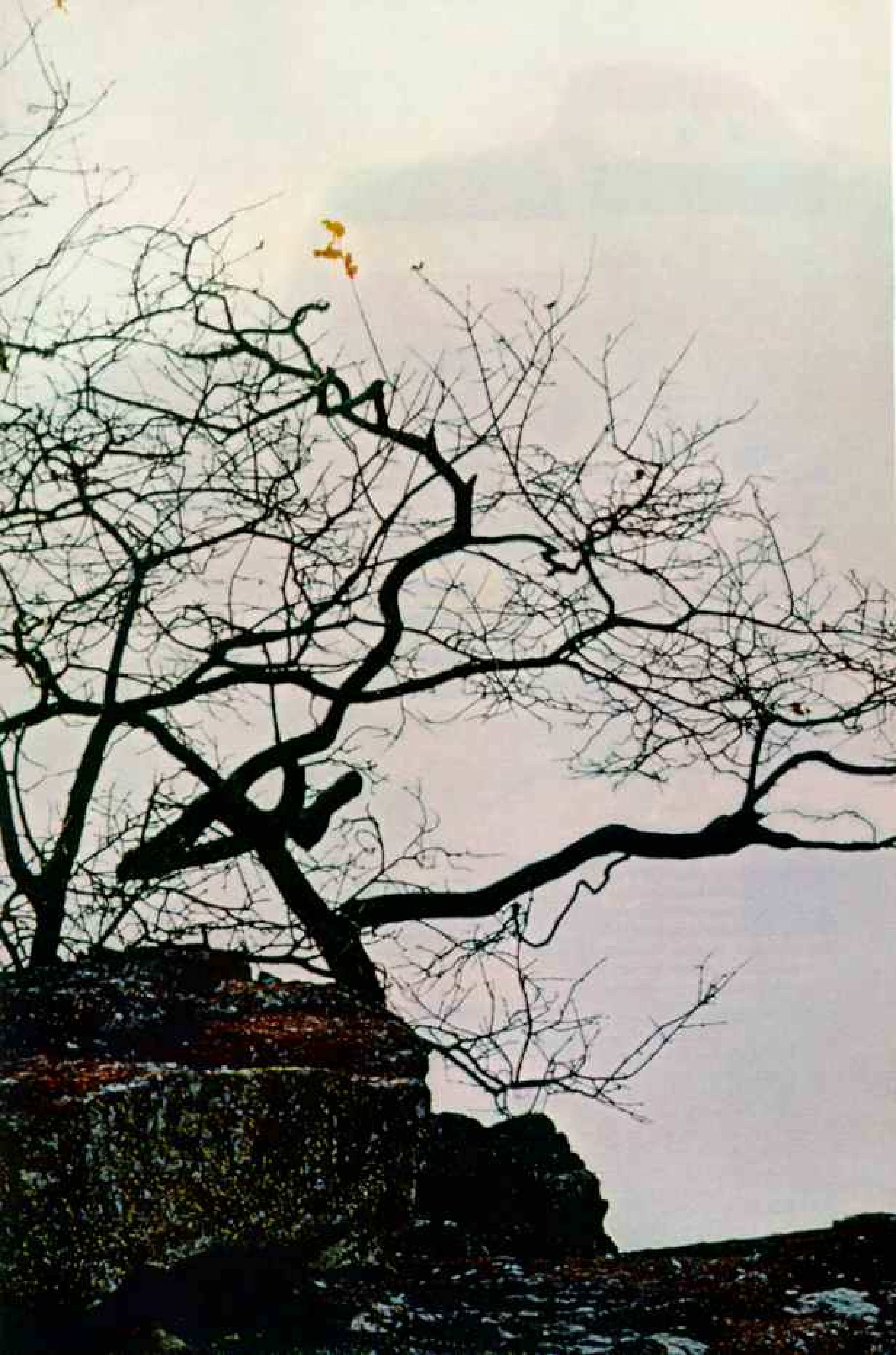
**WHITE RUSSIAN S.S.R.** All republics of the Soviet Union have adopted variations of the Communist banner. White Russia's colors contain an unusual woven-carpet design along one margin. Red band for Communism and green for the land share the field. *Area: 80,154 square miles. Population: 8,112,000. Capital: Minsk. U.N. charter member.*



**YEMEN** Five stars represent regions of the country, the five dogmas of Islam, and periods of daily prayer. Red field and scimitar commemorate Yemeni defense of liberty. *Area: 75,000 square miles. Population: 4,500,000. Capitals: Sa'ad' and Ta'izz. Joined U.N. 1947.*



**YUGOSLAVIA**'s tricolor combines the flags of Montenegro, Serbia, and Croatia; World War II partisans added the large red star. Red now stands for the long battle against foreign rule; white, the righteousness of the struggle, and blue, faith in final victory. *Area: 98,766 square miles. Population: 18,756,000. Capital: Belgrade. U.N. charter member.*



# ANGOLA, UNKNOWN AFRICA

By VOLKMAR WENTZEL

Foreign Editorial Staff

*Photographs by the author*

**W**E WERE APPROACHING the *fim do mundo*, the "end of the world."

Jouncing over the rough roads of southern Angola, we reached the lonely administrative post of Caiundo, a tiny cluster of buildings squatting beside the sluggish Cubango River. Here was a rube ferry—a board platform buoyed on empty oil drums—on which our cars could cross into the expanse of bushland to the east.

While the African crewmen shuttled the unwieldy raft back and forth, transporting our truck and two Jeeps to the opposite bank, I took another look at the map. The vast area beyond was nearly barren of place names (map, page 350).

In Angola, also called Portuguese West Africa, lie the oldest European settlements south of the Sahara; the Portuguese have been here for 500 years. Since 1951, when Portugal declared Angola

*Veiled in haze, twin peaks of the  
Chela range tower above a nomadic*

*Kuvale tribesman in Angola's hinterland*

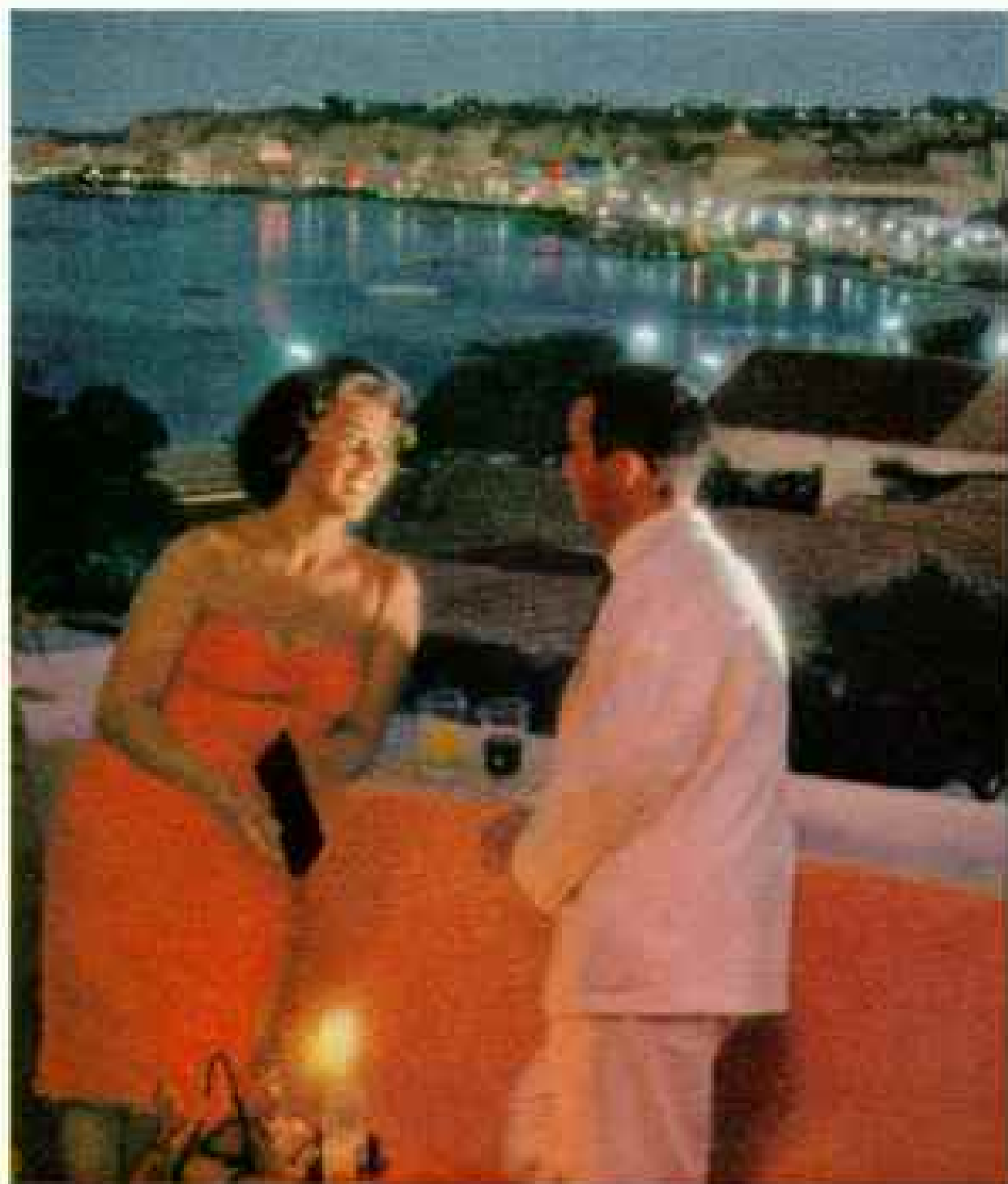
**Editor's note:** During recent months, Angola, one of the largest territories in Africa still under European control, has been constantly in the news. Stories of unrest, insurrection, and bloodshed have been many. Volkmar Wentzel, a member of NATIONAL GEOGRAPHIC's Foreign Editorial Staff, less than two years ago traveled the length and breadth of Angola, even to its remotest wilderness areas. His journey could not be made today. With Angola in ferment, travel by foreign journalists has been closely restricted. Mr. Wentzel compiled a unique photographic record of a little-known land; his article is based upon careful notes of his experiences and observations.

an overseas province, she has considered it as much a part of the mother country as Hawaii is of the United States.

But nothing, I felt, could be farther removed from Europe than the region of Angola we were about to enter—the southeastern section, still largely unexplored, almost a blank on the map. It is inhabited only by wild game and wandering tribes, among them the shy, primitive Bushmen.

"It's truly the 'end of the world,' as the Portuguese call it," commented my host, Señor José Fénykövi. "Until 1954, when I made a 300-mile trip through it here," he said, drawing a pencil line across the empty space, "no motor vehicle had ever crossed it." He marked an X. "That's where I got my elephant."

And what an elephant it was—a monster 13 feet 2 inches tall, the largest ever recorded—which he donated to the Smithsonian In-



Twinkling lights jewel the crescent bay of Luanda, Angola's modern capital, viewed from the roof of the Hotel Continental. Serene during the author's visit, Angola recently experienced outbreaks of violence.

Cosmopolitan Luanda, during a postwar boom, changed from a sleepy port to a modern city of some 200,000. From the Meteorological Observatory, Luanda suggests a miniature Rio de Janeiro. Tile roofs add a Mediterranean flavor.





stitution in Washington, D. C. I had watched the Smithsonian taxidermists reconstruct this majestic tusked beast, and photographed it later in the rotunda of the Natural History Building (page 351).

Talking with Señor Fénykövi at the time, I found him an enthusiastic photographer; graciously, he invited me to join his next expedition—a trip to collect a specimen of hippopotamus needed by the Natural History Museum of Bern, Switzerland.

Now, six months later, in company with José and Señora Fénykövi, their guest Miss Jacqueline Cochran, the American aviatrix, and José's aide, Mario Pontes de Sousa, I was at the gateway to the fim do mundo. For me it was the prelude to a 6,000-mile journey across mountains, plains, and rich plantations, as well as jungles, deserts, and modern cities of this fascinating land.

With us also were three Kuvale game trackers and the Fénykövis' Spanish cook, Manola, who could perform miracles in a kitchen or bush camp. We crossed the Cubango and drove downstream through trackless bush and open grasslands and pitched our tents beside a wide stretch of the river where José previously had seen many hippos.

#### Playing Tag With a Wounded Hippo

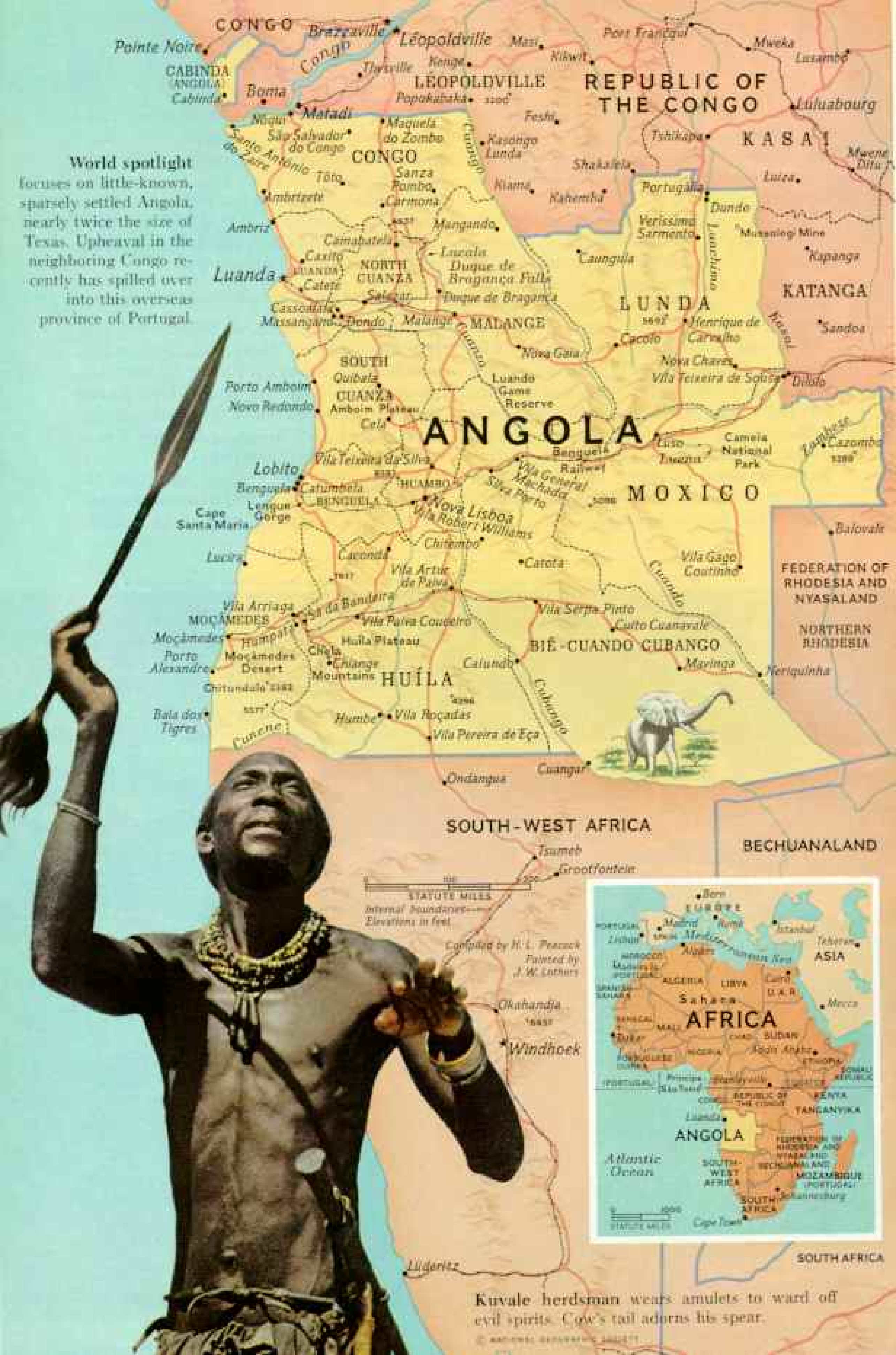
Early next morning we hiked to the spot José had explored. There I stationed myself with Kukuia, one of the Kuvale trackers, in a hippo tunnel—a path up the riverbank among the reeds—through which the beasts came at night to feed. José, Mario, and tracker Petene moved cautiously downstream.

Soon we heard the crack of José's rifle. He had wounded a hippo, and it had submerged. At intervals we got glimpses of the animal's

RESEARCHERS BELOW AND HIS ESTABLISHMENT BY VOLUNTEER BENTON, NATIONAL GEOGRAPHIC SOCIETY © W. E. B.



World spotlight focuses on little-known, sparsely settled Angola, nearly twice the size of Texas. Upheaval in the neighboring Congo recently has spilled over into this overseas province of Portugal.



# ANGOLA

STATUTE MILES  
 Internal boundaries  
 Elevations in feet

Compiled by H. L. Peacock  
 Painted by J. W. Luthers



Kuvale herdsman wears amulets to ward off evil spirits. Cow's tail adorns his spear.

bulbous eyes, nostrils, and flickering ears as he surfaced to breathe with a resounding snort.

In the mounting midday heat, our tunnel became a Turkish bath. Ants crawled up our cramped legs, and biting flies attacked us.

Now Mario circled back upstream and crossed the river; with binoculars we watched him stalking through the tall shoreline reeds.

Suddenly, near him, the hippo surfaced. Kukuia signaled, and the hunter quickly aimed and fired. The hippo grunted and sank like a torpedoed freighter. In a few hours the carcass, bloated by the fermenting food in its stomach, would rise again.

We walked the six miles back to camp, rested for a while, then returned with the truck. The combined strength of its winch and the straining Kuvales hauled the massive animal up the bank. I think we all were

struck by the same thought: a pity that such a fine beast must be killed, even to preserve the species in a museum display.

José took careful measurements and asked me to photograph the hippo and the surroundings for the diorama artists in Bern. The animal proved of impressive size—11 feet 9 $\frac{3}{4}$  inches from snout to tail, and 5 feet 1 $\frac{1}{2}$  inches high at the shoulder.

#### One Tribe's Meat Is Another's Fish

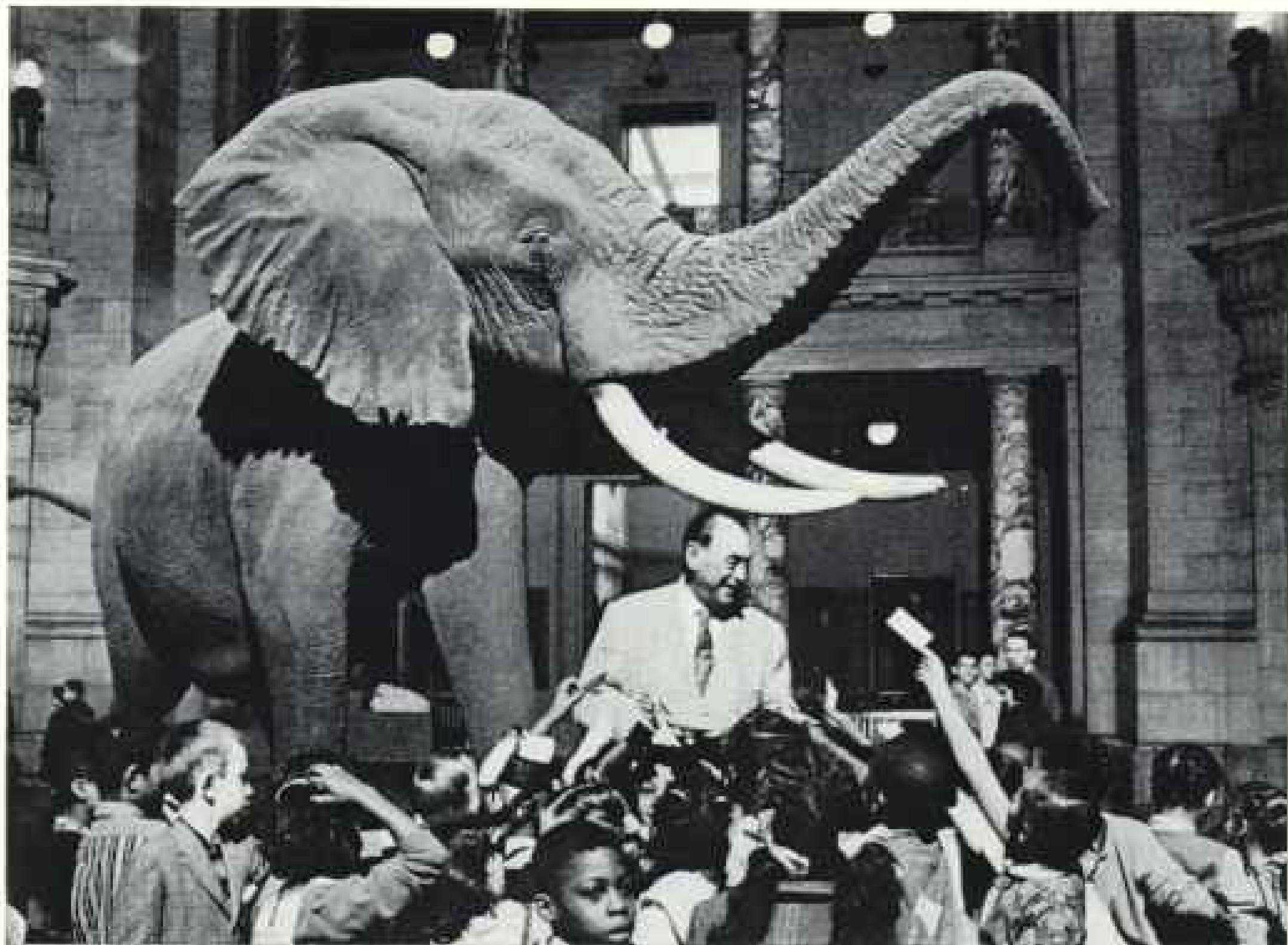
Kuanyama tribesmen appeared out of nowhere. Hungrily they watched as our Kuvales removed the hide, skull, and larger bones.

José selected a few cuts of meat for ourselves; then bedlam broke loose as the visitors pounced on the carcass. They whacked away with their sharp machete-like *catanas*; somehow clutching fingers escaped intact.

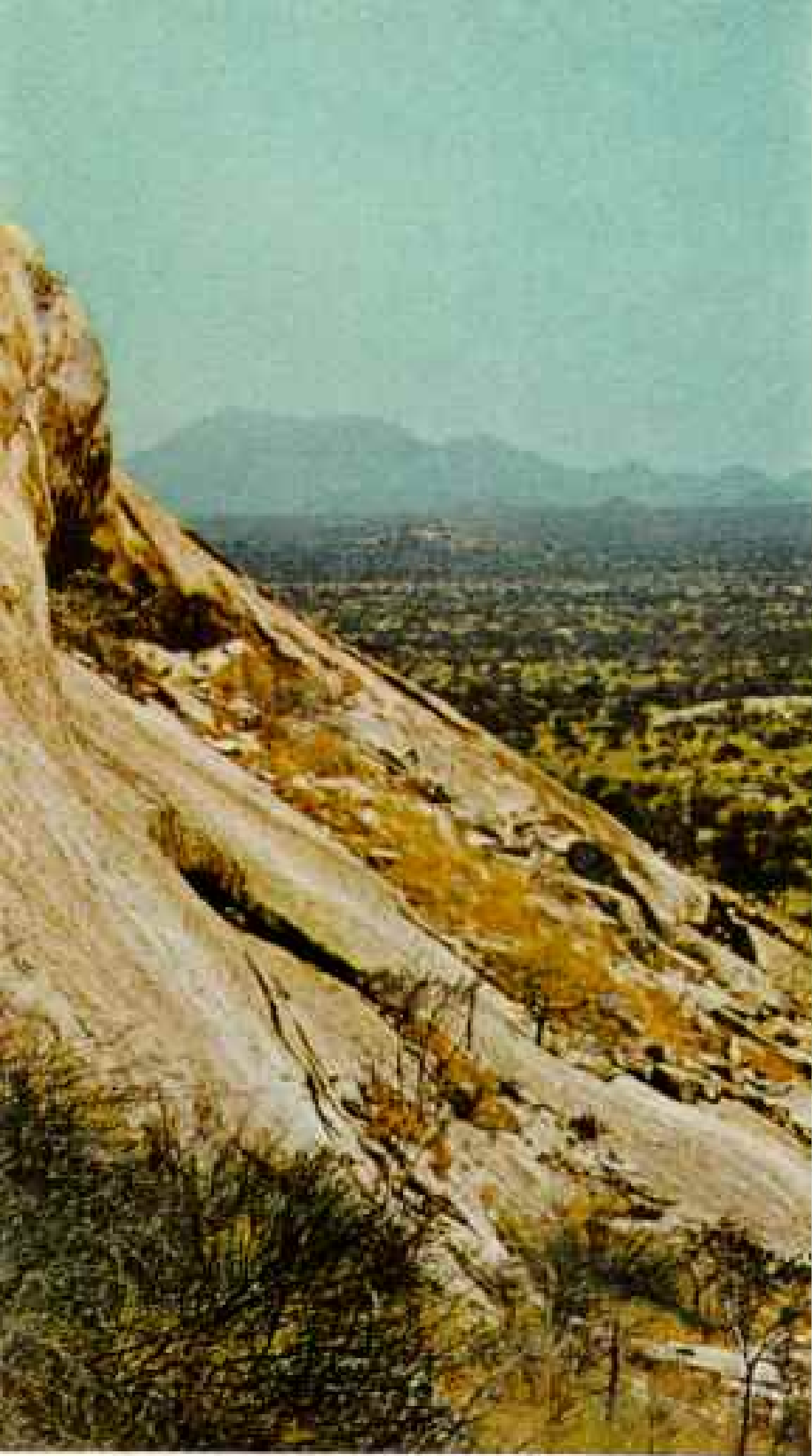
We were amazed that our Kuvales showed

#### Autograph Hunters Besiege the Man Who Bagged the Giant of Elephants

Each fall José Fénykövi, Madrid industrialist and big-game hunter, leaves Europe and heads for his 1,000-acre ranch in Angola. Six years ago, in the southeastern part of the province, he felled a bull elephant which he estimated to weigh 12 tons—largest land animal in modern records. Here he visits the trophy, his gift to the Smithsonian Institution in Washington, D. C. Wood and papier-mâché support the heavy hide. Señor Fénykövi guided the author through a part of Angola still largely unexplored.







no interest, since meat constitutes most of their diet.

"It's not meat," Kukuia said. "This animal lives in the water, so it's a fish—and *Patrón* knows that Kuvale men never eat fish!"

At dinner José and I, less discriminating, thoroughly enjoyed Manola's delicious hippo steak sauté. It tasted a bit like pork.

### Shy Bushmen Dodge Visitors

The next day, while the Kuvales salted and stretched the hippo hide for drying, Mario and I took off by Jeep, hoping to find some Bushmen. I had long been fascinated by these aboriginal wanderers.

Among the most primitive people on earth, these nomads hunt and gather wild honey, berries, and edible roots on the parched plains of south-central Africa. Small bands, usually family groups, occasionally have been seen here in southeastern Angola.

We inquired about them at several Kuan-yama tribal villages, without success. Later we stopped to talk with a herdsman tending long-horned cattle. Unlike his fellow tribesmen, most of whom were nearly nude, he wore a loincloth, knee-length rubber boots, and a dinner jacket with frayed satin lapels. Could this have been the end of the road for some CARE parcel?

He carried formidable armament: a muz-

### Mystery Shrouds a Painted Mountain and Its Artists

Deep in the Moçâmedes Desert, mountains rise like islands from a sea of sand. Kuissi tribesmen believe this rocky rampart, which they call Chitundulo, to be accursed; lions, they say, devour anyone who sets foot on it.

Long ago an unknown race carved pictures on the face of Chitundulo. Most suggest sun or moon, but the author also saw engravings of men, giraffes, and antelopes. Birds, snakes, and fishes decorate the cave at upper left.

Carved symbols, washed with oil, stand out clearly.

Modern artist, a Chokwe villager, mixes imagination and traditional color to decorate his home.



HE EXALCIBRINE CARROLL AND KROUCHERONES © NATIONAL GEOGRAPHIC SOCIETY





Beehive-shaped huts thatched with grass dot a seared plain north of Moçâmedes. Thorny branches ring cattle kraals for nighttime protection against marauding lions.

#### Like a Beached Octopus, a Rare Plant Extends Writhing Tentacles

Adept at water conservation, *Welwitschia mirabilis* grows only in the parched wasteland of southwest Angola and South-West Africa. Fog drifting in from the Atlantic provides some moisture, and the plant may live for a century, its leaves attaining 20 feet. Señor Fénykövi and his trackers examine this plant in the Moçâmedes Desert east of Porto Alexandre.

Jovial Kuvale, decked with beads, jests with his son. Cattle herders who dwell in the remote Chela Mountains, these primitive people measure their wealth in livestock.

zle-loading flintlock, a bow and steel-tipped arrows, and a heavy club. But apparently even these weapons could not protect his herd. Excitedly he spoke to Mario; I was able to catch only the word *dumba*—lion.

Mario translated the bargain he had struck: The herdsman, named Tchivera, promised to take us to a Bushman camp if we would first track down the lion that had killed several of his cows.

The lion's spoor led into dense, low bush. We bucked through it in four-wheel drive, swerving right and left, and often going in circles. Mario and Tchivera followed a track I could not see. Twice they lost the trail, but soon picked it up on foot.

Suddenly we faced the predator. Forty feet away, a lioness crouched in the bush. Mario raised his rifle and fired. A golden leg flailed the air, exposing fearsome claws. Then the powerful paws relaxed. *Dumba* would kill no more cows.

Tchivera kept his word. He guided us through the bush to a circle of seven dome-shaped huts, flimsily built of branches and leaves. Inside each hut we found a bed of soft grass and the white ash of a fire. Bones, seeds, broken calabashes, and a turtle shell littered the encampment. In the trees hung pieces of smoked wildebeest, neatly wrapped



in bark, and bundles of feathers for fletching arrows. But we saw no Bushmen.

We waited. I drowsed in the sparse shade. Half asleep, I dimly heard a high-pitched vocal click-clack and became witness to a primeval scene. From the forest, in single file, emerged several women and naked children. On their backs mothers carried babies wrapped in antelope skins.

#### "April in Paris" Entertains Bushmen

They advanced cautiously, speaking to each other in their strange clicking tongue. They saw us, and like timid animals froze and watched our every move.

I switched on a tiny Swiss music box I carried in my camera case. The merry tinkling tune of "April in Paris" whetted their curiosity; they exchanged more click-clacking talk and came forward to hold the music box to their ears, childlike and friendly.

VEDRERHOMER © NATIONAL GEOGRAPHIC SOCIETY



Hair styles speak volumes in the Mwila tribe near Humpata. Each coiffure represents a different stage in a woman's life. The adolescent above has not yet participated in the puberty ceremony. Two center views display recently introduced fashions for married women. A mother appears at far right. Mwila women smear their hair with oil, mold it with mud and cow dung, and deck it with beads. They shave the forehead to make an even hairline and wear neckbands of rope, beads, and shells.

When the novelty of the music wore off, they set about their housework. A wrinkled old woman, with characteristic eye folds and yellowish skin, twirled a stick between her palms, drilling into a soft piece of wood until it began to smoke. A girl added dry grass, fanning it to flame.

With the fire she lighted a gourd pipe which they passed from one to another, inhaling deeply and coughing. While they smoked, they nursed their babies, continued their click-clacking chatter, and picked vermin from each other's peppercorn hair.

The menfolk, apparently on a hunting expedition, still had not appeared when dwindling daylight forced us to leave these curious bush people.

#### Elephant Hide Weighed Two Tons

Returning to camp, we found the Kuvales working under hissing gasoline lanterns, still scraping and salting the hippo skin.

"With so much work to preserve a hippo specimen," I asked José, "how did you ever manage the big elephant?"

"It wasn't easy," he said. "Skinning it and preserving the hide and principal bones took us three days. Just carrying them out of this trackless country was much harder than stalking and shooting the animal. I first saw his huge footprints, you know, in 1954, but I decided to wait until the next year, when I could hunt him fully prepared."





"But what made you think you could find him again?" I asked. "He might have wandered a hundred miles in a year's time."

"Solitary elephants, left undisturbed, are like many human bachelors—set and methodical in their habits," José commented with a chuckle. "When we came back, we found his fresh spoor beside the same muddy lake."

"On this second trip I brought along six trackers, a second truck, and more than 1,500 pounds of salt. Just to turn the elephant over during the skinning, we needed a motor winch. The hide alone weighed two tons; the head with its 100-pound tusks weighed 1,800 pounds."

"It was worth your effort," I said. "A perfect specimen—the world's record."

#### Africans Grapple With Modern Ideas

The hippo hide cared for, we turned back to Caiundo. Then, to see other game, we headed north on the long route through central Angola toward the eastern town of Luso, near which the government has established a 3,900-square-mile reserve, Cameia National Park (map, page 350).

At Catota we stopped to visit an interdenominational Protestant mission. Cheerful, green-eyed Dr. Lois May Roberts, from California, invited us to lunch in her bungalow, set among orange trees heavy with fruit.

Some 200 boys and girls between 6 and 18 years of age attend the mission school, com-

ing from hundreds of miles around. Another 125 study here at the Bible Institute.

"We teach in Portuguese, as the government requires," said Mr. Robert Brain, the young American missionary in charge of the institute. "We use a system designed for illiterate adults—it seems to work best."

"What kind of students do Africans make?" I asked.

"Eager and intelligent," he replied. "They've a refreshing sense of humor, and laugh about their mistakes. History is most difficult for them to grasp, but that's understandable. We have to remind ourselves that they are just coming into contact with modern ideas; it must be overwhelming."

Our discussion turned to tribal customs and beliefs.

"As usual in the beginning with all people," Mr. Brain continued, "the native folk are animists. They believe the spirits of the dead return, causing troubles ranging from bites and sprained ankles to crop failures. The witch doctor appeases the spirits by sacrifice—killing chickens, for example."

"But we can't discount their traditional knowledge of herbs and balms," nurse Louise Johnson added. "Their witch doctors commonly brew teas from different plants to treat a variety of ailments."

After lunch we toured the hospital.

"Most of our cases," Dr. Roberts said, "are malaria, parasitic intestinal diseases, and





tuberculosis. We are also treating 75 lepers."

As we walked about, Dr. Roberts pointed out a young Ovimbundu tribesman carefully filing a sheaf of medical records. Another, bending over a microscope, analyzed blood samples. And in the dispensary a white-coated male nurse filled prescriptions for a line of waiting patients. By his teeth, filed to points, I recognized him as a Chokwe. Only

yesterday his sinewy hands might have beaten jungle drums.

In a private room we saw a woman with a thermometer jutting from her mouth and with the eyes of a frightened animal. An African evangelist sat by her bedside, reading the scriptures in her native tongue, Ngunuella. As I watched, his strong face and mellow voice seemed to calm her fears.



ILLUSTRATION BY HOLLYMAR WENZEL, NATIONAL GEOGRAPHIC EXPLORER © N.G.S.

Continuing to Silva Porto, we arrived after dark and drove along wide, tree-lined avenues brilliantly lighted by modern street lamps. Portuguese and Africans strolled through spacious parks and chatted in sidewalk cafes. Teen-age boys gathered around a racy sports car at a filling station.

Covered from head to foot with chocolate-brown dust, we registered at the sparkling

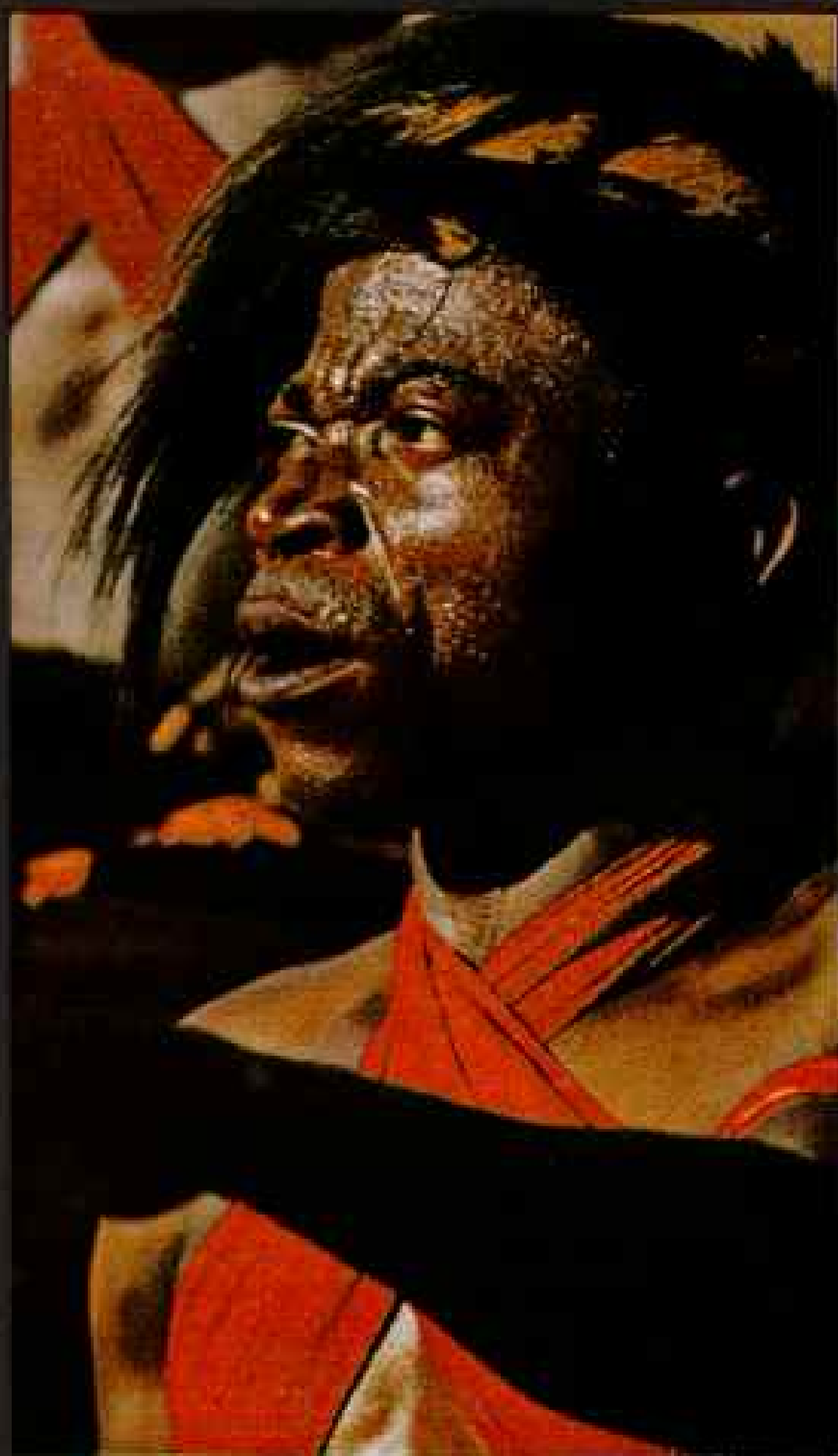
### **Duque de Bragança Falls, Angola's Niagara, Plunges 344 Feet**

Crashing down from a broad semicircular cliff, waters of the Lucala River create an oasis in the midst of sun-scorched savanna. Spray from the cascade supports luxuriant plant life. Portuguese planners hope to harness the falls for electric power.





Tubular eyes and mouth protrude from a mask (left) used at Chokwe funerals. Tribal legend says the head with sharpened teeth and tightly closed eyes (center) models a Luena woman famed for amorous escapades. The third female mask bears an ornamental nose pin once used by the Lunda. Cruciform design marks the forehead, solar symbols the cheeks. These generations-old wooden masks are prized exhibits of the Dundo Museum in northeastern Angola.



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**Wigged drummer**, his face beaded with sweat, beats out a hypnotic rhythm for dancers. Sinewy hands may pound from dusk to dawn. He wears the crossed strip of cloth popular along the Congo-Angola border.



#### **Grotesque Figures Prance Around a Bonfire**

Music and the dance play vital roles in the life of the African Negro. Enacting a folklore tale, these professional dancers entertain Chokwe tribesmen near Dundo. Crouching image represents an anteater, its tongue scouring the earth for food. Skirted dancer wears a *chirhonga* mask, symbol of masculine force and command. Straw suspended from large false hips accentuates his movements.

new Hotel Girão. With characteristic Portuguese courtesy, the night clerk saw that we quickly had rooms, baths, and food.

During the night I was aroused by the roar of a lion. It seemed incredible: a lion in a modern city of more than 12,000 inhabitants. The next morning, I mentioned it to José, who in turn checked with his Kuvale trackers. It was a lion! They, too, had heard the roar and wanted to track him.

The mystery vanished when we met Senhora Maria José Mendes Raimundo Babo. Several years before, hunters had brought this charming Portuguese lady a cub lioness, now fully grown. She keeps it chained in her back yard. The lioness, she told me, lives in complete harmony with the four Babo children and their dog.

As we drove eastward toward Cameia National Park, we learned much about Angolan

**Spacious Lobito harbor**, protected from the open Atlantic by a 3-mile-long natural sandspit, ranks as one of the most modern ports on Africa's long west coast. The "gift of the sea," as Portuguese stevedores call it, handles 1½ million tons of cargo annually.

**Copper ingots** from Northern Rhodesia and the Congo's Katanga province pile high on Lobito's docks (lower right). Other major exports include zinc, cobalt, manganese, iron ore, maize, sisal, and salt.

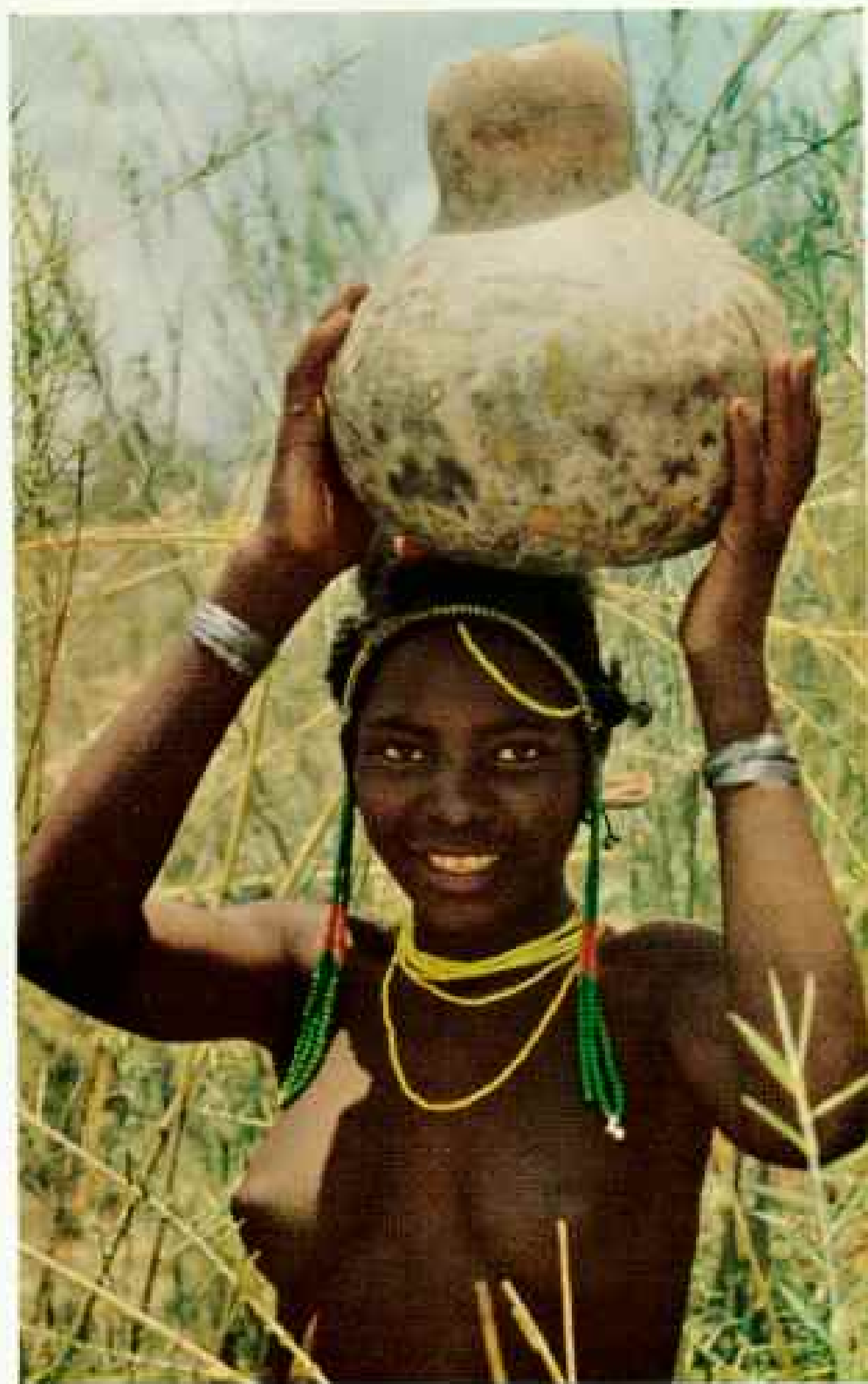
**Hope and anxiety mingled** in their faces, Portuguese immigrants crowd the rail as their ship docks at Lobito, a bustling city of 32,000. Before recent disturbances, more than 1,000 Portuguese settlers sailed each month to seek a new life in Angola. These will homestead at Cela (pages 368-9).





KODACHROME © NATIONAL GEOGRAPHIC SOCIETY





ADRIAN HORN © NATIONAL GEOGRAPHIC SOCIETY

Tramping bare-skinned through thorny bush, a Ngumbi girl balances a gourd of precious water dipped from the Cunene River. Many tribes use calabashes as containers; scarce tin cans and bottles are treasured.

roads. There are 22,000 miles of them in the country. Originally most of them were built for use by ox-carts, and in the rainy season trucks churn the thick mud axle-deep. Drivers often use tree trunks and branches or stones to fill the quagmire.

Oddly enough, termites produce excellent road-paving material in the hard, water-repellent earth-and-sand mixture of their mounds. We passed thousands of these termite hills, some of them 20 feet high.

In regions where soft coal deposits occur near the surface, termites unwittingly become effective coal miners; chunks of their mounds make fine briquettes. And the insects themselves are a delicacy to the African palate. Gourmets particularly relish fried termite queens, I was told.

Under our clouds of dust we drove on. One day we bounced over the rough track for 15 hours. We lunched under trees, camped by streams, and sometimes stayed overnight in settlements. In the vastness of Angola—nearly twice the size of Texas—the small towns seemed to me cheerful islands of Portuguese and African life.

In many places we ran through splotches of countryside blackened by fire. In this way the Africans clear land for their crops of manioc, beans, pumpkins, and corn.

Reaching Cameia National Park, we camped in a cluster of round thatched huts built for visitors. The camp commands a view of vast grassy plains on which we saw immense herds of wildebeests, or brindled gnus. A short Jeep drive brought us close to other game. José pointed out many species of antelope: the sassaby, roan antelope, reedbuck, and oribi. At night we heard the roars and screams of the carnivores—lions, leopards, jackals, and hyenas.

#### Insect Hordes Warn of Rain

On a boat trip down the Luena River, one of the head tributaries of the Zambeze, we came into even closer contact with the wildlife of Cameia. Strong Luena tribesmen helped our Portuguese guides launch a flat-bottomed boat into a maze of waterways that eventually merged to form the Luena River. Reedy green papyrus with fanlike tops lined the shore. Only the throb of our outboard motor broke the primeval quiet.

At our approach crocodiles silently slid off mudbanks. Water birds, thousands of them, waded in riverside lagoons. Black-and-white storks and spoonbills fed in the shallows. The river, sluggish at first, grew swift and turbulent; several tributaries added their strength.

In one clearing stood a magnificent roan antelope, motionless as a statue until he heard the whir of Jackie Cochran's movie camera. Abruptly he turned and vanished in the bush.

At times we hugged the shore, dodging low-hanging branches. From them, weaverbirds' nests dangled only a few inches above the water. Hippo tunnels on the riverbank led through dense reeds and bamboo.

That night millions of black flying insects the size of June bugs invaded camp. They were harmless, but got into everything—our



Market basket balanced on her head, a villager approaches her hillside home near Luanda. She is legally a ward of the state, like nearly all of Angola's 4,500,000 Africans; fewer than one percent have met the strict requirements for *assimilado* status, which grants them Portuguese citizenship. The colony's white population is 200,000.

hair, clothing, the soup, even the beds.

"It is a sign," said José. "The rainy season is near." We turned back, traveling southwestward across the country to Humpata and the Fénykövi ranch, near the booming city of Sá da Bandeira (map, page 350). Here Jackie Cochran left us to return home.

#### Homesite Overlooks Vast Plateau

After weeks on the trail, it was a pleasure to enjoy again the gentle comforts of the Fénykövis' delightful home. Indeed, the interior of their rambling fieldstone house is almost baronial. Game trophies stare from massive rafters of the living room. The door knobs are ivory; lion, zebra, and antelope skins cover the flagstone floor; an immense window frames a wide view of the Huila Plateau and the Chela Mountains.

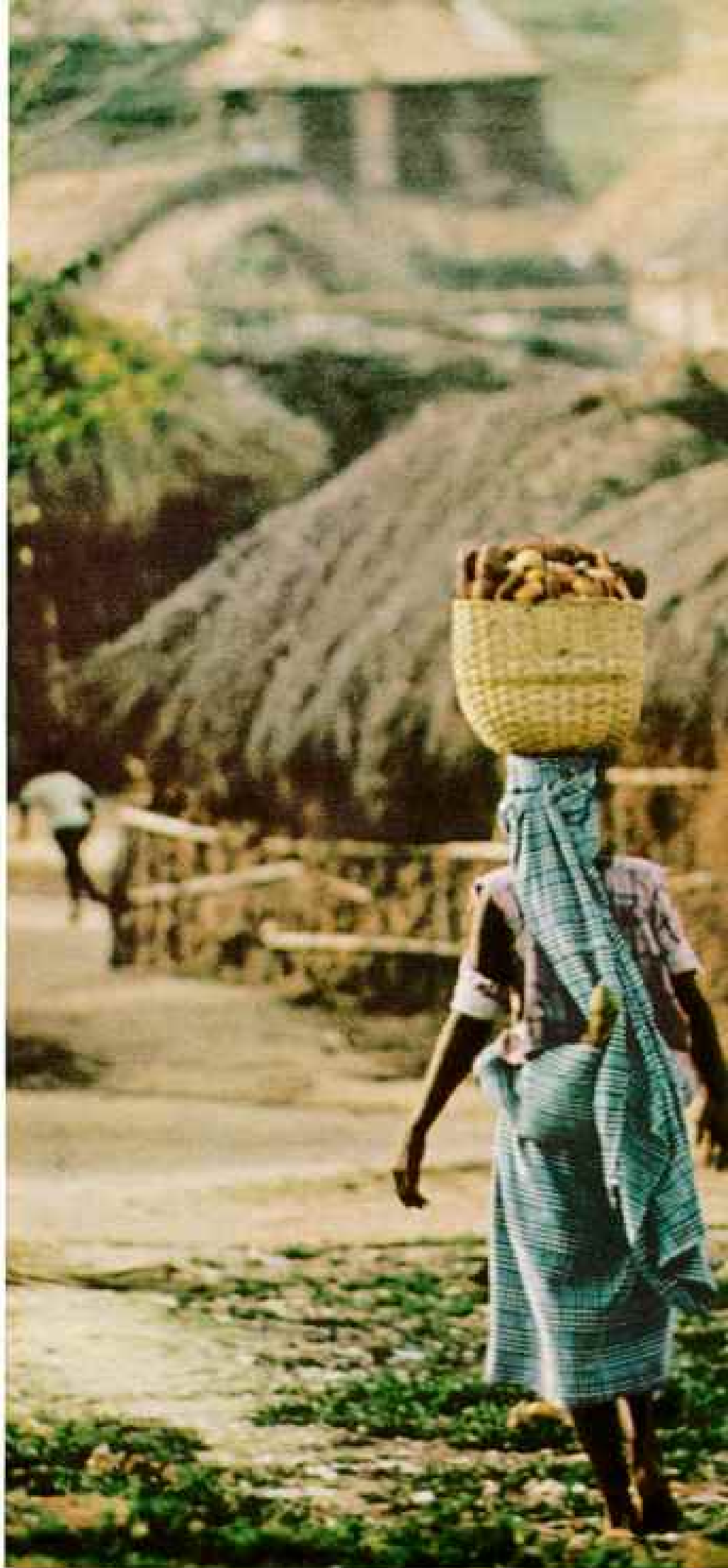
Though José is Hungarian by birth and has adopted Spain as his home, he spends several months yearly in Angola, during the dry season. His wife Sonia is Russian-born.

"We've such a perfect subtropical climate here, 6,000 feet above the sea, you can understand why we like to come," he commented.

A few days later, although it meant leaving Humpata's comforts, José set out to show me the Chela Mountains region and the Moçâmedes Desert lying westward toward the sea. The hot, arid plains beyond the Chelas seemed like another — a lost — world.

Our 400-mile route followed the trail Portuguese colonists and missionaries had used a hundred years ago. Formerly the land teemed with elephant, rhino, antelope, and smaller game.

"Unfortunately, the Jeep opened it to extensive hunting," José said. "Now many fine species — like the mountain zebra, with its beautiful



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yellow-brown stripes — are nearly gone."\*

In this region we encountered almost no wildlife, and the bleached skulls and bones scattered on the ground made me think of

\*Two accounts of Africa's threatened wildlife appeared in the September, 1960, NATIONAL GEOGRAPHIC: "Where Elephants Have Right of Way," by Jim and George Rodger, and "The Last Great Animal Kingdom: A Portfolio of Vanishing Wildlife."

the 19th-century buffalo slaughter in our own American West.

Along our three-day route to the sea we met only a group of nomadic Kuvales, gathering wax and honey, and a tall, blue-eyed Boer named Miguel Prinsloo, who managed a karakul sheep ranch on a boulder-strewn plain.

"*Ach, ja, water*—that's our big headache," Miguel said, as we cooled our faces in the

reservoir filled by a spidery, creaking windmill. Miguel lived in a humble thatched house beside his sheep kraal; he was a true pioneer in this virtually unsettled region.

Only a few miles from his ranch reared a twin-peaked granite lump, Chitundulo, a mountain sacred to the Kuissi tribe.

"The Kuissi believe that anyone setting foot on the mountain will be eaten by lions," Miguel told us.

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Thatched cottages cloak a church-crowned hill in Catumbela, a sugar-producing center.



At the mountain's base he showed us a cave with amber and ocher drawings traced on its ceiling. A long wormlike figure, painted in white and terra cotta, perhaps a snake, undulated the length of the cave. We also recognized birds, scorpions, and fish.

Despite the Kuissi curse, I felt impelled to climb the mountain; José joined me. Not far up, we crossed a large sloping granite face and found it engraved with hundreds of

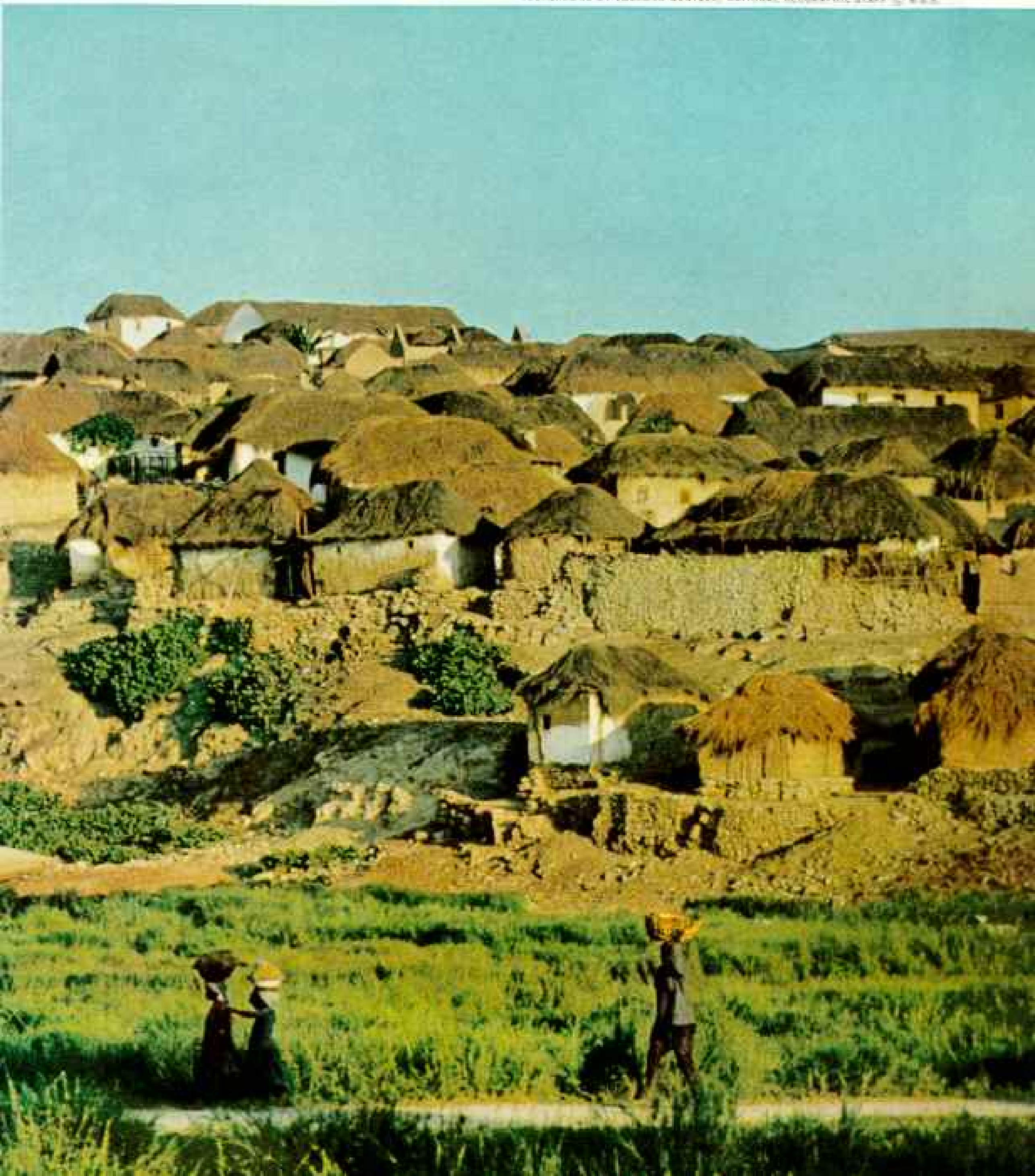
petroglyphs (page 352). Interspersed among geometrical designs were suns and moons, animals, and hunters armed with bows. José identified a giraffe and the unmistakable outline of an eland. These animals no longer exist in the region, suggesting that the artists were an ancient people.

In this coastal desert thrives a rare plant found in no other place: the weird *Welwitschia mirabilis*. From each foot-high stem, black

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Angolans reclaimed near-by irrigated cane fields from sun-baked coastal desert

PHOTOGRAPH BY VOLKMAR WENTZEL, NATIONAL GEOGRAPHIC SOCIETY © N.G.S.





as burned toast, two greenish-brown leaves twist as much as 20 feet along the ground (page 354). To me, they looked like prehistoric crabs marching toward the sea.

"The plants can live for years without rain," José said. "Some may be a hundred years old."

At Porto Alexandre, separated from the desert by a belt of trees, the Portuguese have built a fishing village. On the steps of its pastel-colored houses fishermen mended nets, exactly as they do in Portugal.

We drove north to Moçâmedes, an enlarged version of Porto Alexandre, where I photographed more clusters of motor fishing vessels and more Portuguese curing their catches. And from there, over a better road, we returned to Humpata.

Bidding José and Sonia goodbye, I boarded a DC-3 of the D.T.A. (Divisão dos Transportes Aéreos) at Sá da Bandeira to fly the 425 miles north to Luanda, Angola's capital.

Near Lobito the dull landscape changed to brilliant green fields of sugar cane.

"That's what we can do with irrigation,"

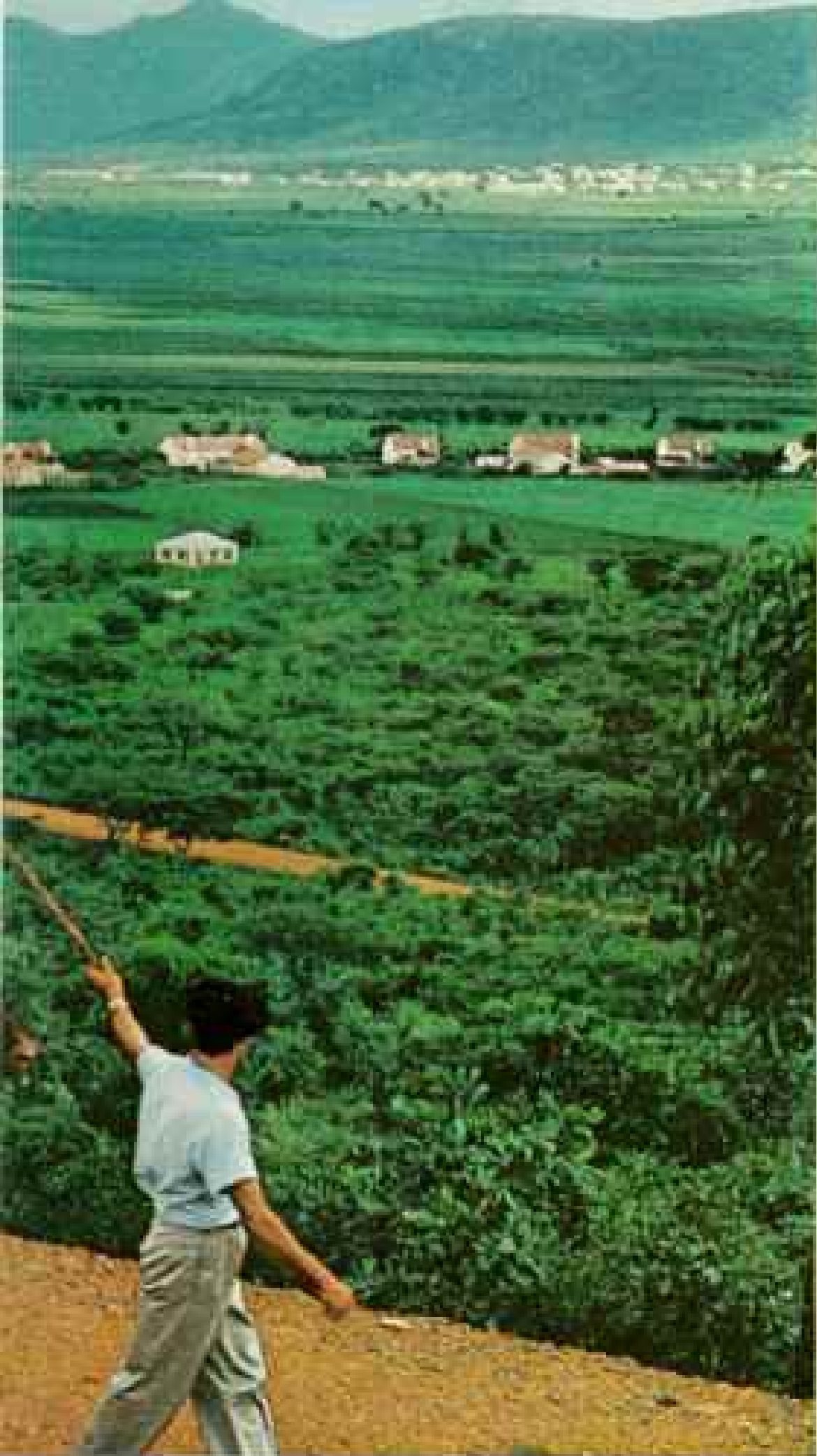
the Portuguese pilot proudly pointed out. "It was once a desert; now thousands of people work here."

We landed to refuel at Lobito, where ocean-going ships swung at anchor in a sheltered bay. Docks, cranes, warehouses, railway yards, and grain elevators crowded the waterfront. Lobito is Angola's principal port, and one of the best harbors of western Africa (pages 362-3). Wide, sandy beaches outlined the tile-roofed city. Against the glare of salt pans in its outskirts, squadrons of pink flamingos flapped in precise formation.

#### Racing Cars Roar on Luanda Streets

Reaching Luanda, I found the city in gay, festive array for the Grand Prix d'Angola, its annual sports car race. Sleek high-powered cars had been brought in from Rhodesia, Senegal, Mozambique, and South Africa. Others had come from England, Belgium, and Finland, as well as from Portugal.

Sidewalk cafes were barricaded with bales of cotton against runaway cars. People festooned the parapets of the old Portuguese



BY BETACROME (OPPOSITE) AND ROBAKHOMEX © N.S.S.

fortress of São Miguel, watching the speeding cars roar through the streets. Elegant dark-eyed ladies, dressed in the latest fashions from Paris and Rome, sipped refreshments on balconies.

"We're one of Africa's fastest growing cities," said Dr. Abel Prattas, Chief of Angola's Veterinary Service, who showed me around town. "Although Luanda was founded almost 400 years ago, it has really forged ahead only within the last fifty."

#### Coffee, Sisal, Diamonds Built City

We drove through the upper city, past lavish houses of the coffee kings, traders, and foreign consulates, and looked down upon the city and its crowded harbor.

"Coffee, sisal, and diamond mines built all this," Dr. Prattas said. "Now we've found oil and asphalt."

Around 17th-century churches in the lower city, shops displayed electric toasters, air conditioners, sewing machines; Japanese "jeeps," Swiss watches, U.S. medicines, and German optical instruments.

#### Oxcart Riders on Holiday Take a Scenic Route Above Cela, Thriving Model *Colonato*

Portuguese homesteaders transformed the Amboim Plateau into a garden spot, with Cela their prize achievement. A dozen settlements have risen on this fertile plain since 1952. Each immigrant family receives a house, livestock, seed, and up to 425 acres of land from the government.

Dinner menu for hard-working Cela settlers includes pork, chicken, beef, rice, potatoes, and citrus fruits—all products of their farm.

Portugal or Angola? Farmwives wash family laundry in a stream near Cela. Law forbids the use of African labor to do *colonato* homesteaders' chores.



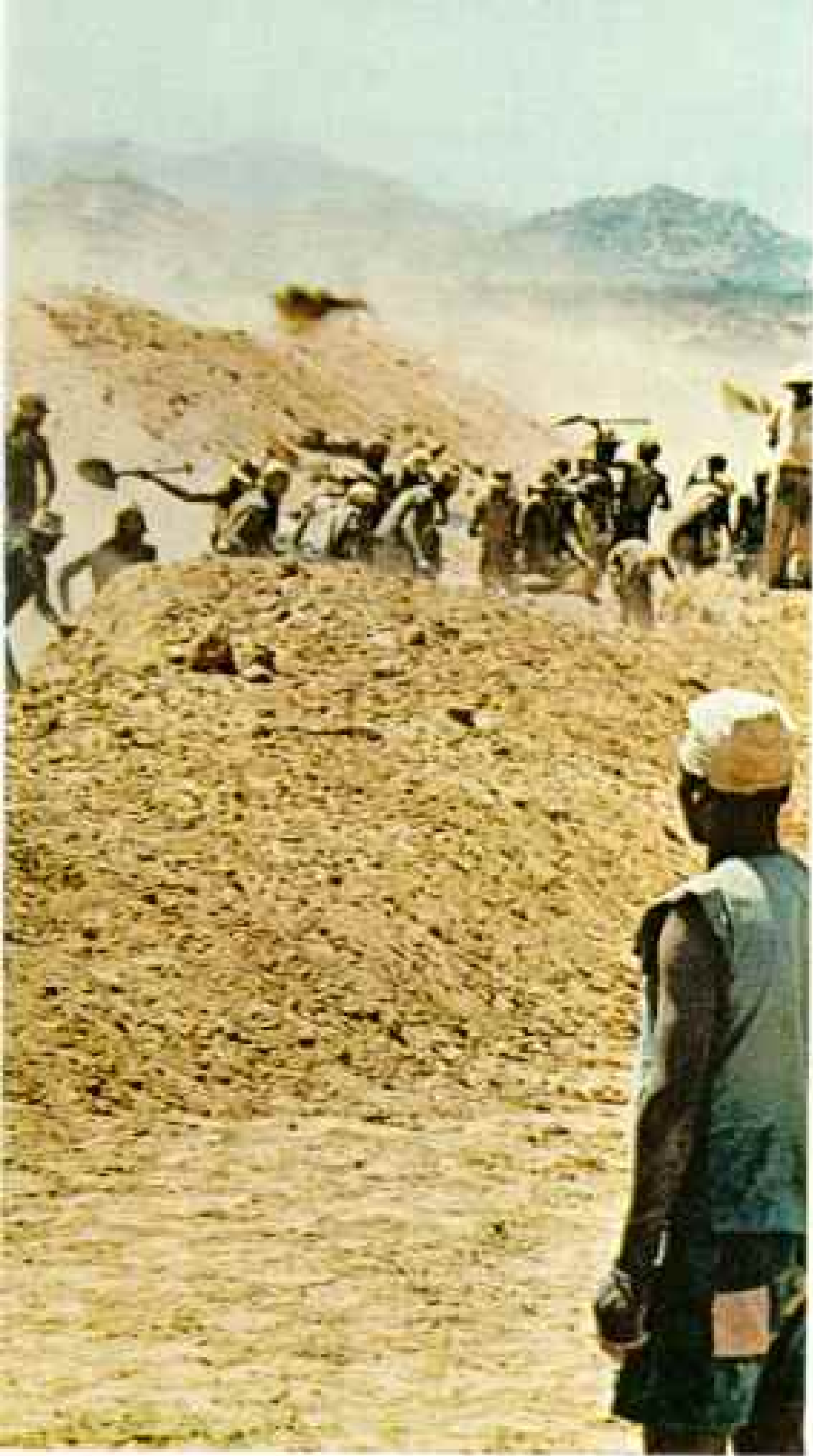


**Dusty Workmen Grade a Roadbed for a New Rail Line in Southern Angola**

Stretching east from the port of Moçãmedes toward Rhodesia, the railway will provide transport for one of Angola's potentially most productive regions. Chanting while they dig, these contract laborers reshape the landscape before track is laid.

Young mechanic oils the wheels of a locomotive in the shops of the 835-mile Benguela Railway, which links Lobito with the heart of Africa. Eucalyptus plantations provide fuel for the wood-burning engines.

Diners enjoy superb meals aboard the Benguela Railway train as it rolls west through the so-called Hungry Country, where many pioneers and slaves died of starvation in the days of foot transport.



In a new two-storied market we listened to Portuguese and African women haggle over fresh fruit, fish, and vegetables. At Bishop's Beach, Dr. Prattas showed me a settlement of pleasant government-built houses, mostly two-family dwellings, set in exuberant tropical gardens.

"Even though we're building some 1,500 units a year, housing is one of our big problems," he explained. "The influx of both Europeans and of natives coming from the interior is tremendous. We're even trying a do-it-yourself project. It may interest you."

At a place called "Bairro Popular," Africans and Portuguese worked side by side helping each other erect homes.

"Though the people do their own labor," Dr. Prattas explained, "each owner buys his own building materials. The plans and utility connections are furnished free by the city. There are no taxes, but the residents pay a modest ground rent."

#### Author Follows Old Slave Route

From my hotel I looked out upon green, finger-shaped Luanda Island, a lazy tropical Lido reached by a causeway. Here eucalyptus groves shade weekend cottages, and families picnic on its white sands. Off its shore, sailboats heel to the breeze, and water skiers churn up the bay.

A road spans much of the island; midway





Water sprites frolic in the shallows off Luanda Island, a palm-fringed pencil of land paralleling the port city. In these seas women divers once sought the *zimbo*, a shell which for centuries served as currency in Angola.

it passes a shoreline village. Here men fish from dugouts as did their ancestors who stared in wonder at armor-clad Portuguese explorers wading ashore from their 16th-century caravels.

In open-air restaurants facing the sea, I sampled lobster, crab, and octopus fried in olive oil. But my favorite was a humble dish called *caldeirada à Portuguesa*—a pungent stew of fish, potatoes, tomatoes, onions, peppers, olive oil, parsley, and spices.

Through the kindness of Dr. Pratas, I met Dr. Pinto da Cruz, also of the Veterinary Service, who was leaving on a land-survey trip into central Angola. He invited me to go along.

"You'll see our Duque de Bragança Falls,"

he said, "and the giant sable antelope on the Luando Game Reserve."

At daybreak we headed eastward in a Land-Rover via Catete and Cassoalala to Malange, old names in Angola's history. Once they were stations along a *Via Dolorosa* of the slave traffic. Angola has been called the Black Mother of Slavery; during nearly three centuries, millions of natives were driven to the coast in wretched caravans. At the ocean's edge, they were baptized by the boatload and shipped to the New World.

We stopped at weathered old Massangano, where we ate lunch while sitting on rusty cannon of the ruined fortress. In a 17th-century church, also used as a school, Angolan children chanted the alphabet (opposite). The place reminded me of Portuguese Goa, in India.

We drove through thick jungles of palms and vines, and passed sisal, cotton, and oil palm plantations. The road climbed through foothills covered with forests and wild coffee, to open plateau.

"Much land is still free in Angola," Dr. da Cruz explained, "but we inspect settlers' claims to make certain the land is suited for its intended use."

Checking on the unsurveyed lands north of Malange, Dr. da Cruz interviewed local chiefs, collected herbs and grasses, and took many blood samples from cattle herds.

#### Camera Captures Elusive Sable

"Generally speaking," he told me, "the highlands will be reserved for farming, the lowlands for grazing and forestry. This is staircase country; it rises in broad steps from the hot coast to cool plateaus."

Staircases, indeed, I thought, when we reached the Duque de Bragança Falls and saw the Lucala River crash deafeningly down a 344-foot cliff (page 358). A double rainbow arched in the spray; the lush foliage of the rain forest glistened like wet paint.

In Malange we sought out Senhor Tobias de Sousa Chato, the supervisor of the Luando Reserve; he was to guide us into this vast game sanctuary, larger than the State of Delaware. A leather-faced, scarred veteran of tribal wars in southern Angola early in this century, Senhor de Sousa Chato is now fighting his most important battle—to save the giant sable antelope (pages 374-5). Only an estimated 500 to 700 of these graceful animals, most magnificent of all the antelopes, still exist.





**Young Africa** prepares for the future at a school in Massangano. The curriculum includes Portuguese language and history and the principles of hygiene. Youthful teacher, grading papers at his desk, uses an alarm clock to time classes and a switch to punish unruly pupils.

**Delighted chief** of a small village sees himself for the first time in a photograph taken and developed by the author's Polaroid Land camera. Companions of the chief study the likeness before passing judgment. "The 'magic box' won good will for me all over Angola," Mr. Wentzel says.



On a 250-mile ride, we ferried rivers in rickety dugouts lashed together and detoured past washed-out bridges to reach a cluster of park station huts.

As morning fog lifted, Senhor de Sousa Chato intently scanned the islandlike savannas in the forest through his binoculars.

"At the edge of the forest, that's where you might see them," he said. "They graze the pastures for tender grasses and *kundo*, a purple-flowered forage plant."

Beginners' luck! Almost immediately we spotted nine beautiful giant sables cantering along, necks arched, manes erect, and horns laid back. Four young ones ran beside their chestnut-brown mothers; a black bull brought up the rear. But they were too far away even for my telephoto lenses.

During the next three days I suffered the tortures of Tantalus. I was almost, but never quite, able to capture the giant sable on film.

Either we came upon them too early, when the light was weak, or they were too distant, or it rained, or we saw none at all.

We jolted over termite hills, through stiff brush and soggy swamp, using up much precious gasoline, and still I had no photographs. Late in the fourth afternoon our persistence finally was rewarded. In a clearing we saw a solitary male.

Cautiously we rode to within 300 yards of him, then stalked him on foot. He remained motionless. Nearing, I saw the gleam of the setting sun in his eyes, and the white markings on his face. His magnificent horns curved far back, almost to the rump. He turned and walked majestically into the forest, but not before I tripped my shutter. From the sight of this splendid specimen I could understand why Angolans chose the giant sable as a national symbol on stamps and currency.

To see Angola's plateau farming country,

Atop an islandlike plateau, spotters with binoculars scan vast plains of Luando Game Reserve





ESQUADRONED BY QUENTIN KEYNES (PHOTO) AND GUYANAN WATZEL, NATIONAL GEOGRAPHIC SOCIETY © N.G.S.

Immense horns crash together as giant sable bulls butt with stunning force. "They fought steadily for 20 minutes," reports Quentin Keynes, who photographed this rare sight.

in quest of the giant sable antelope

Lordly sable carries the most awe-inspiring horns in the animal kingdom, five-foot-long scimitars that sweep in mighty arcs toward the rump. Even the lion steers clear of such weapons. Luando Reserve, established to preserve the species, shelters between 500 and 700 giant sables, last on earth.





I drove 250 miles southeast of Luanda, arriving at the *colonato* of Cela after dark. Colonatos are Portugal's experiment in colonizing the fertile agricultural lands of Angola with Portuguese immigrants and native Africans.

#### Settlers Farm Former Swampland

I woke next morning to the sound of church bells. Looking from my window, I thought I was viewing a European countryside. Tile-roofed villages edged cultivated fields; an ox-cart filled with Portuguese peasants ambled down a country road (pages 368-9).

Here at 4,600 feet above sea level, the morning was cool and crisp. I climbed a

fence to photograph dairy cattle grazing in the lush pastures. A Jeep pulled up behind me, and abruptly a voice shouted, "What are you doing there?"

And so I met Mr. Henning Friis-Hanson, a Dane engaged by the *colonato* to set up a dairy. He told me he had brought 225 Red Danish cattle from Denmark to Cela.

"We've shipped cattle all over the world," he said, "but this is the first time we've brought them so near the Equator—within twelve degrees. They are doing well; those calves were born here."

Hanson's pride was a nearly completed dairy, equipped with huge stainless steel vats, sterilizing equipment for milk and cream,



BOGACHEVNIK © NATIONAL GEOGRAPHIC SOCIETY

and tiled, temperature-controlled rooms for cheese ripening and butter storage.

"We plan to process 10 to 12 thousand liters of milk a day," he explained. "Much of it will go to Luanda."

Later I met Senhor de Sousa Melo, the agronomist in charge of the colonato.

"Our entire area comprises 125,000 acres," he told me. "So far we've brought 15,000 acres under cultivation. The soil, mostly drained swampland, is rich.

"We've 250 families from Portugal occupying 12 villages, each with its own church, school, community barn, and, of course, a Portuguese fountain in the central square. As we expand, we'll add more villages."

"Do you expect much growth?" I asked.

"Yes, our purpose is twofold: to provide an outlet for overcrowded Portugal, and to show the Africans how they can properly cultivate the land," he replied. Several colonatos are settled entirely by Africans; one in southern Angola is planned for 9,000 families of both races.

#### Plaintive *Fado* Evokes No Sadness

Through fields of corn, wheat, soya beans, and potatoes we drove to one of the villages.

"We permit little African help because we want each settler to work for himself," Senhor de Sousa Melo explained. An average family owns about 150 acres of land and a house; the state provides cows, fowl, rabbits, and pigs. Money comes from a government agency — the Angola Development Fund. The settler eventually repays it.

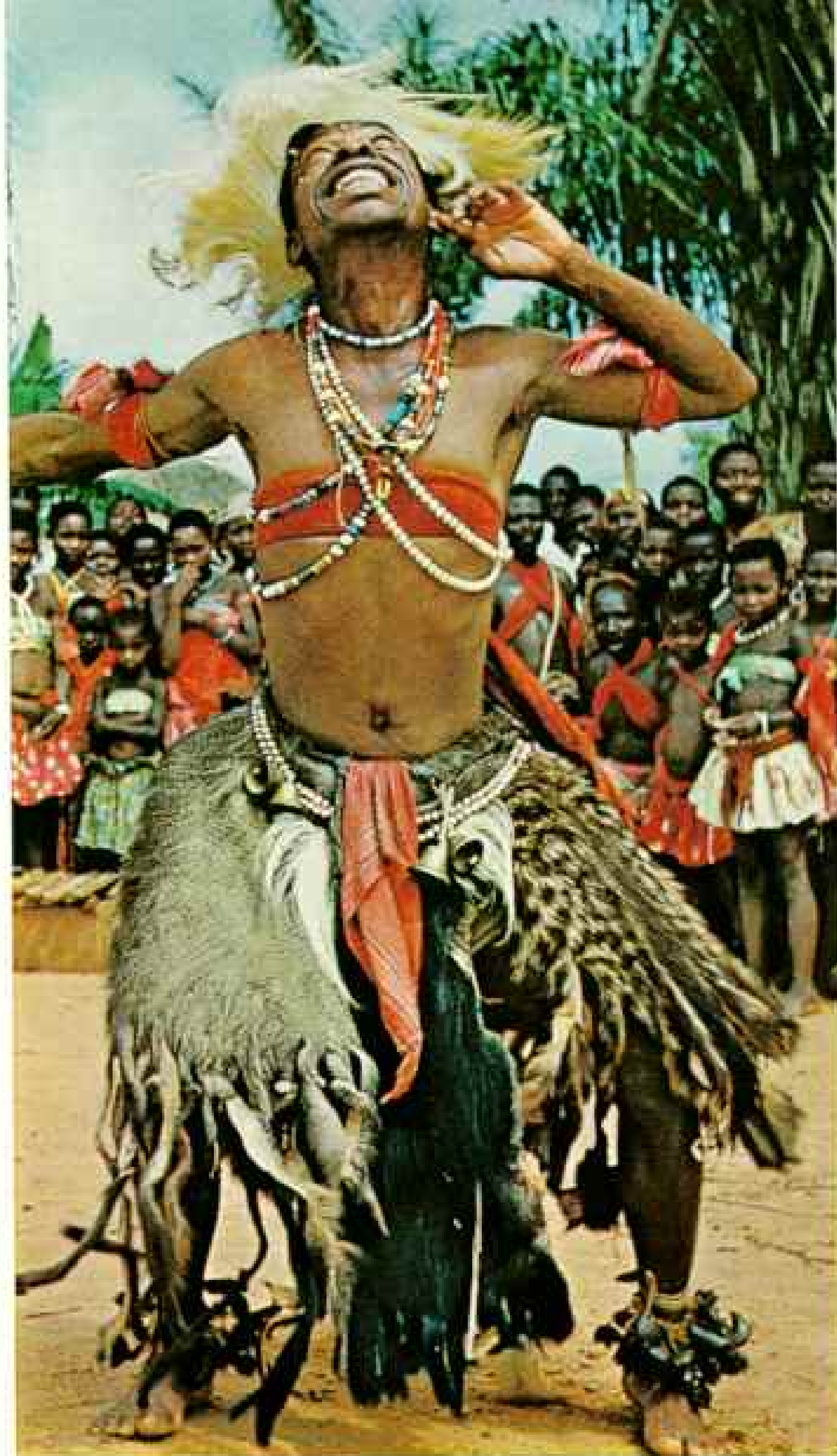
We dropped in for a visit with the family of Antonio José Freire, an emigrant from Alto Alentejo Province in Portugal.

#### Diamond Diggers Scar a Land's Green Face

Gaping holes in northeastern Angola yield \$20,000,000 worth of diamonds a year. Here the Companhia de Diamantes de Angola — DIAMANG — governs an empire as large as Portugal. These workers in the Mussolegi mine must strip away 70 feet of soil to get at diamond-bearing gravel. Machines process eight tons of gravel for each carat of diamonds.

Uncut gems gleam with yellowish hue. Mine officials valued these at \$200,000.





ARRANGED BY (ABOVE AND RIGHT) AND BY ETYCHOWSKI © N.S.S.

Grimacing skyward as he writhes to the beat of drums, a Baluba tribesman performs the strenuous Thief's Dance in a village near Dundo. Every motion makes beads and bells rattle and furs and feathers shake. Palms shade the rapt spectators.

#### Toes Gripping Ground, Hips and Shoulders Asway, Baluba Girls Learn a Graceful Tribal Dance

As drummers and xylophonists step up the tempo, performers flex knees and dip low. Losing balance, the girl at right steadies herself with finger tips to the amusement of the instructress, center. Many Baluba men labor in the diamond mines.

Painted beauty marks (opposite, above) have outmoded painful scarification practices. Baluba women can change facial markings as often as they wish, an advantage denied by tattooing.

Over the radio a plaintive voice was singing a *fado*, the nostalgic folk song of Portugal. But in the Freire family circle I detected no nostalgia. In parting, Senhora Freire took me by the hand and said, "This is our home. We shall be here for the rest of our lives, and our children after us."

While in the capital, I had asked for permission to see the diamond operations of the Companhia de Diamantes de Angola (DIAMANG), in northeastern Angola. Permission, I was told, had to





be obtained from Portugal. Now came the welcome telegram: "DIAMANG VISIT GRANTED." I immediately arranged to fly there.

The plane skimmed over green bush, grasslands, and eroded escarpments. Set in this wilderness, the Diamang headquarters at Dundo appeared as regularly laid out as a chessboard. It governs an empire as large as Portugal itself.

Senhor Enes Ramos, Secretary of the Field Management, took me for a spin around the settlement. From a hilltop he pointed out the administration buildings, hospital, housing, church, and a museum. A broad hydroelectric dam held back the swollen Luachimo River.

Rows of prefabricated houses crept up the hill; they had been erected for the *assimilados* employed by the mine. The unique *assimilado* system grants a native African full Portuguese



citizenship. To attain this status, however, he must meet a series of extremely strict requirements.

Thick mud clogged my shoes as I walked about. Seeking a scraper to clean them, I picked up a stone—and abruptly took a second look at its curious shape.

Senhor Ramos laughed, and quickly explained: "It's a Stone Age ax. Archeologists say that this was a workshop of prehistoric Sangoan Man, who lived here 40 to 50 thousand years ago. They've found hundreds of axes, cleavers, and stone daggers—you'll see them in our museum."

At the museum I saw not only the rude tools used by early Sangoan Man, but splendid ethnographic exhibits of the local tribes, and listened to tape recordings of their songs. That night, by flickering firelight among thatched houses, I witnessed Chokwe dances of savage beauty (pages 360-1).

Diamang's mines are yawning open cuts slashed across the green landscape (page 376).

Within them chanting native workmen shovel the red soil into a conveyer system.

"We have to strip away 70 feet of overburden before we reach diamondiferous gravel," the labor manager at the Mussolegi mine told me. "We process about eight tons of gravel to get one carat of diamonds."

#### Steel Doors Guard Precious Gems

The diamond separation center reminded me of a penitentiary as well as a gravelworks. Steel doors clicked behind us as we entered, and an armed guard escorted us to a bedlam of hoppers, metal jaws, and jiggling and sifting machines. Most of the final separation, I learned, is done electrostatically, the gravel clinging to a roller charged with 20,000 volts, while the diamonds and quartz drop into a receptacle. Another method sluices the gravel over a greased belt, to which the heavier material, including the diamonds, will stick.

Our tour ended in a small office, again behind steel doors. Senhor Henrique Patrone,





one of the many National Geographic Society members I met in Angola, brought out two trays of diamonds from a safe. He poured a glittering cascade of rough stones onto a velvet-covered table.

"Here are 6,272 carats," he said, "the equivalent of ten days' production at this mine. These are mostly gem stones; 80 percent of them will end up in the United States."

"How much are they worth?" I asked.

"To us about \$200,000; more, of course, on the world market. We produce \$20,000,000 worth of diamonds a year—next to coffee they're Angola's biggest export item."

From the hospitality of the diamond company, I drove two days through heavy rains to Luso, a thriving frontier town we had touched earlier on our trip to Cameia. This time I wanted to catch the Benguela Railway, linking the mining regions of Katanga and Northern Rhodesia with the sea. The train would take me westward across the midsection of Angola to Lobito, on the Atlantic coast.



Beauties on a balcony in midtown Luanda watch a sports car race. Below the apartment, drivers hurtle along the Avenida de Paulo Dias de Novais, named for the city's founder.

Eye-catching mosaics decorate the sidewalk of a cafe outside the Hotel M'ombaka in Benguela. Old Portuguese caravels and ships' wheels form a maritime motif.

Arriving well before train time, I explored the town. Quite by chance I met husky, blond Heinrich Pelas, Prince Reuss—whose family can be traced in German nobility to 1122—delivering milk.

Prince Reuss came to Angola after fleeing his Silesian estate in a horse cart just ahead of the Russians in World War II. On the out-

skirts of Luso he cleared 100 acres of land where he keeps 20 cows. Although a bachelor, he has adopted a native boy, 12-year-old Antonio; they hope one day to provide all the milk the town of Luso can use.

"Hop in," he invited, and we took off in his little blue station wagon. We stopped at street corners where Portuguese, assimilados, and Africans waited for His Serene Highness with pails and bottles. Two African boys ladled out the milk while the prince collected the money, six escudos (about 21 cents) for a liter.

Half the town was at the station when we returned. In this isolation the arrival of the passenger train is still a big event. I said goodbye to the pioneer prince, and our train puffed off into the night, spewing a red fountain of sparks over the landscape.

The rail carriages, richly paneled with inlaid woods, were a tribute to the coach builders of Birmingham, England. In the dining car we ate excellent meals on damask-covered tables decorated with flowers (page 371). We rolled across swamps and plateaus, stopping often to load eucalyptus logs for our hungry engine.

A night, a day, and 375 miles from Luso, our train chugged into Nova Lisboa, a prosperous agricultural center laid out with broad avenues and imposing squares named after Portuguese heroes. Here I detoured on my rail journey to visit Fazenda Chinguri, a model coffee and citrus plantation, 30 miles to the northeast.

"Do come in," invited Mrs. Werner Hollmann, the attractive wife of the German plantation manager. "My husband will be back soon. He went to the station; our children are coming home from school in Cape Town."

Brakes screeched in the yard; three teenagers—two girls and a boy—rushed in and embraced their mother. Behind followed Mr. Hollmann with Hasso, a Scottish terrier.

"Sports car fever extends even to the small towns in Angola's interior," says the author. Children in Malange, on the old slave trade route, gather about a sleek British model parked before modern shops and apartments, which reflect the Portuguese love of color.

110 EXPANSION BY VOLKMAR WENTZEL, NATIONAL GEOGRAPHIC STAFF © R.S.S.



"I'll show you the farm," Mr. Hollmann said. "But you must stay for lunch — we're starved for news."

At the wheel of the family Land-Rover, Mr. Hollmann told me about the plantation: "Nine years ago there was nothing here — no road, no clearing, only wilderness."

Now we rode past rows of contour-planted coffee trees shaded by tall cypresses and silver oaks.

"Our climate corresponds to the coffee-growing highlands of Kenya," my host said. "We've planted 180,000 trees of the *arabica* species. They require much care, but the beans fetch a good price. We should have a bumper crop in 1962, when most of our trees will be four to five years old."

We turned into vast citrus orchards, where workers were picking oranges.

"It looks almost like Florida," I remarked.

"Yes, we have the same hazards, too — fungus, diseases, and bugs," he replied. "I read all the American citrus literature I can lay my hands on."

Mr. Hollmann picked several oranges for me to taste. They were as juicy and delicious as those grown in California and Florida.

#### Africa's Tensions Touch Angola

Still munching oranges, I caught the train to the coast. We descended by way of picturesque loops and curves through the Lengue Gorge, and after passing Benguela, headed straight through green sugar and banana plantations for Lobito.

As I checked in at the Hotel Terminus, I was suddenly reminded of the date I had almost forgotten in this tropical land. It was Christmas Eve.

Next morning, Christmas Day, I saw hundreds of children streaming in their Sunday best toward the railway station. I joined them to see what was afoot.

On the platform, eager youngsters gazed toward a whistling, gaily decorated train that steamed slowly in. From it waved a bearded Santa Claus with a team of youthful helpers. He had brought presents for all the children — white, black, and brown.

On my 6,000-mile trip I had observed a fascinating spectrum, from Bushmen scarcely out of the Stone Age to far-reaching economic development projects. I had seen no unrest, found



HE ESTACHEME © NATIONAL GEOGRAPHIC SOCIETY

Peering from the sanctuary of his mother's legs, a Kuvale baby reflects a tribal way of life unchanged for centuries. Decorated stick strapped to his back keeps the child's spine straight when mother transports him in a sling.

few signs of political tension. But I realized that tension often remains invisible until the rope snaps.

I had watched Africans and Portuguese working together in the fishing fleets, building their own homes side by side, and playing together in basketball and soccer games. I had seen pioneer settlers, black and white, carving their futures out of former wastelands on productive colonatos.

When I left Angola in January of 1960, I hoped with all my heart that this kind of cooperation would continue. Now, in the summer of 1961, it appears that the peaceful land I had seen was not destined to be spared the violence of racial strife.



*The world's last Shangri-La, now darkened by China's shadow, opens its doors to a Western reporter*

# BHUTAN

MOUNTAIN KINGDOM  
BETWEEN TIBET AND INDIA

ARTICLE AND PHOTOGRAPHS  
BY DESMOND DOIG



**T**HE MAN, I was solemnly informed, had been attacked by a spirit.

He burned with a painful fever until the local witch doctor, diagnosing the illness, prescribed a massage with salt and the juice of a jungle plant called *majecta*. Immediately the scratches stood out: hundreds of scarlet marks covering the victim's back, shoulders, and arms. This was a good omen. Had the scratches not appeared, the man would almost certainly have died.

He could have been clawed by a rabid cat, but what cat glazes a grown man's eyes with

such fear? No, clearly it was the work of a *soumday*, a spirit.

This I was told by no less an authority than His Highness King Jigme Dorji Wangchuk, 33-year-old ruler of Bhutan. He had had the victim, a servant, stripped to the waist for my inspection in the ornate sitting room of the Royal Palace at Thimbu, the capital of Bhutan. It was a room fit for such exotic drama: leopard- and tigerskin rugs on the polished floor, carved and painted furniture, and richly painted walls.

I had been a month in Bhutan, and already



ESPENKRENE © NATIONAL GEOGRAPHIC SOCIETY

I was conditioned to believe in witches, ghosts, and clawing spirits.

I had been warned before entering the country that in Bhutan the extraordinary is often commonplace and the unexpected happens. Ghosts and apparitions are so familiar that they give their names to valleys and districts. Black magic is a part of life.

The sounday, I learned, can assume the shape of dog, jackal, pig, or even a ball of twine. The ball of twine manifestation is the most terrible. In it a man can become hopelessly entangled and die.

**Mountains meet the clouds** in Bhutan, a hermit kingdom in the heart of the Himalayas. Few Westerners have visited the rugged realm, which is just starting to shake off the feudalism of the past.

Bhutan has no towns and few villages; life centers around castle-monasteries called *dzongs*. Rising fortresslike from its hilltop, the Wangdü Phodrang Dzong commands the serpentine Sankosh River and its emerald valley (page 408). Turreted cantilever bridge at left suggests medieval battlements of Europe.



*Shy, Wondering Smiles Light Young Faces; Novices See a European for the First Time*

*Curiosity overcame piety when the author visited the Buddhist Kiyuchhu Monastery in Bumthang. "I was the first European to visit it in decades,"*



PHOTOGRAPH BY BERTRAND DUBOIS © NATIONAL GEOGRAPHIC SOCIETY

he recalls. "Many lamas interrupted their devotions to greet me." Traditionally, each family dedicates a child to religious orders, but the government now discourages the practice.

For its human shape, the sounday adopts only the most beautiful female form. Few men can resist the seductive glance and provocative giggle. I met one man, however, who did. He was a young Indian-educated schoolmaster in Bumthang (the Plain of Spirits), in central Bhutan, who told me he had once been enticed by a bevy of soundays. Somehow he managed to resist their charms—a victory for modern education.

#### Problems Beset Fairy-tale State

Bhutan, however, is not all spirits and superstition. Today it is a country suddenly in the news, caught between two powerful contending neighbors: India on the south and Chinese-occupied Tibet on the north. To the west lie the Indian protectorate of Sikkim and the Kingdom of Nepal. To the east stretches India's province of Assam (map, page 390).\*

Long undisturbed in its feudal ways, Bhutan suddenly has problems. By a treaty signed at Darjeeling in 1949, India has guaranteed the independence of its 18,000 square miles. But with Tibet's tragic example still fresh in their minds, the estimated 700,000 Bhutanese see mortal danger at their northern gates.

Politics apart, Bhutan is as outrageously different as it is beautiful. Small as a fairy-tale kingdom, it plays the role with medieval pageantry, a Dragon King, subjects dressed like Renaissance page boys, and castles thrust above indolent clouds.

High mountain ranges and a closed door to foreigners have helped to preserve the country's antique ways. Essentially, Bhutan is warm and hospitable; it clings to human values and an easy, uninhibited way of living. Though the people of Bhutan have spent centuries in isolation,

\* See "Bhutan, Land of the Thunder Dragon," by Burt Kert Todd, NATIONAL GEOGRAPHIC, December, 1952.

they accept with stolid unconcern the tales of the rare foreigner they meet. If I thought my accounts of sputniks and television were going to make me a celebrity, I was soon disillusioned. In a country that happily minds its own business, an oracle's prediction or the birth of a yak are miracles enough.

Yet Bhutan knows more of the world than it admits. Once in the Ha River Valley of western Bhutan, I met a 15-year-old schoolboy who addressed me in perfect Hindi. When I asked him what he wanted to be, he answered promptly, "An electrical engineer." This in a country where the only electric generators belong to radio stations, a sawmill or two, and the Royal Palace at Thimbu.

Bhutan has no cinemas, and the only written news comes in the form of outdated Indian newspapers and old American maga-

zines. The country has no towns, no post offices, no shops worth the name. Since homesteads are widely scattered, there are few villages. The wheel, though known, is practically unused; and yet people talk of skyscrapers and locomotives.

Such is Bhutan, and I came to it one day over a forested pass filled with blinding mist.

The shortest and best route into the country leads from India through Sikkim and Tibet. But since Communist Chinese occupation of Tibet, this route has become too dangerous. Travelers now use the longer southern route direct from India into Bhutan.

### Leeches Plague Bhutan Travelers

When I arrived at Bhutan's southern mountain barrier, the guides, servants, and mules sent by the King awaited me.

My party was small. In it was a Bengali named Bhanu Banerjee, a free-lance photographer and high-caste Hindu who had never ridden a horse or trekked more than a mile. But he had jumped at the chance to come, and there he was at the frontier in new jungle boots and Gurkha felt hat.

"Where is Bhutan?" his family had telegraphed when he wrote them of his plans.

There was middle-aged O. P. Mathur, an Indian engineer who was then selecting a route for an automobile road that now links Bhutan's fertile Paro River Valley with India.

There was Matay, our cook and headman, a plump, jovial Bhutanese with a fiery temper. He had been to the United States and

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**The Author:** A correspondent for the *Calcutta Statesman*, British newsman Desmond Doig has taken tea with maharajas and sought the abominable snowman in the high Himalayas. Recently the Prime Minister of Bhutan invited him to become the first journalist ever to travel widely through that little-known land. In three months he covered almost 600 miles on foot and by horse-and muleback.

The proof sheets of this remarkable article followed Mr. Doig on his latest foray to the roof of the world, where he was serving with Sir Edmund Hillary's recent expedition. Sherpa runners sped the pages from Nepal's exotic capital, Katmandu, to a campsite at 19,000 feet on the slopes of Ama Dablam, Mount Everest's next-door neighbor.



A passing mule almost nudged the author to his death when he leaned out to make the photograph opposite. The tortuous track spirals down a cliff below Tongsa Dzong. Legend credits a monk with blazing the trail while chasing a runaway bull. Until recently, Bhutan resisted roads.

Frontier guard with a British Sten gun mans a three-mile-high outpost near Chekha.







even toyed with the idea of staying there, but then he grew homesick.

Nimchu, a Bhutanese Don Juan, was our Jack-of-all-trades. A splendid entertainer, he sang, cracked jokes, and called to every woman he passed.

This calling of a man to a girl is something I will always remember about Bhutan. The man calls as Nimchu did, with a hand to his ear to catch the echo.

"Women prepare, I am lord of the mountains and I own the sun. Your valley is mine, as are the fish in the streams and the animals in the forest."

"But are you a man?" trills the woman, a distant speck in the flooded rice fields. So they called to us, and Nimchu invariably told me that they sang my praises. But I suspected the wicked glint in his eye, and Matay, with his Western manners, often looked plainly embarrassed.

The first part of our route lay over densely forested Sinchula Pass, where prayer flags and flowers decorated a cairn of stones. Here in 1865 the Bhutanese and British met to sign a treaty that ended the Bhutan wars and cost the kingdom vast tracts of land.

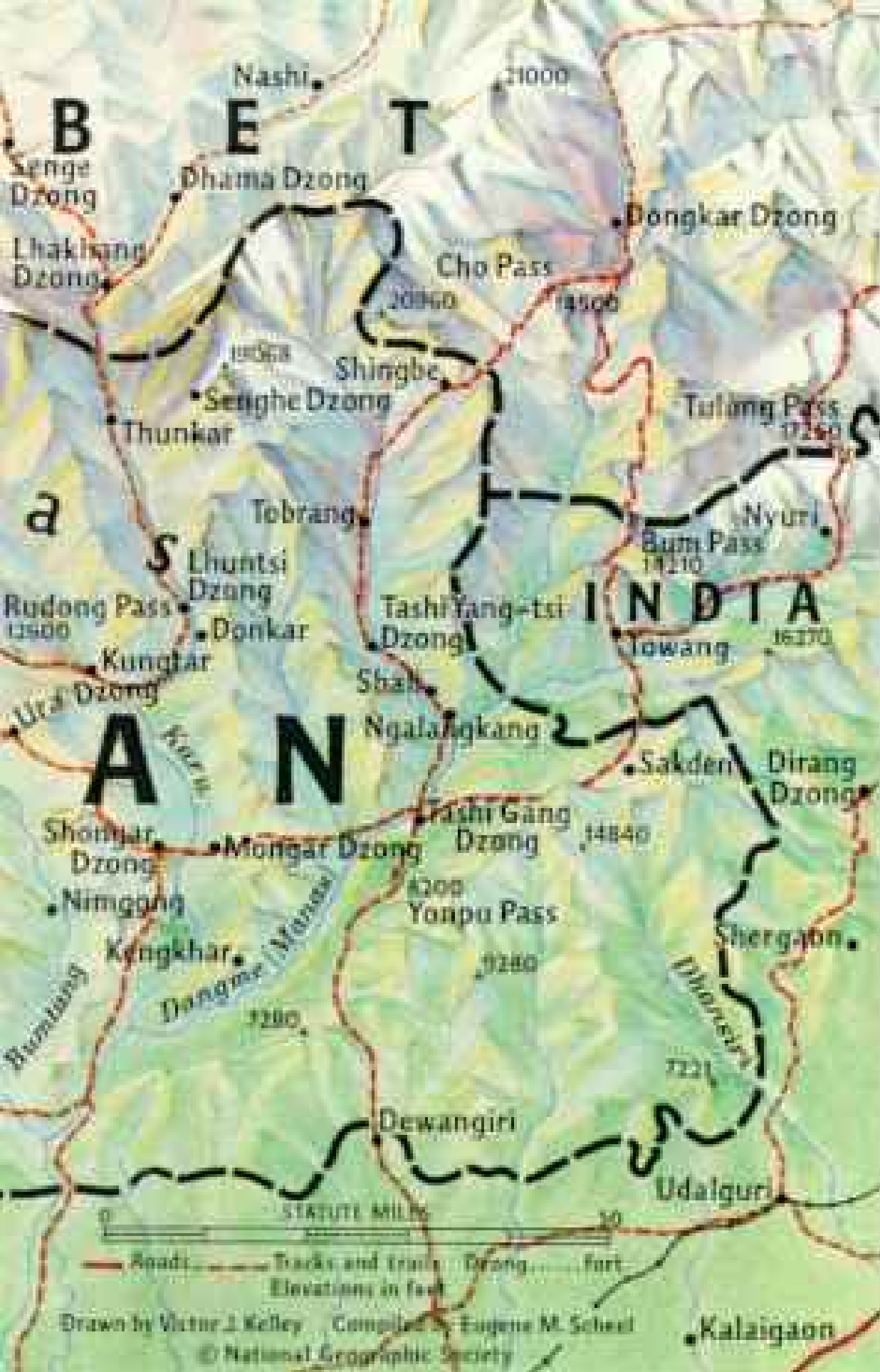
As we labored over the pass, I wondered about our British predecessors. Had they stuffed tobacco leaves in their boots or salt in their stockings to ward off leeches? I did, because leeches are the scourge of Bhutan. Millions of them swarm in the undergrowth or drop from the trees. They bloody the horses' eyes and noses and make them a fearful sight. I have had a leech suck away unnoticed at my chest until blood soaked my shirt from collar to waist.

#### Bird Call Inspires a Ghost Legend

At first we encountered only trees and mountains, the peaks rising higher and higher toward the north, their monotony broken by spectacular waterfalls. In the forests stood banks of rhododendron, often festooned with moss. Orchids sparkled like jewels in the unending green.

The jungle vibrated with bird song. One anonymous bird set up a strangely haunting cry that rang through the trees. In the mist it was an eerie sound. Legend can hardly be blamed for labeling it the voice of a lost soul.

Often we rode through clouds of butterflies so dense that they brushed our faces.



## Isolated Bhutan Forms a Buffer Between India and Communist China

As remote as the fictional Shangri-La, Bhutan is awakening from the slumber of centuries. A new road links Paro Dzong to Jaunti, India, and allows the first vehicles to penetrate a land where the wheel has been virtually unknown for transportation. Half the size of Indiana, the nation covers 18,000 square miles. Its Prime Minister estimates the population at 700,000. Red Chinese troops occupy neighboring Tibet.

Tigers have been seen high in the mountains, where they occasionally kill yaks. Deer, wild dogs, bears, and mountain sheep are a common sight. But my greatest thrill having to do with animals came later in a monastery farther north in Bhutan, where I saw the pelt of a *dremo*, my candidate for the abominable snowman. It was a shimmering gold and the texture of nylon.

"An ape bear," said the old monk, who knew nothing of our Western expeditions for the mysterious *yeti*. I bought the skin and later showed it to an authority in the British Museum. Less romantically inclined than I, he identified it as the skin of a blue bear—a rarity if not a snowman.

Bhutanese themselves accept the snowman casually—they have seen him, and he figures in their folk tales and songs. One account describes the *yeti* carrying off a woman and lovingly licking the soles of her feet until they become too tender for flight.

The *yeti* has a lesser relative, the "Little Man," a black, apelike creature that roams the forests, hooting and piling twigs into neat bundles.

Still another, a Loch Ness-type monster,

Hundreds were crushed under our horses' hoofs. One variety I dubbed Suicide Butterfly; I saw several thousand alight on a waterfall and be swept away.

Animals abound in Bhutan's sky-high forests. Nimchu pointed out elephant tracks at 6,000 feet on a slope so steep it would have taxed even the legs and lungs of our sturdy mountain guides.

Face to face: Royal servant's fearsome mask bewilders a leopard cub at Thimbu. Palace woodcutters captured the baby; the King gave it to the author.

"Thinking it was tame," Mr. Doig recalls, "I tried to cuddle it, only to be bitten." Constant petting gentled the captive. Only after the cub developed a taste for dogs and human legs did Mr. Doig give it to a zoo in Sydney, Australia.





KODACHENES © NATIONAL GEOGRAPHIC SOCIETY

Known as the Tiger's Nest, Taktsang Monastery clings to a cliff above the Paro River Valley. Bhutanese believe that the Indian mystic who brought Buddhism to Bhutan and Tibet landed here on a flying tiger.

inhabits one of Bhutan's northern lakes. The King has seen it—a great, white, fast-swimming shape. And the Prime Minister told me of a pink water animal, a cross between a piglet and an otter, that is sometimes seen in the rivers. Bhutanese fear it, for calamity always follows its appearance.

Once, after I had taken a chill swim in a pool near the palace in Thimbu, the King horrified me with the remark: "That's the python pool. Quite a large creature, but harmless, I suppose. Or do you think it would attack a swimmer?"

Rickety bridge spans a cataract on



For nights afterward, I dreamed of pythons coiling around me in a freezing pond.

That trek to Thimbu taught me that Bhutan then had no roads worthy of the name. There were mule tracks, to be sure, that painstakingly climbed the mountains and plunged into the valleys. The great ridges of the Himalayas run north and south in Bhutan, cradling high valleys in their gigantic folds. Life centers in the wider valleys, where the rich earth yields two harvests a year.

Distances mean nothing to the Bhutanese. Some mornings I would ask Matay or Nimchu where the next halt would be. They

would point to some hill and say, "Just around the ridge." I soon learned that "the ridge" could keep unfolding endlessly. Mountains seem to do that. They almost travel with one.

The main track to Thimbu is fairly good—until it rains. Then the surface becomes treacherously slippery, and the mules churn it to a porridge. A single cloudburst turns streams to torrents, tearing at everything and smashing house-sized rocks against pathetic log bridges (below). Turbulent rivers are spanned by cantilever affairs of log and stone with turrets at either end to house toll gath-

a trail in southern Bhutan. A traveler crosses with the nonchalance of a tightrope walker





PHOTOGRAPHED BY JUAN PABLO BARRERA (BOLENA)





BY STANLEY DOW © NATIONAL GEOGRAPHIC SOCIETY

Flag-bearing archers parade to the butts for a tournament at Thimbu, Bhutan's capital. Oracles determine the most propitious route and time of arrival. Team colors will mark the targets. Bhutanese archers consider defeat an evil omen.

Drawing his bow, an archer aims at a target 140 yards distant. The weapon, made of bamboo, takes a pull of 40 to 60 pounds. This marksman carries a rifle, its muzzle plugged against the weather.

Dragon head and pearl tassels embellish a lutelike instrument played by a Thimbu musician.

erers and watchmen (page 384). Even bridges that are sturdy to look at often shake underfoot. Prayer wheels stand in the turrets and prayer flags festoon the railings.

Once, on a perilous stretch of pathway, calamity threatened. My horse shied at a bear-sized stone and, without warning, started to leap from the road toward a thousand-foot cliff. One of our quick-witted Bhutanese guides flung his loose robe over the horse's eyes, and it calmed instantly.

We broke our trip to Thimbu into six stages and stopped every 15 or 20 miles at typical Bhutanese resthouses: wooden buildings of two or more rooms, with shuttered windows (glass is rare in Bhutan), wooden platforms for beds, and wooden hobbyhorse-type commodes that take getting used to.

### Refugees Stream in From Tibet

We shared one of these resthouses with a group of Tibetan refugees, some pathetically undernourished, others wounded, and most of them suffering from dysentery and infected insect bites. We were to meet hundreds of these pitiful exiles during our stay in Bhutan, and we always marveled at their courage.

In another resthouse, where great rocks weighted down the wood-shingled roof and fireflies sparkled like animated sequins in the trees outside, my evening scrubdown was interrupted by female giggles. I turned to find mischievous almond eyes peeping through the cracks in a shutter. Later I saw the same beautiful girls shoulder our heavy bedding and fall in behind the horses.

On the fourth day, we crossed a high moun-

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tain ridge into what our guides called the "dry belt," and certainly the clouds that rush like frightened ghosts up the lower valleys seemed to stop here. Oak and fir replaced tropical trees, and we reached the first settlements of white-plastered houses with their trimming of weather-blackened beams, reminiscent of the Tudor cottages in England. Here terraced fields of rice and wheat shingled the mountainsides and here stood the first *dzongs*, Bhutan's combination fortresses and administrative and religious centers.

*Dzongs* command most of Bhutan's valleys. In architectural style they resemble the great Potala, or palace of the Dalai Lamas, at Lhasa: high whitewashed walls of earth and stone; deep, richly ornamented windows; and gold-plated pagodalike roofs adorned at the corners with dragon heads. If there are resident lamas, no woman may spend the night—a rule that applies even to the Queen.

Usually the *dzongs* include several chapels, sometimes as many as thirty, each magnificently painted and brooded over by a host of deities. I have stood enthralled in their perfumed gloom, trying to absorb the myriad detail of murals, images, and all the paraphernalia of worship.

In some *dzongs* the images loom so large that their gilded heads are lost to sight in the upper shadows. Their hands could seat a man, and the murmured prayers of monks in the galleries overhead give the impression that the giants breathe and live.

#### Bhutan's Religion Mixes Creeds

Buddhism, Hinduism, and Bon, the country's original cult of sorcery and spirit worship, all survive in Bhutan's religion. Fierce gods and protective deities are born of the strange alliance. A few merely represent some bandit or sorcerer deified more out of fear than respect.

Being Buddhist and thus opposed to killing, Bhutanese shun the butcher's trade. They give the job to low-caste Tibetans. Since even flies are spared, it is small wonder that dysentery is the country's greatest killer.

Most Bhutanese still take their ailments to witch doctors and monks, although two Indian-trained doctors and more than a dozen pharmacists have begun the campaign against disease. There are clinics at all important centers, and hospitals of a sort at Thimbu and Paro Dzong, the two biggest centers of population. But still no surgery is

practiced, and despite the hospitals' two modern delivery rooms, children continue to be born at home. Infant mortality is high.

This is not to say that Bhutan is all hardship and disease. By Asian standards Bhutanese enjoy a fairly good life. They eat well, dress well, and most families own two homes: one for winter in the lower valleys, another for summer higher up. Thus, depending on season, Bhutan's settlements may be filled or deserted, and my first encounter with the forsaken off-season valleys was a shock.

#### Cheering Sections Enliven Archery Meet

We reached Thimbu on the day of a great archery contest. The King and Queen welcomed us to the village that serves as Bhutan's capital and took us to the field, an arrow's flight from the palace.

For sheer pageantry, Bhutan's archery meets are unbeatable (page 394). They are explosions of color and excitement, beginning with the archers in vivid traditional costumes, their processions like cascades of jewels down the emerald valleys.

Then there are the cheering sections, the dancing girls decked out in vivid homespun, brocade, and coral jewelry. Each team has its own troupe of girls, whose job is to praise the home team and insult competitors.

The competition began, and the dancing girls urged their favorites on:

"My beautiful lord, let your arrow fly like a bird, straight to its nest."

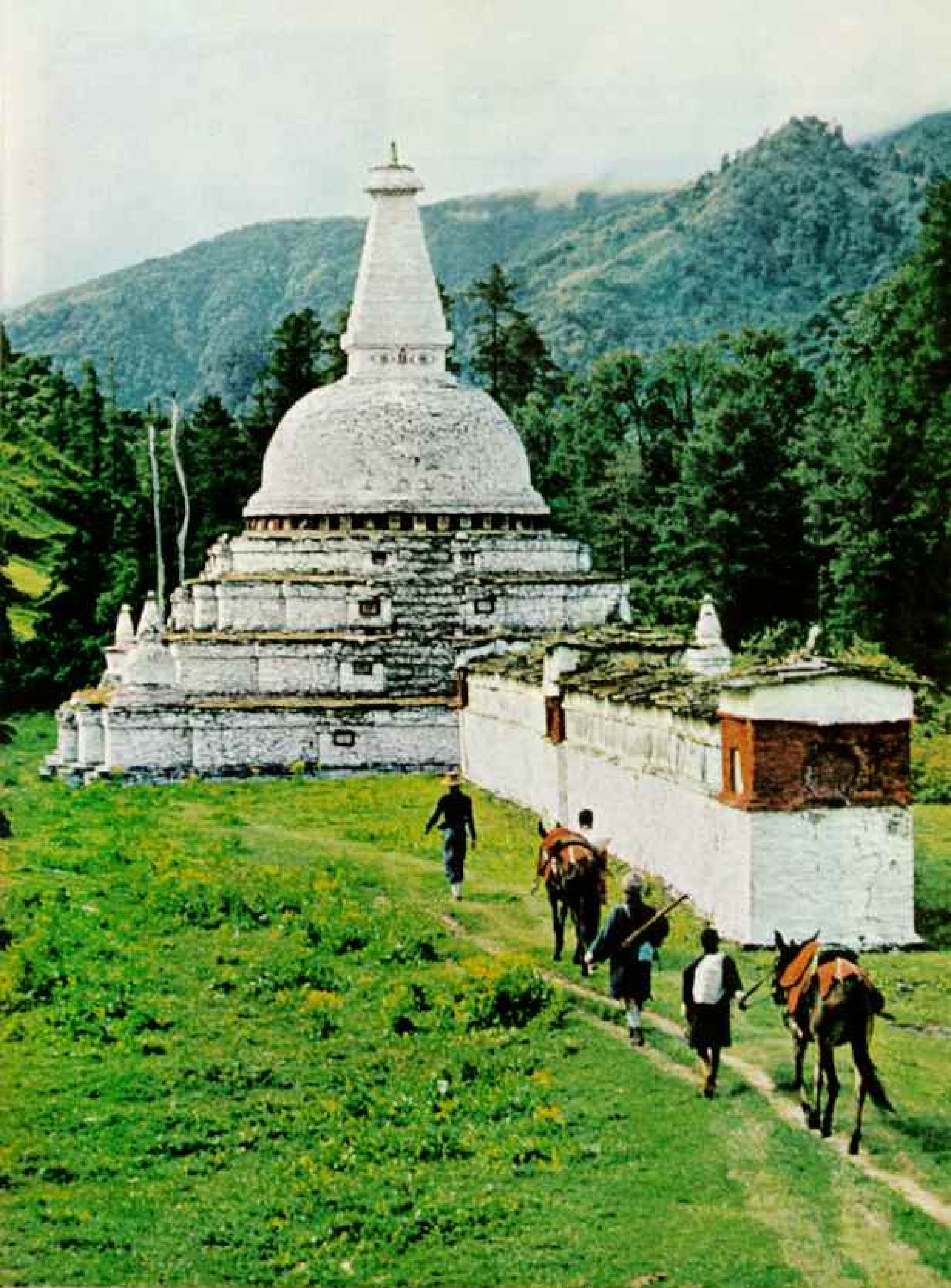
Often "my beautiful lord" might be the ugliest of men, a fact that did not escape the rival teams' girls. With a swishing of scarves they would taunt the unfortunate.

"There is a goat in our village whose face is more handsome than yours."

At intermissions other dancers performed. Some wore flame-colored brocades and masks representing mystic birds and animals (pages 404-5); others dressed as skeletons. They all leaped and whirled to the throb of turquoise-and-coral-colored drums and the harsh blasts of two-yard-long trumpets.

The King joined in the shooting and did very well, despite the dancing girls' jibes—even royalty is fair game at an archery contest. The Queen and her palace guests watched from under an embroidered silk canopy, their modern cameras contrasting with the medieval scene. "What exposure are you using?" was as common a question as "What's the score?"





ADAPTURED BY GEORGE JOHNS © NATIONAL GEOGRAPHIC SOCIETY

All-seeing eyes of a Nepalese-style stupa, only one of its type in Bhutan, observe travelers on the track to Bumthang. Prayer wall at right beckons the faithful. Bhutanese practice a form of Buddhism overlain with belief in devils and spirits.

Fingers flying, a weaver in the palace at Thimbu works a pattern into her cloth. Fashion dictates closely cropped hair for Bhutanese women as well as men.



Dragon and sea monster adorn a gold-and-silver teapot. The same metals line the ivory cup.

Intent on his work, a palace woodcarver shapes a chapel beam.



Each team, I noticed, had brought its own witch doctor along, though apparently magic was taboo during the meet. The favored team had done well at first, but suddenly it collapsed suspiciously. What was worse, its best archer was seriously wounded: An arrow went through his neck.

An uproar followed. A search was made for a rival witch doctor, and sure enough, there he was, casting spells. With the King's approval, he was banished from the field.

Coincidence or not, the favorite team immediately picked up and went on to win the contest. The wounded archer? He walked from the field, helped draw the arrow from his own throat and, ignoring a doctor's advice, sat down to a heavy meal of rice and pork fat. I'm told that he survived.

A few days later, I witnessed another supernatural feat, this time the work of an oracle. It was in Ha Valley, a 9,000-foot-high basin southwest of Thimbu, from which a pass leads one ultimately into Tibet.

Fear of the Chinese had seeped into the valley with the streams of pathetic refugees who brought chilling tales. Communist China, they said, regarded Ladakh, Nepal, Sikkim, Bhutan, and India's North East Frontier Agency as her own—the five fingers of her Tibetan hand.

A young brother of Bhutan's Prime Minister sent for the oracle and invited us to the solemn affair. Village headmen and officials from the near-by dzong were also present.

#### Chondu Warns of Peril to Bhutan

The evening threatened rain, and we sat in the gloom of a carved and painted Bhutanese home over bowls of saffron rice. At last the *pau*, or oracle, arrived.

My first reaction was disappointment, for he was a shabby, middle-aged man with a high-pitched voice and an unctuous manner. But then he began to dance.

He swayed and chanted to the rhythm of a small hand bell, and as he danced, he grew in stature. Finally the tempo quickened, his ritual reached a climax, and he became a menacing, commanding figure. He called upon Chondu, Ha Valley's guardian deity, to take possession of his body. Then, in a deep, rasping voice, he announced Chondu's approach.

Now Chondu was possessing the *pau*, whose body suddenly stiffened, whose eyes bulged and lips frothed. A triumphant voice came from nowhere—perhaps a whisper, per-

haps a shriek, I was beyond remembering: "He has come!"

And no one, least of all myself, doubted.

Abruptly the dancing stopped. The *pau* quivered so violently that the floors shook. I was as tense as the rest, as fearful as any of what was to come.

When the *pau* opened his mouth, it was Chondu who prophesied:

Bhutan was in danger. Enemies could come from the north in the spring. But there was hope. With the right ceremonies and steadfast faith on the people's part, danger might be averted. That was all.

The same night, orders went out that ceremonies for Chondu be performed through-



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Whirling prayer wheel, set in motion by the supplicant, sends up Buddhist prayers on his behalf. The scene is Tongsa Dzong.

out the valley. Exhausted, we all went to bed. But days later I was to remember the order for the ceremonies and hope it had been obeyed.

Bhanu and I had traveled north to the Tibetan frontier to see Chomo Lhari, Bhutan's most famous peak, 23,997 feet high.

Part of the mountain is actually in Tibet. We had seen it from a distance, from a pass between the Ha and Paro Valleys, a magnificent fluted pile of snow.

"Go and have a look," the King urged. "But I hope neither of you has heart trouble," he added ominously.

Lhendup Dorji, the Prime Minister's American-educated younger brother and unofficial governor of Paro, bade us farewell.

"I'll probably be seeing you," he said as we started. "I'm building a fort up there. You'll see it. It may not be the best defense against a Chinese invasion, but it's bringing our people together in a common effort." He smiled. "Don't get kidnaped."

On the second day we found the fort, a beautiful construction job of great logs with shooting galleries, ornamented barracks, and heavy wooden gate with prayer flags fluttering above. Our welcome by a young Bhutanese sergeant in a fox-fur cap gave it all a Davy Crockett-American frontier air.

#### Tension Grips Border Outpost

We spent the night a little way up the valley. Bears had been rummaging around, we were told, but it wasn't bears that worried me—it was the Communist Chinese. The frontier was close, and we felt terribly alone, despite the fine stockade behind us.

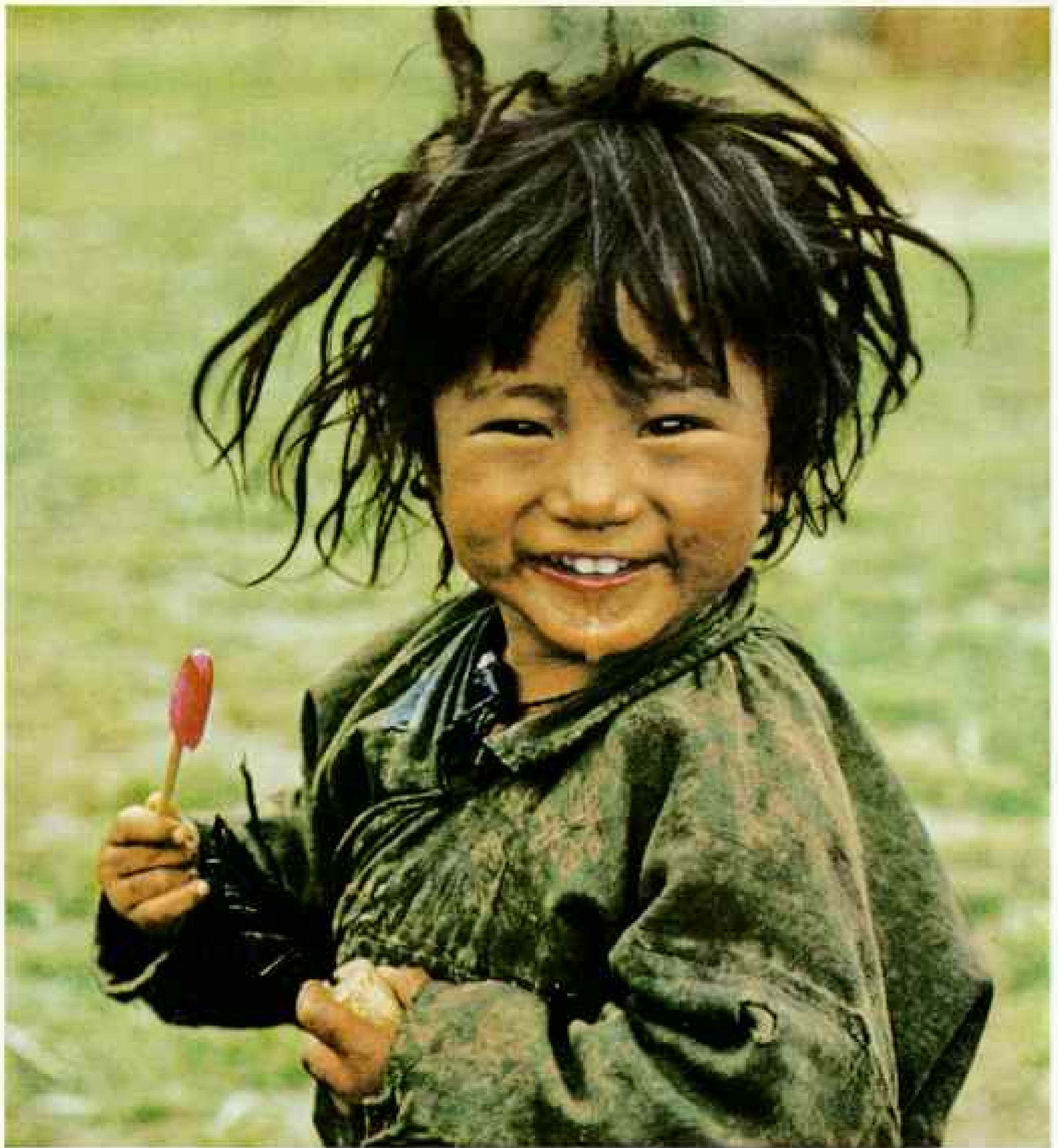
The next day we clawed our way up to Chekha, a pathetically small outpost close to the Tibetan border that was manned by 18 Bhutanese militiamen. Here we reached the tree line; above were only acres of alpine flowers, dominated by that exhibitionist the blue poppy, and wrapped in a vast silence.

The slopes around us were dizzyingly steep,



ACC-CHECKED BY BERNARD BANA LIPPINCOTT, UPPER AND BHANU BANERJEE © NATIONAL GEOGRAPHIC SOCIETY

Youthful scholars at the royal servants' school, Thimbu, crowd a balcony to watch visitors arrive. The government sends promising students to schools in India.



### Lollipop Lover Flashes a Blissful Smile

Tousle-haired Kaka, four years old, quickly won the author's heart. "She loved to flirt, wrinkling her nose and winking wickedly," he says. Her parents ran a tiny shop in Ha stocked with textiles, tobacco, and kerosene. A bottle displayed sweets, but they were taboo for Kaka. Her merry beam rewards Mr. Doig for his gift of a lollipop.

Overtaken by sleep near Thimbu, a tot lolls papoose fashion in a shawl slung from father's neck.





Travelers halt for a trailside meal below Dukye Dzong (background). Burdened guide

for here on the border — as if nature had taken a course in frontier fortification — the long, gentle mountain ridges of Bhutan pile suddenly together in a great saw-toothed, wind-whipped barrier. Chomo Lhari's summit seemed within arm's reach. Tibet lay only about a mile away.

Here we camped, and that evening, as the mist wrapped us in its ghostly shroud, news came that some Tibetan refugees had slipped over the pass. The Chinese were after them and might cross the frontier.

Our militiamen in the check post gallantly went off to investigate, warning us to pull out if they failed to return.

Night came. We were alone now on the mountainside, with the heavy mist outside our tent cloaking imagined footfalls and whispered commands. Afraid? I like to think it was the cold that paralyzed me, but I've been cold before.

#### **Refugees Prefer Death to Return**

By morning the Chinese had withdrawn and the Tibetans were on their way to India. The sun shone and all was serene. But I have reason to remember the night.

When the refugees, most of them women, were warned that they might have to return to Tibet, they asked simply to be shot on the



APRIL 1968 (2) WPTDVA/ GEOGRAPHIC SOCIETY

shoulders a rifle and packs an umbrella

spot. They were prepared to be killed mercifully. Tibet, they feared, meant rape, torture, and horrible death.

Leaving the border, we visited Taktshang Monastery, Bhutan's most famous cloister, where Buddhist shrines cluster like a colony of swallows' nests. Taktshang actually means "Tiger's Nest," but what a tiger! The settlement, approached by the narrowest of ledges, perches on a sheer granite cliff some 3,000 feet high (page 392).

The good monks made us comfortable while we sat out a paralyzing storm. Setting up a low table in front of the main altar, they loaded it with sheep tongues, yak meat,

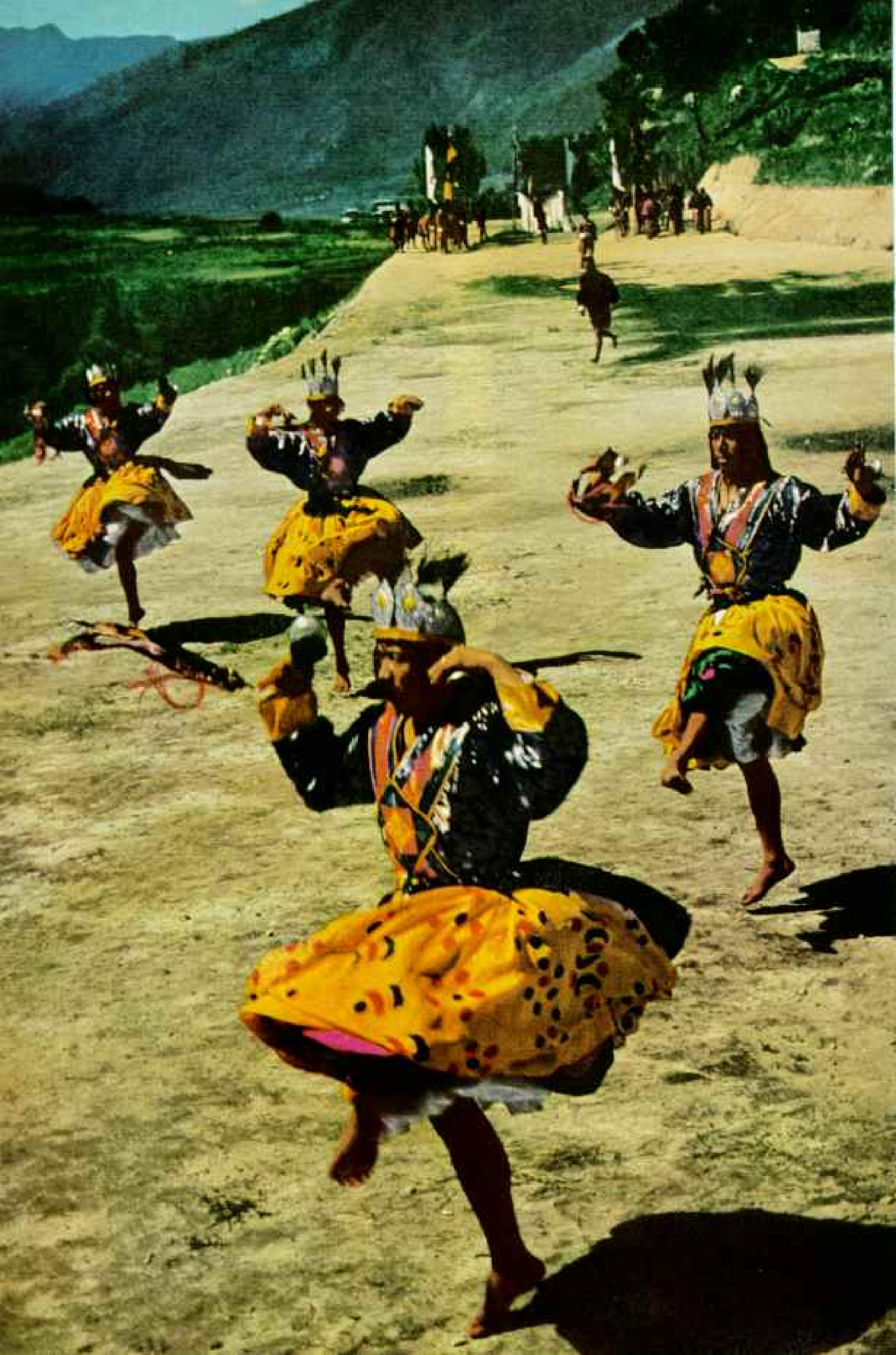


Two scissorslike sticks help a Bumthang farmer harvest wheat. He pinches each stalk between the sticks, wrenches off the heads with an upward jerk, and dumps the grain into a bamboo basket. Later he will drive cattle into the field to graze on the stubble. Wheat, rice, and barley rank among Bhutan's major crops. The King has broken up estates and limited individual plots to about 30 acres.

green peppers, rice, and sirupy tea. Apparently no one but me thought it sacrilegious.

When the storm had passed, we made our way back to Thimbu—and comparative luxury. Our approach to the capital was flavored with incredible egg and cheese sandwiches (we had not seen bread for a month now), a gift the Queen had sent to us while we were still on the road, a few miles from the capital.

In Thimbu itself, still no more than a handsome dzong and a cluster of houses that bespeak a capital in the making, we found a tent with foam-rubber mattresses and even an electric light, fed by the generator in a near-by radio station.





The following day I had another audience with the King. Bhutanese resent the title Maharaja as being a foreign one. To them their sovereign is the Druk Gyalpo, the Precious Ruler of the Dragon People.

He is a handsome man, this Dragon King, soft-spoken but possessing a ready humor.

"I'm sorry my wife can't be here," he greeted me. "She's bathing the baby."

I asked if I could not see more of the country. My original permission had been limited to a few main centers, largely in western Bhutan. "Go anywhere you like," the King answered generously.

Such warmth and informality, I discovered, are typical of Bhutan's King and his exquisite wife, Queen Ashi Kesang (page 411). During my stay he could not have been more kind, and yet he has much to preoccupy him.

A rarity among Eastern rulers, Jigme Dorji Wangchuk was educated entirely in his own country. He speaks fluent English, Hindi, and Tibetan, as well as Bhutanese. His interests are broad—they seem to



Toothy snout and golden eyebrows embellish a dancer's mask. Imagination ran riot when the mask maker chose to portray a sea monster.

Whirling and prancing, palace dancers punctuate a Thimbu archery meet with explosions of color and movement. Trumpets, drums, bells, and cymbals provide the music. When the King travels, these performers precede the party. Bowmen gather in the background.

Glittering coronets and brocade robes lend a regal appearance to palace dancers. Daily practice perfects their performances. Their crowns attest the skill of Bhutanese artisans.



### Laden Mules Clop Across Paro Bridge; Prayer Flags Festoon the Railing

Covered bridges across Bhutan's major streams serve as social centers and impromptu markets. Sacred texts adorn the beams of this span. The prayer flags appease river spirits.

Harness bells herald Bhutanese mule trains. "I know of nothing lovelier," the author asserts, "than the sound of mule bells tinkling through the mist on a high mountainside long before the animals themselves appear."

Dressed in their best, man and wife hold hands on Paro bridge in a rare public display of affection. He wears a typical homespun robe, she a shawl and short coat over a full-length robe. Bhutanese usually go barefoot even in snow.

ILLUSTRATION BY SHINY BAREVITZ © NATIONAL GEOGRAPHIC SOCIETY



cover everything—and his knowledge of Bhutan is encyclopedic.

Compared to Bhutan's former rulers, the present King is both a liberal and a humanitarian. As a result, he is respected rather than feared.

He is the third in a hereditary line established with the help of the British in 1907. Prior to that, Bhutan was governed by a succession of Deb Rajas, or temporal rulers, and Dharma Rajas, spiritual leaders. Jigme Dorji Wangchuk is at heart a reformer. Some of his liberality he gained



REDAIRONE BY DESMURE DIXE © NATIONAL GEOGRAPHIC SOCIETY

from travels in Europe, and some he owes to his gentle wife.

Among the revolutionary reforms he has given Bhutan are the abolition of slavery and its corresponding caste system, the emancipation of women, and the democratization of the royalty.

#### Death Penalty Seldom Imposed

As to the latter, though the King is technically an absolute monarch, today he has an eight-man advisory council to help him. Laws originate in the 130-man National Assembly, whose members represent some

5,000 constituents each and who include monks, village headmen, dzong officials, and the Prime Minister himself.

The Assembly usually meets twice a year for sessions of 10 to 15 days each, and the meetings are often stormy. One was in progress during my visit to Thimbu, and the members debated such controversial issues as conscription, military training for monks, and land grants for Bhutan's Nepalese inhabitants, about a third of the population.

The King has final veto power over laws, and he also has the power of death sentence. This is rarely used; Capital punishment,



Last Light of a Dying Day Illumines  
the Tiers of Wangdü Phodrang Dzong:

Built at an elevation of 4,000 feet, the dzong  
dominates one of the lowest of Bhutan's settled  
valleys. Scorching sun and buffeting winds led



ILLUSTRATION BY HEBBING WONG © NATIONAL GEOGRAPHIC SOCIETY

the government to abandon plans to construct an army base near by. Buildings at left bristle with prayer flags. Shadows darken the turreted bridge

at right; watchmen occupy the towers. The same hill-crest dzong, pictured from the ridge in background, appears on page 385.

hotly opposed by the country's powerful monks, is confined to traitors and murderers.

Petty offenses are dealt with much as they were in prerevolutionary America. I saw several of the convicted with heavy boards around their necks, recalling the Puritan stocks. Prisoners are put to work by day but get time to visit friends.

Land laws in Bhutan are generous. Nearly everyone owns land, and every village has certain rights to adjoining forests belonging to the crown. Here villagers may collect firewood and manure for their fields.

Bhutan's man-power shortage is responsible for some strange social customs. Married couples, for example, may live separately for a time, each in his or her own home, because their families cannot spare them from work.

Marriage is a simple affair. Bride and groom merely announce their plans to the parents, and a lama may give his blessing. The choice of partners is seldom arranged.

Death calls for more formality. The prayers of monks are necessary and great respect is shown the dead, although this depends upon age. Corpses of children are dropped without ceremony into deep water or exposed on high ridges for vultures to devour, but adults are arranged in the fetal position—legs drawn up, arms folded, and head tucked between the knees—and then cremated. Last rites and even the carrying of the corpse are directed by the local astrologer.

#### Tour Reveals Bhutan's Other Half

One day the King asked me if I would like to visit Bumthang, far to the east of Thimbu.

I jumped at the offer, for it meant seeing such fabled places as Punakha, the former capital, where the old rajas ruled and which boasts Bhutan's largest dzong. It meant Tongsa Dzong, which the Queen's sister described as "a fairy castle, perched so high on a mountain that the clouds float below it."

Army captains play at dice with a palace official (center) at Thimbu. Tiger- and leopardskins carpet the royal pavilion. Red-trimmed shoulder sashes indicate the officers' rank. Bhutan recently adopted conscription and created a militia.





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Queen Ashi Kesang and Crown Prince Jigme romp on a leopardskin at Thimbu. A niece of the Maharaja of Sikkim, she attended school in England before marrying the King. Her garb is Sikkimese; Dowager Queen (right), mother of the King, wears Bhutanese costume and dresses her hair in the short Bhutanese style.

It meant Wangdü Phodrang, with its magnificent bridge, and Bumthang itself, in a valley with a reputation for ghosts and beautiful women.

It took seven days to reach Bumthang, seven magic days of adventure along a track filled with ever-changing scenery. On one side of a high pass might lie tropical forest and on the other a world of alpine loveliness: a profusion of flowers and lush green grass that fattened the King's handsome cattle.

Mountain streams gurgled through painted shrines that harnessed the power to turn huge prayer wheels. Legendary giants and their consorts occupied the mountaintops above us. Mortals below—the apple-cheeked village women—fed us fresh yak-milk cheese amid the fields of flowers.

#### Dwellings Boast Cowshed and Chapel

We came at last to 11,000-foot-high Pele Pass, purple with blossoms. Matay, my constant companion, explained that here rose the Bhutan divide—a ridge that splits the country in a north-south line. To our east lived a people enormously different from those we had met. They spoke a different dialect; they looked different; and had a different style

of architecture. Variety, of course, is basic to the Bhutanese, who are a mixture of origins and races. Anthropologists believe their ancestors include Mongols, a later wave of Tibetan settlers, and slaves of mixed origin captured by the Bhutanese from India.

The eastern Bhutanese appeared stockier and generally darker than their western countrymen.

The eastern Bhutanese employ a simpler, more obviously Tibetan style of architecture. In the west, where there is more contact with Indians and migrating Nepalese, the Bhutanese have evolved an ornate style not unlike that of Swiss chalets.

Bhutanese houses generally have three stories. The ground floor serves as a stable, cowshed, and storage area. The second floor is family quarters, including the ever-present chapel, which is always the best room in the house. Attics, often open to the air, are used as storerooms for meat and fodder.

The chapels interested me most, and I attended more than one banquet in them, the gilded deities almost brought to life by the flickering lights of candles. Murals of heaven and of hell glowed on more than one wall. During the meal, we would put aside a few

grains of rice and some drops of millet wine for the gods.

Tongsa was all that we hoped for. Its handsome dzong, visible for miles, rode like a splendid ship on the waves of distant mountains. Passing through the dzong's massive gate illuminated with religious texts, we abruptly entered another world.

Here were banks of painted galleries, with latticed windows and casements rising in multicolored tiers. Wooden roofs and gilded spires of the dzong towered above all and seemed to challenge the mountains themselves.

The endless murmur of monks at prayer, punctuated by the tinkle of bells, vied with the flutter and swish of pigeons' wings. Magenta-robed lamas leaned over the carved railings to watch us as we passed. We might have been walking through the Middle Ages, and in a way we were, for Tongsa has changed little since its founding centuries ago. Time has slept in its secluded courtyards.

#### Leopard's Milk a Remedy for Rabies

Only three or four foreigners have ever gazed on Tongsa's wonders: the lamas in relays turning 12-foot-high prayer wheels; the little-used royal suite with its gilded door that guards some of the royal treasure; and the unchanged dzong itself (page 399).

One event marred the tranquillity of our stay in Tongsa. A rabid dog bit two women and a man in the village. The nearest doctor was in distant Thimbu, but the patients were treated with a standard remedy—a brew of leopard's milk or the dried breast of a leopard, chicken fat, and a tuft of hair from the rabid dog. Maybe the victims recovered. I never learned.

That night in our guesthouse we were de-

#### Mountains Cradle Paro Valley and Its Pagodalike Guesthouse

To this valley, show place of Bhutan, come the kingdom's infrequent visitors; the guesthouse caters to their comfort. Set at an elevation of 7,750 feet, Paro serves as an important administrative center. Fertile fields along the valley floor grow grain, fruits, and vegetables.

Long building in foreground houses a radio transmitter. Bhutan cypresses reach for the sky at right. Prayer flagpole at left juts from the Paro Dzong.

lighted to receive a gramophone and six records, a loan from an official in the dzong. The bearer of the gift brought his master's apologies:

"He lent the best records to some lamas, and they broke them all," he said sadly.

The six records comprised a Nepalese song in praise of Tenzing Norkey, the Mount Everest hero, a broken Hindi disc of 1929 vintage, three Tibetan works that consisted mainly of weird wheezing noises, and marches by massed military bands at the Aldershot Tattoo in 1933. Where the latter came from, I shall never know, but it fitted into the repertoire very well. It was scarcely

FEBACHHEBE © NATIONAL GEOGRAPHIC SOCIETY





distinguishable from the chants, clangs, oomphs, and ahs of Tibetan lama music.

Throughout our tour, I was impressed once more by the self-sufficiency of the Bhutanese. The average people care little for luxury; they raise their own food, weave their own cloth, and build their own houses, often with barely more than their hands for tools.

Money still means little to the Bhutanese, for theirs is a barter economy. The result is that the dzongs, which serve as tax-collection centers, are crammed with homespun cloth, dried yak meat, rice, wheat, and tons of rancid butter. The United States is not the only country plagued by a farm surplus!

Trade with Tibet, once an avenue for excess food, closed down with the Chinese invasion. Today the Bhutanese Government is hard pressed to buy up surplus food grains that formerly brought in Tibetan wool.

Bhutan's only real source of cash is the annual \$105,000 subsidy from India, a tradition dating back to the treaty with Great Britain in 1865. The government is wary of any other aid, fearing an end to its closed-door policy. One exception is Bhutan's ambitious road-building scheme, which India has begun financing.

Early this year the King and Prime Minister of Bhutan visited New Delhi for talks





with India's Prime Minister, Mr. Jawaharlal Nehru, and Indian Government officials. Bhutan agreed to accept aid from India for a more extensive development program. At the same time, the King reiterated his country's friendship for India and promised a cold shoulder to Communist overtures for aid and to the opening of diplomatic relations with Red China.

Meanwhile, more than half of Bhutan's total budget goes to defense. Once content with a force of half-trained territorials, the country is rushing plans for a small, hard-hitting army of regulars, perhaps numbering 2,500 men. A new conscription law applies to all males between the ages of 18 and 50.

To foreigners, Bhutan's diversely uniformed frontier garrison might seem pathetic beside Communist China's millions of battle-hardened troops. But they overlook the fact that Bhutan defends terrain where invading units would have to advance in single file and live off some of the world's most inhospitable country. What counts is that Bhutanese militiamen know their land, can live off it indefinitely, and have a frontiersman's skill with the rifle.

#### Siege Tactics Recall Middle Ages

Since Bhutan allows no military men among its few foreign visitors, Indian-trained Bhutanese are organizing the new army. One of the projects is construction of an army cantonment in a valley to the north of Wangdü Phodrang in the Sankosh Valley. Originally the camp was to have been in Wangdü itself, but the area's heat and high winds forced the change.

A handsome, decaying dzong commands the heights of Wangdü Phodrang, but the place is more interesting for its ancient bridge of stone and stout logs that spans a river 120 yards wide (pages 384 and 408). Still it stands, a monument to the engineering genius of its long-dead builders.

Defense and siege are nothing new to Wangdü Phodrang. Over saffron rice and parched wheat, an official of the dzong told me tales of battles between warring chieftains

that included all the medieval stratagems from flaming oil and ponderous catapults to scaling ladders and blazing arrows.

Bhutanese today, however, search the skies not for flaming arrows but for a new kind of airborne evil spirit—foreign planes and possible parachutists. More than one unidentified aircraft has flown over the country in the recent past.

#### Bhutan Links Itself Closely With India

India's friendship has probably saved Bhutan from the fate of Tibet, but India must be careful what it does. One clause in the Darjeeling treaty of 1949 reads:

"The Government of India undertakes to exercise no interference in the internal affairs of Bhutan. On its part, the Government of Bhutan agrees to be guided by the advice of the Government of India in regard to its external relations."

So far that advice is best characterized by the counsel of Mr. Nehru on a visit to Bhutan:

"Take things slowly and keep foreigners out, even Indians," he said.

But world events have badly shaken the old Eastern philosophy of taking things slowly, and Bhutan's days of tranquil isolation are slipping away. Times of wishful thinking are gone. Tibet, as it was known, is dead. Bhutan, possibly next on the list of Chinese expansionist aims, has chosen alliance with India, and its southern barriers are coming down.

When the first bales of Indian cotton find their way into Bhutan's market places, when the first real tourist arrives, the old Bhutan will begin to shrink into the far corners of its beautiful valleys, and its living culture will be on its way to the museum.

Or worse still, that precious culture may disintegrate under attack from alert and ruthless enemies.

Either way, the country I have been privileged to see will die a little or completely.

And only a few who have seen the virgin Bhutan—Bhutan the contented, the uncluttered and untouched—will know what the world has lost.

#### Fluttering Prayer Flags Banish Demons From a Bhutanese Trail

Inscribed with Buddhist prayers and sacred texts, the flags appease the gods and bring the donors good luck. A palace guide pauses beside the slender masts.

Mr. Doig's party passed the flags on the way to a hermitage esteemed for its sacred dice. He reports: "I threw 11. Very lucky, I was assured."

# The Flight of *Freedom 7*

By CARMAULT B. JACKSON, Jr., M.D.  
Life Systems Division, Project Mercury

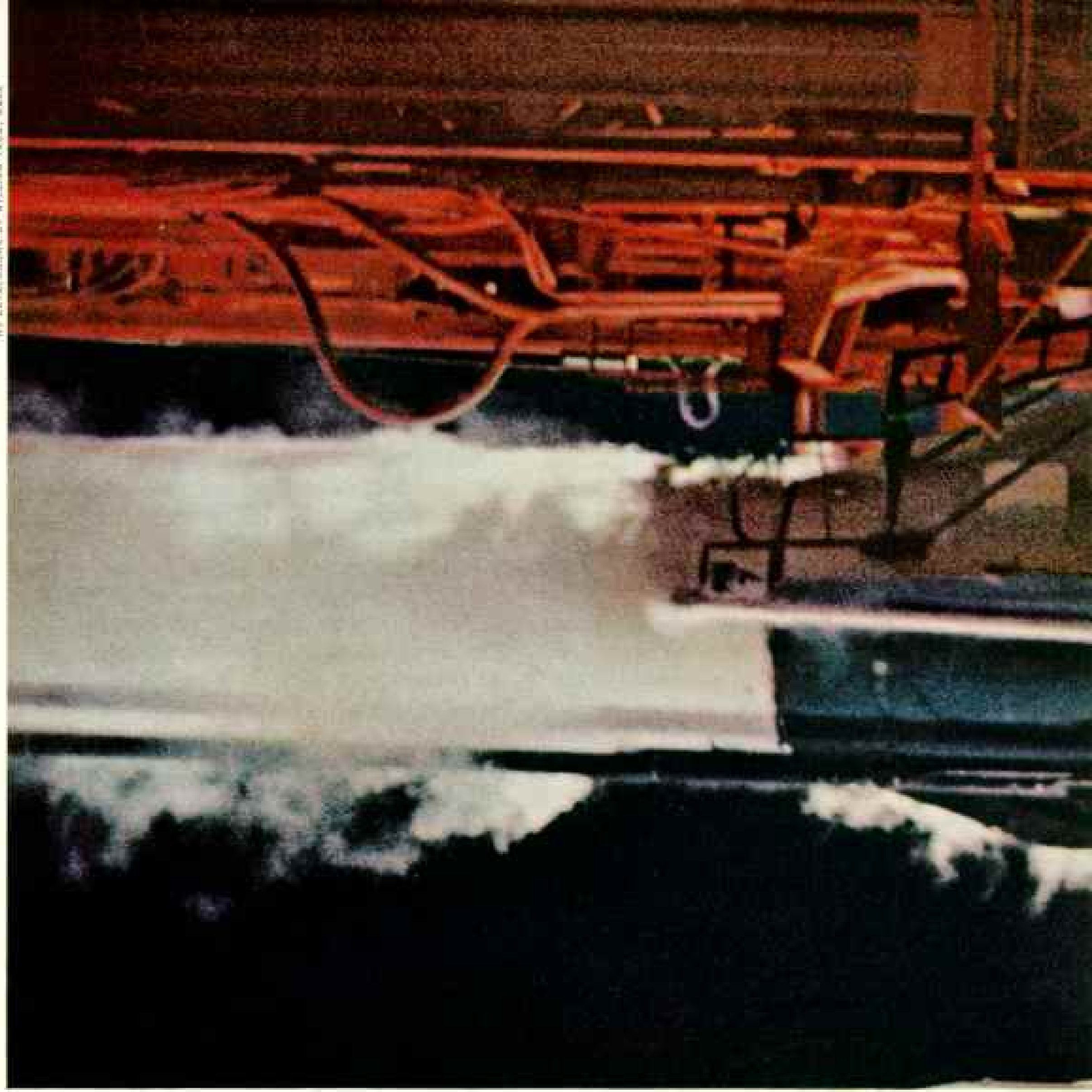
*A physician for the astronauts  
gives a highly personal eyewitness  
account of America's first  
manned venture into space*

**I** BELIEVE that if I watch a thousand missile launches, I shall find it always exciting. The launching of a missile, any missile, is breathtaking. It is stirring, awesome, unforgettable, like Fourth of July parades, our flag, the soaring notes of "The Star-Spangled Banner."

It makes you proud just to watch or listen. It shouts power and ability. It promises great adventure, and this day, May 5, 1961, the promise was to be fulfilled. A man was in the capsule.

Above Cape Canaveral's tightly guarded rocket range, morning star and half-moon shone benignly in a peaceful sky. A whoopoorwill called in the early-morning quiet.

On Pad 5 stood a gleaming Redstone rocket,



fueled and fuming with impatience. On its nose—60 feet from the ground—it bore a black, cone-shaped Mercury spacecraft bearing the name *Freedom 7*. And strapped down in that capsule lay the man selected from 180,000,000 Americans to make the first United States space flight: Astronaut Alan B. Shepard, Jr.

As one of seven physicians assigned to the Mercury astronauts, I had ridden with Shepard in the big transfer van that brought him to the launching pad. I had watched his bulky silver figure step briskly through the blaze of searchlights to the gantry elevator and ascend to the enclosed platform around the capsule.

He grasped an overhead brace and swung his feet through the capsule's narrow hatch. A rubber pad on the bottom edge of the hatch projected against snags in his all-important pressure suit. While white-gowned attendants steadied him, he wriggled his body inside and onto his molded couch (page 423). Technicians carefully tightened straps over knees, lap, chest, and shoulders.

Now he was alone. The hatch cover was in place, shutting him off from the world except for headphones and a distorted view through his wide-angle periscope.

But in a real sense he was not alone. Thou-

**Man and missile meet at dawn on Pad 5 at Cape Canaveral.** Floodlights glare down on Alan B. Shepard, Jr., who carries a portable air conditioner to cool his aluminum pressure suit. Plastic overshoes prevent flight boots from tracking grit into the capsule he will ride into space. Evaporating liquid oxygen streams from the poised Redstone.



sands of people had labored to make this day possible—the scientists who had drawn the plans and trained the astronauts; the artisans who had assembled the unbelievably complicated capsule and its rocket booster; the crews aboard recovery ships; the multitude of technicians who were to monitor and track his flight. Perhaps 10,000 of us were in some way a part of the Mercury program—and all were now sweating it out with Shepard.\*

And across the Nation television screens by the millions would shortly light up. Americans in every city and farm and hamlet would be unified as seldom before in their rapt concentration; their hopes and prayers would ride with Alan Shepard.

#### "What Have We Forgotten?"

It was now past five o'clock. In the sequence of early-morning moves, which had begun with the awakening of Shepard at 1:05 a.m. in his secluded quarters at Hangar S on the Cape, I had noticed a quiet tension. We had all paused as we left the hangar, as though about to make an entrance on a stage. Dolores O'Hara, our nurse, had brought her rosary to work. Astronaut Virgil I. Grissom, normally quiet, seemed a bit more talkative. Flight surgeon William K. Douglas, the astronauts' chief physician, seemed to be thinking, "What have we forgotten?"

After a last look at the spectacular beauty of the rocket poised in the white glare of searchlights, I turned from the van to the thick-walled blockhouse, carrying my black bag of doctor's tools and my brief case. The latter contained a copy of the countdown, a copy of the postflight medical procedures, my access badges, and a Bible. This Bible had been sent to President Eisenhower in March, 1959, by children in Toledo, Ohio, with the hope that it would be placed aboard the first rocket to carry one of our men into space. He might be lonely and afraid, they thought, and the Bible would comfort him.

Unhappily the weight limits in the capsule were critical, and we dared not add another ounce. But Bill Douglas and I brought the

Bible, somehow feeling that at least it should be near the astronaut.

In the crowded, busy blockhouse I joined Army physician William S. Augerson at the end of the row of telemetry racks connected with the capsule by wire. Here information about Shepard's physical condition, relayed from electrodes attached to his body, was showing up on dials and recorders. Shifting to radio shortly before take-off, or T-time, it would continue until the end of the flight, now about four and a half hours away.

"Auto retro jettison switch—arm?" asked the voice of the pad leader.

Back came the response from Shepard:

"Roger, auto retro jettison switch—arm."

And so the strange liturgy proceeded:

"Retro heater switch—off?"

"Roger. . . ."

"Landing bag switch—auto?"

"Roger. . . ."

#### Astronaut's Tasks Suppress Anxiety

As the count shortened, we busied ourselves. Augerson was concerned with the dials and switches, the communications and the count. I watched the medical data flowing in on an eight-channel strip recorder. Its moving pens hurried to record body temperature, respiration, pulse rate, and electrical potentials of heart muscle of the man lying out there atop the Redstone.

We knew Shepard felt some slight apprehension—he had told us so during the morning examination. But he suppressed such thoughts by focusing on his tasks, watching his instruments, and reporting to the blockhouse, so that his pulse and rate of breathing stayed at moderate levels.

A blockhouse countdown can be compared to the performance of a symphony orchestra responding to the cues of its conductor. Or perhaps two orchestras, one for the booster, one for the capsule. Our test conductors checked in turn with the men sitting at the instrument racks—men who had exchanged

\* See "Exploring Tomorrow With the Space Agency," by Allan C. Fisher, Jr., NATIONAL GEOGRAPHIC, July, 1960.

#### Tight Suit and Snug Helmet Fit the Astronaut for Survival in Space

Grueling hours in pressure chambers, isolation rooms, heat boxes, centrifuges, flight simulators, and supersonic jets condition Project Mercury's seven hand-picked men. Sub-orbital thrusts prepare them for the big one—an hour-and-a-half swing around the earth. In flight the astronaut's leakproof visor snaps down over his face against a black, inflatable seal. Cheeks wrinkle against foam ear pads that dampen shock and muffle noise that might destroy hearing. Twin microphones assure communications performance. Cables leading to the neck ring keep the helmet from lifting when the suit inflates. Astronaut Shepard models the equipment.



names for functions: Telemetry, Electrical Power, Environmental Control, Communications. We seldom spoke except for our laconic responses in the countdown.

At intervals the rhythm was shut out when Astronaut Leroy G. Cooper, Jr., switched Augerson and me to the private line which permitted telephone conversation with the pilot. Cooper was serving as capsule communicator in the blockhouse, the same role Astronaut Donald K. ("Deke") Slayton was playing in the control center.

### "Are You Really Ready?"

During one of these moments, at about T-minus-6-minutes, I asked Shepard for an honest answer to an honest question.

"Are you really ready?" I asked.

He laughed and shouted, "Go!"

"Good luck, old friend," I replied.

Now it was about 9:30. Shepard had been in the capsule four hours and a quarter; in the suit about six hours and a half.

**T-minus-25-seconds:** The blockhouse lyrics sang:

"LOX tank pressurized."

"Vehicle power."

Now the time was at hand. The umbilical tower dropped away from the Redstone, breaking our direct line connections to booster and capsule. The bird was on its own power and feeding us radio telemetry information.

The announcer's voice betrayed excitement as the final words of the liturgy rang through the blockhouse public address system: "Ignition . . . Mainstage . . . Lift-off!" The word "lift-off" was almost shrill.

Then came a softer, calmer voice from the capsule:

"Roger, lift-off, and the clock is started."

Shepard's timepiece in the capsule now would give him precise readings for the start and termination of each critical function.

The booster roared, filling the blockhouse with thunderous noise, a surprising noise, a noise I could feel. But to Shepard it was less noise than he had expected. In his own words, "The lift-off was very smooth."

Tapes flew through the recorder before me as I interpreted lift-off data: pulse 124, respiration 30, deep body temperature 99.

I did not see the actual launch (page 425); the blockhouse windows are in another room, and I was too busy to look at the four TV screens behind me.

Crowds of eyewitnesses did watch from the beach adjoining Canaveral (pages 428-9). Hundreds of reporters peered through binoc-

ulars on the Cape, and workers on near-by gantries laid aside tools to see this most important launching in the Cape's history.

The minds of these watchers were filled with the sobering realization that this rocket, this roaring bucket of fire, carried a man, not just a load of instruments. Tears sprang to the eyes of men and women alike, and many found themselves praying.

"O.K., José, you're on your way!" came Deke Slayton's voice from the capsule communicator's console in the control center. It was a reference to an old joke among the astronauts about a television spaceman dubbed José Jimenez.

Flight controllers in Mercury Control Center had taken over the responsibility now. Upward the capsule flew, slowly at first, then fast, faster, fastest. Up through the vibration at the speed of sound—Mach 1, Mach 2. Faster still, beyond the roughness of maximum aerodynamic pressures, up into the atmosphere's geography where names like troposphere, stratosphere, ozonosphere, and ionosphere apply. Past Mach 3, Mach 4, the three of them flew—the booster, the capsule, and Shepard. Past 2 g's, 3 g's, 4 g's, and 5 g's.

### Explosive Bolts Release Capsule

For a few seconds at about Mach 1, when aerodynamic pressure reached its peak, vibration made the instrument needles appear a little fuzzy. However, the pilot was able to read his meters accurately. Then he reported, "Smoother now, a lot smoother." He had experienced the only real difficulty of the entire flight.

**T-plus-142-seconds:** "Booster cutoff."

The Redstone howling its way down the Atlantic Missile Range became abruptly silent.\* Explosive bolts fired, the clamp ring fell away, the tiny posigrade rockets gave their little 20-foot-per-second push to the capsule, and the g's were gone.

"Cap sep is green," the astronaut announced. Capsule and booster had separated.

The most dangerous moment of the flight had passed safely. There were backup circuits designed to ensure firing of the explosive bolts, and Shepard, who had a personnel parachute, might have survived a high-speed bail-out if the capsule had not separated. But more likely, rocket, capsule, and passenger would have plunged at high speed into the

\*See "Cape Canaveral's 6,000-mile Shooting Gallery," by Allan C. Fisher, Jr., NATIONAL GEOGRAPHIC, October, 1959.





44 (EPTACHROME) (ABOVE) AND KIBZACHROME BY NATIONAL GEOGRAPHIC PHOTOGRAPHER DEAN CONNER FOR NASA

**Tugging and pulling.** Shepard struggles into his flight garments. Suit technician Joe Schmitt assists him in a dress rehearsal. Vented underwear lets cool oxygen flow over the skin.

**Riding in a transfer van** during a practice run, astronaut and author travel from living quarters in Hangar S to launching pad. Dr. Carmault Jackson talks to the blockhouse by intercom.

421





RALPH WORRE, LIFE, (ARROW) AND PD EXTRACHROME BY FRED SANDERSON/REX USA

### Countdown Reaches Moment of Farewells

Through the night hours, men groomed and fueled the Redstone. Backup Astronaut John H. Glenn, Jr., inside an air-conditioned "greenhouse" high on the gantry, gave the 9-by-6-foot capsule a thorough preflight test. At 5 a.m. the gantry elevator lifted Shepard nearly six stories to the capsule's hatch, where friends awaited him.

"A-O.K.," says the hand signal flashed by Glenn, who has completed his check of the capsule cockpit. He covers the hatch's sharp edge with a pad as Shepard and Astronaut Virgil I. Grissom arrive.

Gantry inches away. Greenhouse and red platform above it have just opened like a giant maw, revealing escape tower and capsule, which now contains a human passenger. Gantry crewmen watch clearances.





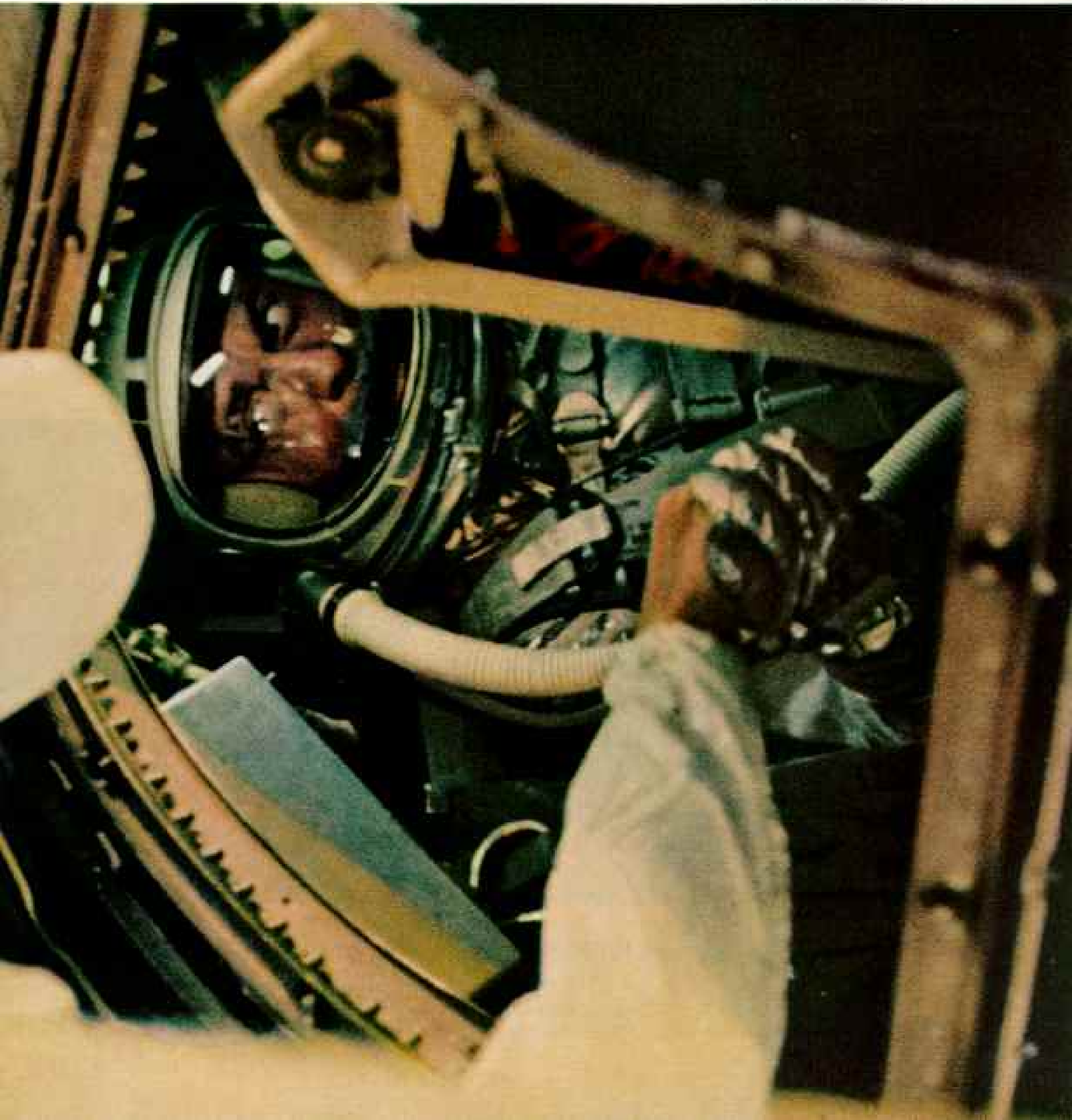
Into the capsule feet first, Shepard slides gingerly to his prone position on a contour couch. Then Guenter Wendt, Pad Leader for the launch, reaches in for a final handshake (below).



Astronaut's last look at his colleagues narrows to a slit as hands push the hatch door into place. Fluorescent lights in the capsule bathe him in a greenish glow. Lift-off is still 4¼ hours away.

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RE-ENTRANCE BY ROBERT SPECIAL, NASA





Manned missile, an 83-foot arrow aimed at space, draws intent inspection by pad crewmen an hour before launch. Should disaster threaten now, the astronaut can flee to the cab of the "cherry picker," a hinged crane with a 116-foot reach.

Tense faces in the block-house reflect anxieties of the countdown. Astronaut Leroy G. Cooper, Jr. (left), flanked by Systems Test Engineer H. H. Luetjen, talks with Shepard by telephone.



### Shepard and His Black Capsule Rise on 78,000 Pounds of Fiery Thrust

Slowly the 33-ton rocket lifts from its pad, where castoff umbilical lines sprawl under a cloud of vapor. The roaring missile climbs above the palmetto scrub of the Cape and distant Cocoa Beach. Alcohol-and-oxygen flame burns cleanly.

ocean. Shepard's pulse count had reached its peak for the flight, 138—no faster than if he had run up a flight of stairs.

More than 6,400 feet in every second, 4,375 miles per hour they raced, Shepard and *Freedom 7*. With my red pencil I hurried too, over unfolding data on the strip charts. I printed numbers and words like "respiration 32" and "temperature unchanged."

Plus 157 seconds: "Orbit attitude command," droned the announcer.

"The turnaround has started," called the pilot.

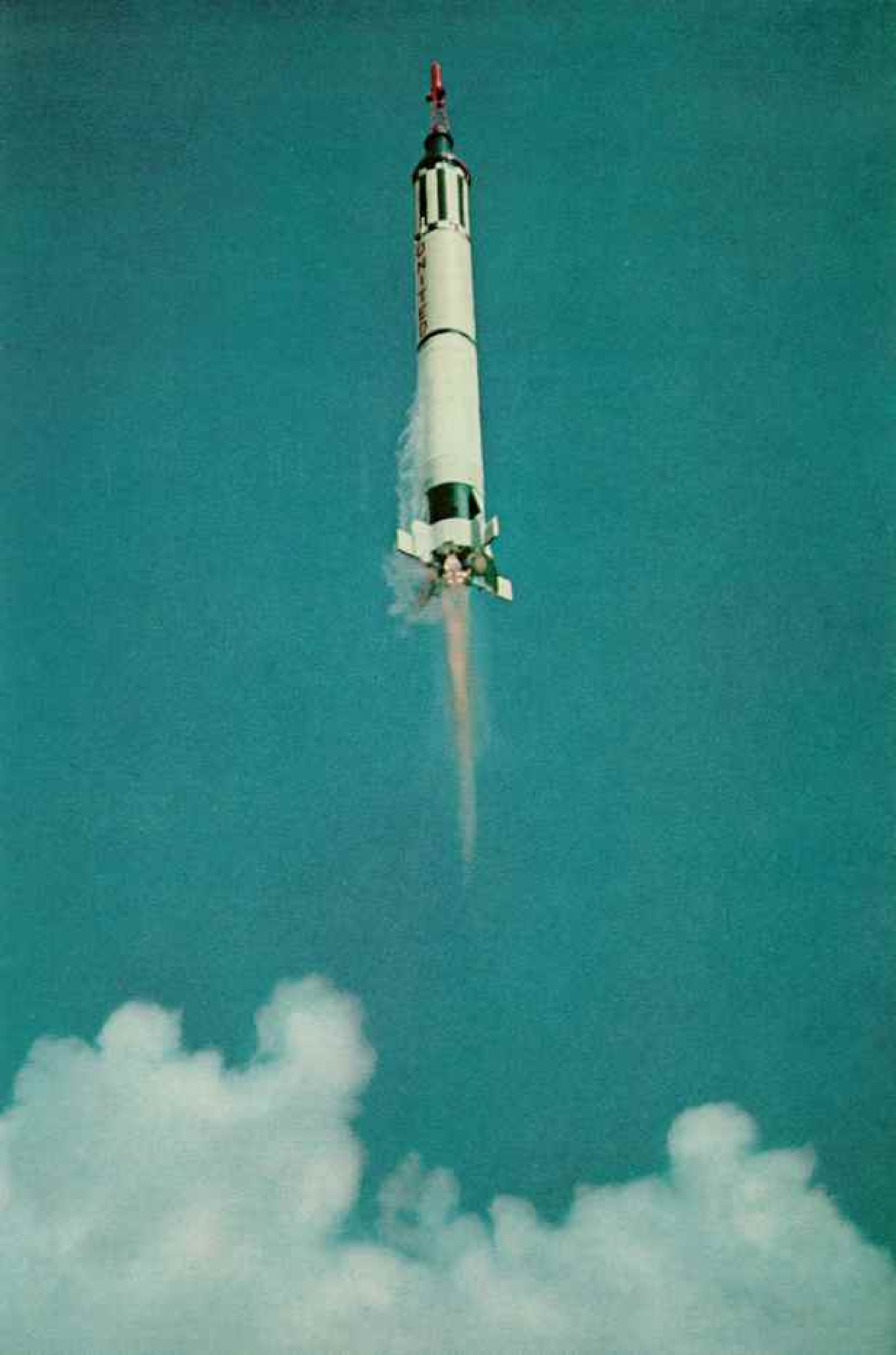
"Roger." Slayton dispassionately acknowledged a great triumph: The automatic system for stabilizing the capsule was working in its intended environment.

Plus 180 seconds: "Turnaround completed."

*Freedom 7* was now traveling big end first, heat shield and retro-rockets aimed along the flight path. And now the pilot had begun five minutes of weightlessness, during which he experienced no discomfort and no difficulty in breathing, moving, or talking.

BY EXTRACTS FROM BY FRED BENTONWASSING, WASH. (UPPER) AND DEAN CONNER FOR NASA







SHUTTLE MARTIN LABREYEL © NATIONAL GEOGRAPHIC SOCIETY, AND NASA

Plume of condensed vapor trails through the zone of maximum vibration, at 41,000 feet. Severe buffeting surprised Shepard, but he reported no worry. Then the lashing ceased, and he radioed: "It's a lot smoother now—a lot smoother."

### Shepard Cleaves the Clouds as His Redstone Holds Faithfully to Its Course

Early in 1958 a Redstone formed the first stage of the Jupiter C that launched Explorer I, the Nation's first satellite. Last January 21 a Mercury-Redstone fired the chimpanzee Ham 414 miles to a safe landing in the Atlantic.

Controlled tail fins and carbon vanes in the exhaust provide stability. As on a julep glass, frost sheathes the lower half of the rocket because of liquid oxygen chilled to  $-297^{\circ}$  F. Vertical stripes below the capsule mark the compartment containing instruments that control the rocket's flight.

"O.K., José, you're on your way!" Thus Astronaut Donald K. Slayton, capsule communicator, announced lift-off. Shepard's voice came through strong in the Cape's control center, but died briefly during a shift in radio frequencies.

"Some of us had a scary moment then," says the author. "We thought we'd lost contact."

"O.K., switching to manual pitch." Pitch down, pitch up. "Pitch is O.K. Switching to manual yaw." And thus Shepard matter-of-factly stated an even greater triumph. He had tested the manual controls and they worked well (page 430). The dialogue sounded like any session on the procedures trainer at Langley Air Force Base, Virginia.

Plus 240 seconds: Time to look through the periscope, check horizon, try to identify land masses and cloud formations. Okeechobee, and Andros, and cloud cover over Hatteras—all are recognizable.

"What a beautiful view!" cried the man a hundred miles in the sky.

"I'll bet it is," answered Slayton.

*Freedom 7* is at apogee, 116.5 miles high. Look for the moon! No, the moon has set. We were late in lifting off. Are the stars visible even in daylight? Can't tell; the sun is bouncing off the edge of the porthole. Actually Shepard observed little outside the capsule during the flight because he was so busy.

Plus 300 seconds: "Retro attitude on green... Retro one very smooth... Retro two... Retro three. All three retros are fired."

The braking rockets burn briefly. They're not needed on this flight, but we're testing them for the day when they will be, to bring a man and capsule out of orbit.

Plus 360 seconds: The burned-out retro-rockets will soon be jettisoned. Wait, where's the retro-jettison light?

RALPH MORSE, LIFE









Rocket and jet trails cross high over the Cape. Redstone's wake of vapor seems to explode in the whiplash of churning winds. Ground camera caught the breakup just as an F-106 chase plane streaked into view.

THOMAS F. SMITH



DOUGLAS MARTIN

### Hopes of Hundreds of Onlookers Soar With the Man Riding a Shaft of Flame

From all over Florida, visitors poured onto the beach to watch the lift-off. Some photographed the event or set up telescopes for a closer look. Many carried blankets, cots, or tents for an all-night vigil. At Cocoa Beach (left), six miles from the launch, cheers arose as the Redstone climbed out of the forest of gantries: A 600-millimeter lens on a rooftop took this picture.

THOMAS F. SMITH, NATIONAL GEOGRAPHIC SOCIETY © N.G.S.



DOUGLAS MARTIN



Like a swivel chair, the capsule assumes any attitude in obedience to the astronaut's control stick. If he pushes forward or pulls back, he pitches; if he throws it left or right, he rolls; if he twists the stick, he yaws. Tiny hydrogen peroxide steam jets power the capsule's movements.



DESIGNED BY ROBERT W. BISHOPSON, © N.S.T., AND EUGENIYOROV, NASA

ALFA trainer gives the feel of space maneuver. Pivoting on a bearing lubricated with compressed air, the device moves in all axes. As a result of such training, says Shepard, "We experienced no major difficulties during the flight." Centrifuge rides, on which he withstood 16 g's, also added to his "feeling of confidence."

"I do not have a light. I see the straps falling away. I heard a noise. I will use override."

There, the light! Retro-jettison had worked.

The failure of the green signal light was the only capsule malfunction during the entire flight. When Shepard got the light by pushing the override button, it was one more victory for those who had planned so carefully for such emergencies.

"How's he doing?" asked the voice of rocket expert Wernher von Braun behind me. "Excellent, wonderful!" I answered, and with my red pencil I wrote "all normal" on the moving charts for those who gathered around our console.

Plus 420 seconds: The .05-g light in the capsule is armed and will go on in about 50 seconds when *Freedom 7's* sense of touch de-

fects five-hundredths of the earth's normal embrace, at approximately 200,000 feet. Re-entry g's will follow; they will reach 11. Shepard will tense his muscles to prevent losing consciousness.\*

**Plus 480 seconds:** G's are increasing.

"Three."

Tense your calves, strain at the harness!

"Six," he called into the two microphones against his lips.

"Nine." I could hear it in his voice; he was straining, as expected. It's quite a feat to talk against these forces. Once he reached the maximum and the pressures eased, he would call O.K. There it was!

"O.K. . . O.K.!"

He had easily endured the flight's severest physical stress, a g-force of 11, much less than he had experienced in the centrifuge. Cabin air rose to 111° F.†

**Plus 580 seconds:** "The drogue is out."

Augerson and I were beginning to see weakening of our telemetry signal as Shepard and his capsule descended rapidly. The needles vibrated erratically. Voices on the blockhouse speakers called off the altitude: "Fifteen . . . thirteen . . . twelve . . . eleven . . . main chute, ten thousand feet."

"Main chute is green. Main chute is coming unreefed, and it looks good!"

What's the rate of descent?

"Rate of descent is reading about 35 feet per second."

### Earth's Curvature Blocks Radio Contact

What relief Shepard must have felt! So many things might have gone wrong—fire, failure of the capsule to separate, loss of pressure, failure of the chutes. But none of these had happened, and none of the stresses of noise, heat, vibration, and g-force had been too severe for a man so magnificently trained.

Now all movement in the blockhouse stopped. The long fingers of our telemetry could no longer reach us from below the horizon. We could only listen to the recovery forces at a point 302 miles from Pad 5.

There was restrained rejoicing when we learned that the landing bag that cushions the capsule's impact was extended, and when 2,000 visual sightings were reported in the

same instant by those aboard the carrier U.S.S. *Lake Champlain*, as they saw the orange-and-white main chute blossom. Helicopters were talking to Shepard.

**Plus 922 seconds:** Now came word from the aircraft overhead: "Impact. The capsule is in the water—looks good."

At this point Shepard uttered the now famous words, "Everything A-O.K."

Then came the final assurance:

"Shepard is in the copter!"

Now the flight was over, now Shepard could exclaim, "Man, what a ride!" Only 25 minutes from Pad 5, and he was on the carrier.

I joined Bill Douglas, Astronauts Grissom and Slayton, and others, and we hurried to meet Shepard at Grand Bahama Island, arriving only a few minutes ahead of the plane that brought him from the carrier. All the way down we were grinning and shaking our heads in a kind of approbation.

### Ultimate Target: the Moon—and Back

When Shepard came through the hospital door, we greeted him as though he had left our group months, not hours, before. He was self-possessed, although there were signs of quiet excitement and exhilaration. "Everything went well . . . I feel fine . . . It was a wonderful flight."

Our elaborate two-day medical study in the Bahamas failed to show us anything we had not learned already in centrifuge tests. Alan didn't even need a Band-Aid. There had been no lurking, unsuspected dangers.

We have every reason to believe that this was a typical Redstone flight. By the time you read these words, another Redstone may have soared into space, carrying Gus Grissom or John Glenn. Later a third man may try the downrange flight, and then a chimp will be shot into orbit. Late this year, or more probably sometime next year, a man will attempt the orbital voyage for which Shepard's brief sortie was the prelude.

As I began to feel the inevitable letdown, the overwhelming wave of relief releasing the strain of the last few months, I heard Grissom say jokingly, "There won't be this much fuss next time. When you've seen one, you've seen them all."

I disagree. To me, the men who ride and aspire to ride our *Freedom 7*'s will always be heroes. The progressive steps made by these and later vehicles will always be exciting—one orbit around the earth, or three orbits; then finally, probably before this decade is out, to the moon and back.

\*For an explanation of g-force and its effects, see "Countdown for Space," by Kenneth F. Weaver, NATIONAL GEOGRAPHIC, May, 1961.

†NASA released a preliminary temperature reading of 102° F., later correcting it to 111° F. The old figure appears with the illustration on pages 434-5, which was subject to an earlier press deadline.

# The Pilot's Story: ASTRONAUT SHEPARD'S

*Here, in the matter-of-fact language of the engineer-test pilot, are excerpts from a unique document: Alan B. Shepard, Jr.'s, own report to the Nation on his 4,375-mile-an-hour flight down the Atlantic Missile Range.*

432

**A**T LIFT-OFF I started a clock-timer in the spacecraft and prepared for noise and vibration. I felt none of any serious consequence. The cockpit section experienced no vibration, and I did not even have to turn up my radio receiver to full volume to hear the radio transmissions.



Astronaut's actions from launch to landing (clockwise from lower left) register on the film of a preset camera. At lift-off he raises an arm to flick on the clock should its automatic starter fail. Floating in space, he finds weightlessness pleasant; then re-entry's crushing g-forces lock him to his couch. After the capsule's main chute opens, he lifts his face visor, swiftly frees himself from a web of straps, lines, and hoses, then happily watches the altimeter unwind the final few thousand feet.



Gazing at space through a porthole, Shepard descends from his flight's zenith. Sunlight dances blindingly across his visor as *Freedom 7* revolves approximately twice a minute.

# FIRSTHAND ACCOUNT OF HIS FLIGHT

*Illustrations by National Geographic photographer DEAN CONGER for NASA*

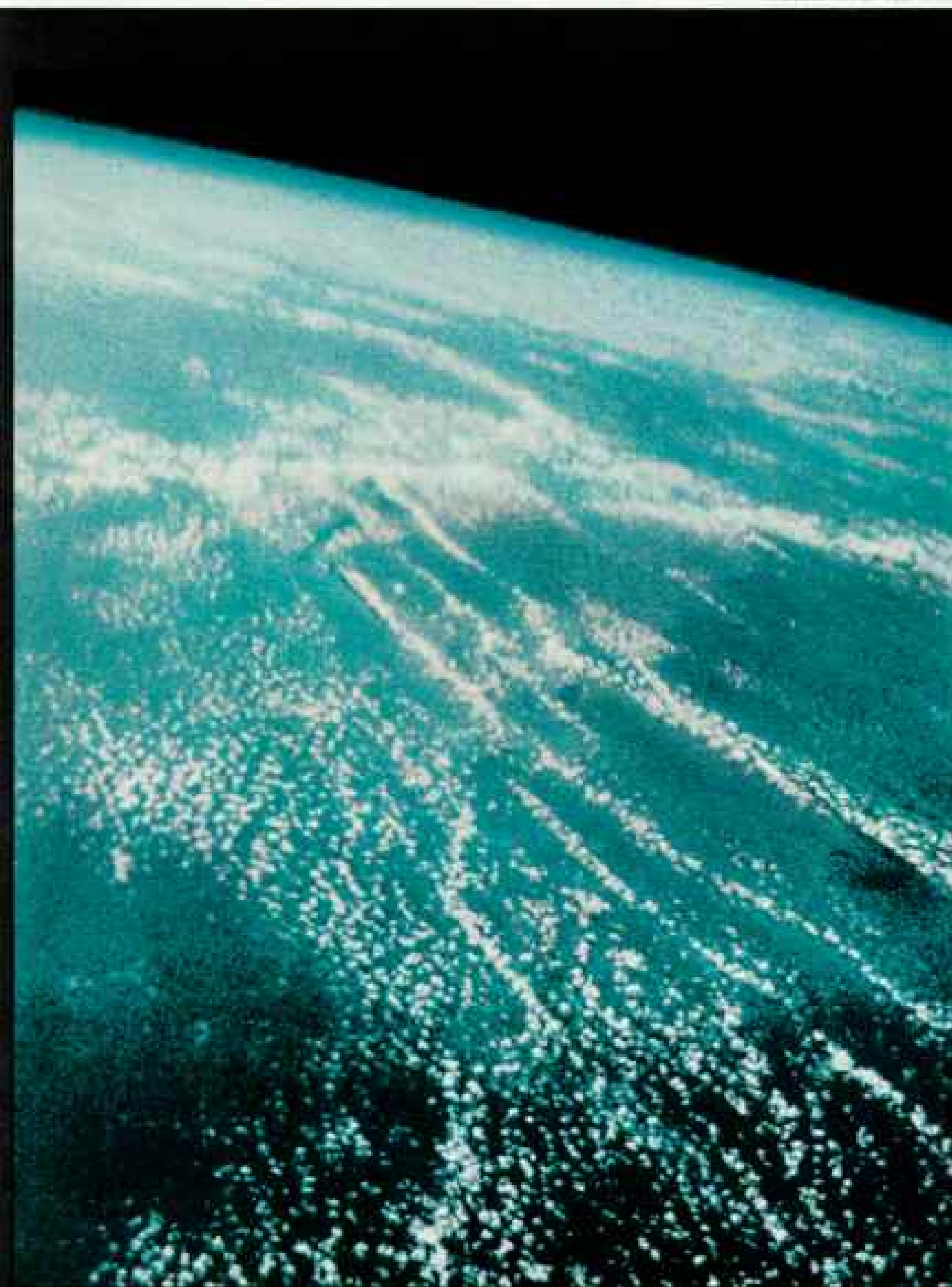
Radio communication was verified after lift-off, and then periodic transmissions were made at 30-second intervals. . . .

Some roughness was expected during the period of transonic flight and of maximum dynamic pressure. These events occurred very close together on the flight, and there

was general vibration associated with them. At one point some head vibration was observed. The degradation of vision associated with this vibration was not serious. . . . The indications of the various needles on their respective meters could be determined accurately at all times. We intend to allevi-

433

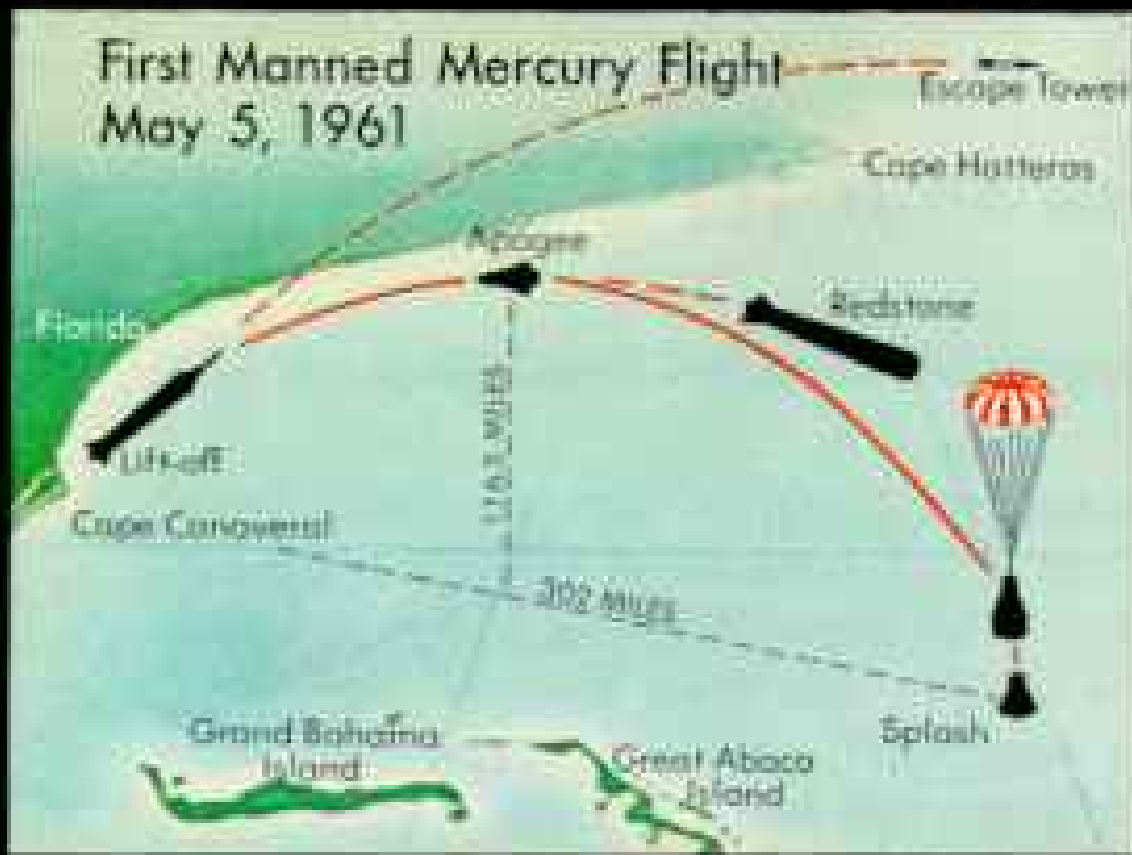
AWACEDHOMER ZLETTU AND HE EXTACHOMER (BELOW) BY NOLA



Receding world lies beaded and speckled by wisps of cloud as the astronaut climbs beyond 50 miles. Two and a half minutes after lift-off, the porthole camera snapped this view of the Atlantic's blue face.



Drogue parachute drifts free after stabilizing descent and releasing the main canopy. Porthole camera caught chute and its canister falling to watery oblivion.



**HIGH ARCHING RIDE** dropped Shepard 302 miles from Cape Canaveral 15 minutes after blast-off. Escape tower rocketed 90 miles beyond the capsule's splash point, expended Redstone fell only 20 miles beyond. Slowed by parachute, the capsule landed last.



Escape tower blasts away

Periscope

**3** As the capsule coasts into blue-black space at 4,375 miles an hour, tiny jets neatly swing it about in response to the autopilot. Now Shepard takes manual control and finds that the stick gives mastery of maneuver. Alive to his commands, *Freedom 7* changes from capsule to spacecraft, and he from passenger to pilot.



**2**

Two minutes and 22 seconds after launch, the Redstone cuts off and the rocket-powered escape tower blasts away. Shepard awaits the parting of the capsule from its silent booster.

The slight chance of a dartlike descent with the units still mated worries him. Pulse shows his anxiety. From 124 at lift-off, it rises to 138—highest of the flight.

Then explosive bolts fire, freeing the capsule. Postgrade rockets push it away from the Redstone, which follows like a faithful dog.

"Cap sep [capsule separation]," Shepard reports. "Periscope is coming out, and the turnaround has started."



Redstone booster

**1**

Flat on his back and strapped to his contour couch, Astronaut Shepard awaits lift-off as final seconds of the countdown tick away. Tasks required by the check list dim his sense of loneliness. The Redstone sheds its umbilical lines, and the periscope retracts. The astronaut becomes virtually blind to the world beyond his cramped capsule.

"Lift-off!" a voice announces in his earphones. Shepard hears the throaty roar and feels the vibration from the rocket's flame some 60 feet below. "Roger, lift-off," he says, "and the clock is started."



4

At flight's apogee, the Atlantic lies 116.5 miles below the tilted spacecraft. The astronaut takes a periscope look at a 1,900-mile span of sea and land: "What a beautiful view!" Retro-rockets, needed to break orbit on later earth-girdling rides, test-fire on schedule. During five minutes of weightlessness, Shepard performs his tasks flawlessly.

5

Freedom 7 arcs earthward in gravity's growing grip. A panel light fails to confirm automatic jettisoning of retro-rockets. Shepard hits a switch, and the balky signal flashes a comforting green. The capsule starts to revolve slowly.

As the astronaut slams into the atmosphere, g-forces build from zero to 11 in only 32 seconds, multiplying his weight to seven-eighths of a ton. Shepard tightens muscles and finds the strain tolerable. Into the radio he grunts a reassuring "O.K... O.K."



6

Clawing atmosphere brakes the plunge. The blunt heat shield warms to only about 100° F., a marked contrast to the meteorlike 2,600° anticipated when the first orbital capsule hurtles downward at some 13,600 miles an hour. Temperature in Shepard's cabin reads 102°, but his suit rises to only 78°.

At 21,000 feet a drogue parachute pops out on schedule, and at 10,000 feet the candy-striped main canopy blossoms beautifully. Swinging lazily on the shroud lines, Freedom 7 falls slowly and splashes into the sea.



## Sealed In and Alone, the Astronaut Journeys to Space and Back

Robert W. Nicholson  
National Geographic Staff



ate the head vibration by providing more foam rubber for the head support and a more streamlined fairing for the spacecraft adapter ring [a more streamlined covering for the ring that clamps the one-ton Mercury capsule to the rocket—Editor]. These modifications should take care of this problem for future flights.

I had no other difficulty during powered flight. The training in acceleration on the

centrifuge was valid, and I encountered no problem in respiration, observation, and reporting to the ground.

Rocket cutoff occurred at T-plus-2-minutes-22-seconds, at an acceleration of about 6 g [T indicates lift-off time, and 6 g equals 6 times the normal force of the earth's gravity.] It was not abrupt enough to give me any problem, and I was not aware of any uncomfortable sensation. I had one switch move-





RETRACOLOR, U.S. NAVY

### Hovering Helicopter Lifts Shepard to Safety on a Slender Cable

U.S. Marine Lt. Wayne E. Koons flew his helicopter in descending circles around the capsule as it parachuted the final 700 feet to splash-down. Before the bobbing spacecraft righted itself, the chopper moved in for the pickup. Koons's copilot, Lt. George F. Cox, leaned out and threaded a cable through the capsule hoist ring, using a device known as a shepherd's crook. So fast did the flyers work that they completed the hookup before the capsule extended its 16-foot antenna, part of a rescue radio system. As rotors whipped up whitecaps, the chopper lifted the capsule a few inches to steady it; then the astronaut clambered into view.

Shepard (below), leaving the capsule's hatch, slips into a "horse collar" harness and looks up at Cox (striped helmet). Dye marker tints water green.

Riding the cable, the astronaut swings above the capsule (pages 438-9).

Throughout the recovery, pilot Koons saw neither astronaut nor capsule. Above the trackless ocean, he held a steady position at 22 feet through his copilot's directions and the feel of his craft.

RETRACOLOR BY NATIONAL GEOGRAPHIC PHOTOGRAPHER HENRY CONGER FOR NASA



ment at this point, which I made on schedule.

Ten seconds later the spacecraft separated from the launch vehicle, and I was aware of the noise of the separation rockets firing.

In another five seconds the periscope had extended, and the autopilot was controlling the turnaround to orbit attitude.







*Lake Champlain crewmen cheer arrival of the helicopter bearing astronaut and capsule. Earlier they shouted as the capsule splashed into the sea less than four miles away.*

Shepard crosses the carrier deck briskly half an hour and 302 miles after blast-off. Dr. Jerome Strong leads him below for a brief checkup. The astronaut's first words on the carrier went to helicopter pilot Koons: "Good boy!" Earlier he exclaimed: "Man, what a ride!" *Freedom 7* is already chocked and lashed to a mattress-cushioned platform.

Even though this test was only a ballistic flight, most of the spacecraft action and piloting techniques were executed with orbital flight in mind. I would like to make the point . . . that attitude control in space differs from that in conventional aircraft. There is a penalty for excessive use of the peroxide fuel, and we do not attempt to control continually all small rate motions. . . . [The amount of hydrogen peroxide fuel is limited; jet controls are used sparingly.]

At this point in the flight I was scheduled to take control of the attitude (angular



position) by use of the manual system. I made this manipulation one axis at a time, switching to pitch, yaw, and roll in that order until I had full control of the craft. I used the instruments first and then the periscope as reference controls. The reaction of the spacecraft was very much like that obtained in the air-bearing trainer [page 430]. The spacecraft movement was smooth and could be controlled precisely. Just prior to retrofiring I used the periscope for general observation. . . .

#### Astronaut Found "Zero-g" Like Floating

The sky itself is a very deep blue, almost black, because of the absolute lack of light-reflecting particles. We are encouraged that the periscope provides a good viewing device as well as a backup attitude-control indicator and navigation aid.

At about this point, as I have indicated publicly before, I realized that somebody would ask me about weightlessness. I use this example again because it is typical of the lack of anything upsetting during a weightless, or zero-g, environment. Movements, speech, and breathing are unimpaired, and the entire sensation is most analogous to floating. The National Aeronautics and Space Administration intends, of course, to investigate this phenomenon during longer periods of time, but the astronauts approach these periods with no trepidation.

Control of attitude during retrofiring was maintained on the manual system and was within the limits expected. There was smooth transition from zero gravity to the thrust of the retrorocket and back to weightless flying again.

PHOTOGRAPHS BY NATIONAL GEOGRAPHIC PHOTOGRAPHER DEAN LONGER FOR NASA





After the retrorockets had been fired, the automatic sequence acted to jettison them. I could hear the noise and could see one of the straps falling away in view of the periscope. My signal light inside did not show proper indication; so I used the manual back-up control and the function indicated proper operation.

#### **Pilot Seeks Stars Through Porthole**

After retrorockets were jettisoned, I used a combination of manual and electric control to put the spacecraft in the re-entry attitude. I then went back to autopilot control. . . I also looked out both portholes to get a general look at the stars or planets as well as to get oblique horizon views. Because of sun angle and light levels, I was unable to see any celestial bodies. The Mercury Project plans

are to investigate these phenomena further on later flights.

At an altitude of about 200,000 feet, or at the edge of the sensible atmosphere, a relay was actuated at .05 g [for automatic re-entry control]. I had intended to be on manual control for this portion of the flight, but found myself a few seconds behind. I was able to switch to the manual system and make some controlling motions during this time.

We feel that programing for this maneuver is not a serious problem and can be corrected by allowing a little more time prior to the maneuver to get ready. We were anxious to get our money's worth out of the flight, and consequently we had a full flight plan. However, it paid off in most cases as evidenced by the volume of data collected on pilot actions.

The re-entry and its attendant accelera-



NO DETROITERS BY PAUL SCHUTZ, LIFE, (LARGE); AND NATIONAL GEOGRAPHIC PHOTOGRAPHER DEAN CONGER FOR NASA

Last look at his spacecraft precedes Shepard's departure by plane for Grand Bahama Island, some 100 miles away. He wears a new orange flying suit supplied by the carrier's crew and tagged with his name and the title Astronaut (lower left). Earlier he talked by telephone with President Kennedy and found time for a reflective moment, hand raised to check. He wears his Naval Academy ring, only personal possession he took into space.

tion pulse of 11 g [the shock caused by slashing into the atmosphere] was not unduly difficult. The functions of observation, motion, and reporting were maintained, and no respiration difficulties were encountered. . . . I noticed no loss of peripheral vision, which is the first indication of a "gray-out."

After the acceleration pulse I switched back to the autopilot. I got ready to observe parachute opening.

#### Open Parachute a "Welcome Sight"

At 21,000 feet the drogue parachute came out on schedule, as did the periscope. I could see the drogue and its action through the periscope. There was no abrupt motion at drogue deployment.

At 10,000 feet the main parachute came out, and I was able to observe the entire operation

Reunion with Astronauts Slayton (left) and Grissom follows the landing on Grand Bahama. A joke over a box of crayons, offered to Shepard to help while away time in space, adds hilarity to the meeting. Near Shepard's plane stands National Geographic photographer Dean Conger, on loan to NASA to help film Project Mercury.

Shepard remained three days on Grand Bahama for checkups, debriefing, and rest.

through the periscope. I could see the streaming action as well as the unreefing action and could immediately assess the condition of the canopy. It was good to see it blooming and a welcome sight. The opening shock was smooth and welcome. I reported all of these events to the control center and then proceeded to get ready for landing.

I opened the faceplate of the helmet and disconnected the hose which supplies oxygen to its seal. I removed the chest strap and the knee restraint straps. I had the lap belt and shoulder harness still fastened.

The landing did not seem any more severe than a catapult shot from an aircraft carrier. The spacecraft hit and then flopped on its side so that I was on my right side. I felt that I could immediately execute an underwater escape should it become necessary. . . . I could



HE GETS HOME BY NATIONAL GEOGRAPHIC PHOTOGRAPHER DEAN CONYER FOR WALK

### Shepard Receives NASA's Distinguished Service Medal From the President

Laughter at the White House stems from an executive slip. Mr. Kennedy dropped the medal, then quipped: "This decoration has gone from the ground up." Shepard, a Navy commander, is the second person to win the medal. NASA also gave it to its Director of Aeronautical and Space Research, John W. Crowley, Jr., on his retirement in 1959.

see the water covering one porthole, I could see the yellow dye marker out the other porthole, and later on, I could see one of the helicopters through the periscope.

The capsule righted itself slowly, and I began to read the cockpit instruments for data purposes after impact. I found very little time for that, since the helicopter was already calling me.

I made an egress as shown in the training movie; that is, I sat on the edge of the door-sill until the helicopter sling came my way. [The audience which heard Shepard read his report had seen a film showing this method of getting out of the capsule.] The hoist itself was uneventful.

At this point, I would like to mention a device that we use on our pressure suits that gives watertight integrity. There is a soft rubber cone attached to the neck ring seal of the suit. When the suit helmet is on, this rubber is rolled and stowed below the lip of the neck ring seal bearing. With the helmet off, this collar or neck cone is rolled up over the bearing and against the neck of the pilot where it forms a watertight seal. The inlet valve fitting has a locking flapper valve.

[The neck cone fits like the collar of a turtle-neck sweater, and the inlet valve locks to prevent water intake.] Thus the suit is waterproof and provides its own buoyancy.

The helicopter took me to the aircraft carrier *Lake Champlain*, where the preliminary medical and technical debriefing commenced. Since no serious physiological defects were noted, only an immediate cursory examination was necessary. . . .

I went from the carrier to Grand Bahama Island, where I spent the better part of two days in combined medical and technical debriefings. A great deal of data was gathered. . . . It appears profitable to provide a location where a debriefing of this sort can be accomplished. . . .

In closing I would like to say that the participants in Project Mercury are indeed encouraged by the pilot's abilities to function during the ballistic flight which has just been described. . . . The Space Task Group is also encouraged by the operation of the spacecraft systems in the automatic mode, as well as in the manual mode. We are looking forward to more flights in the future, both of the ballistic as well as the orbital type.





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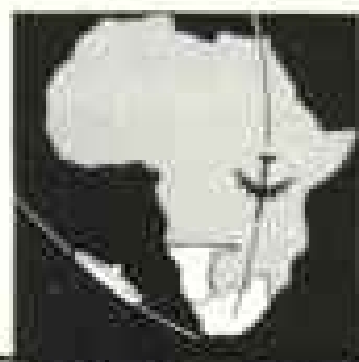


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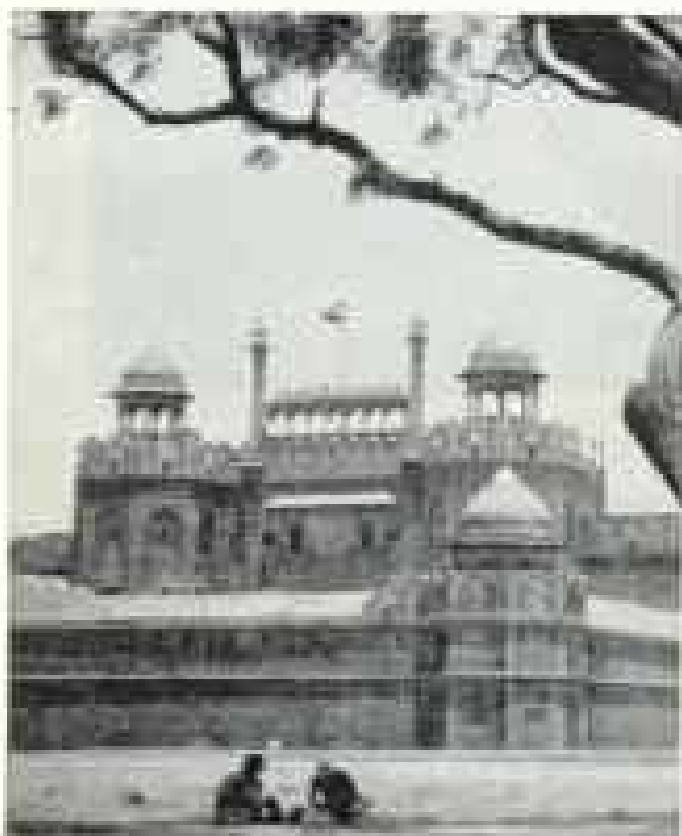
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## "The Swiss Watchmakers' Camera"

No. 9 (continued from NGM June issue)



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(26,811 ft.)

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by Georges Caspari

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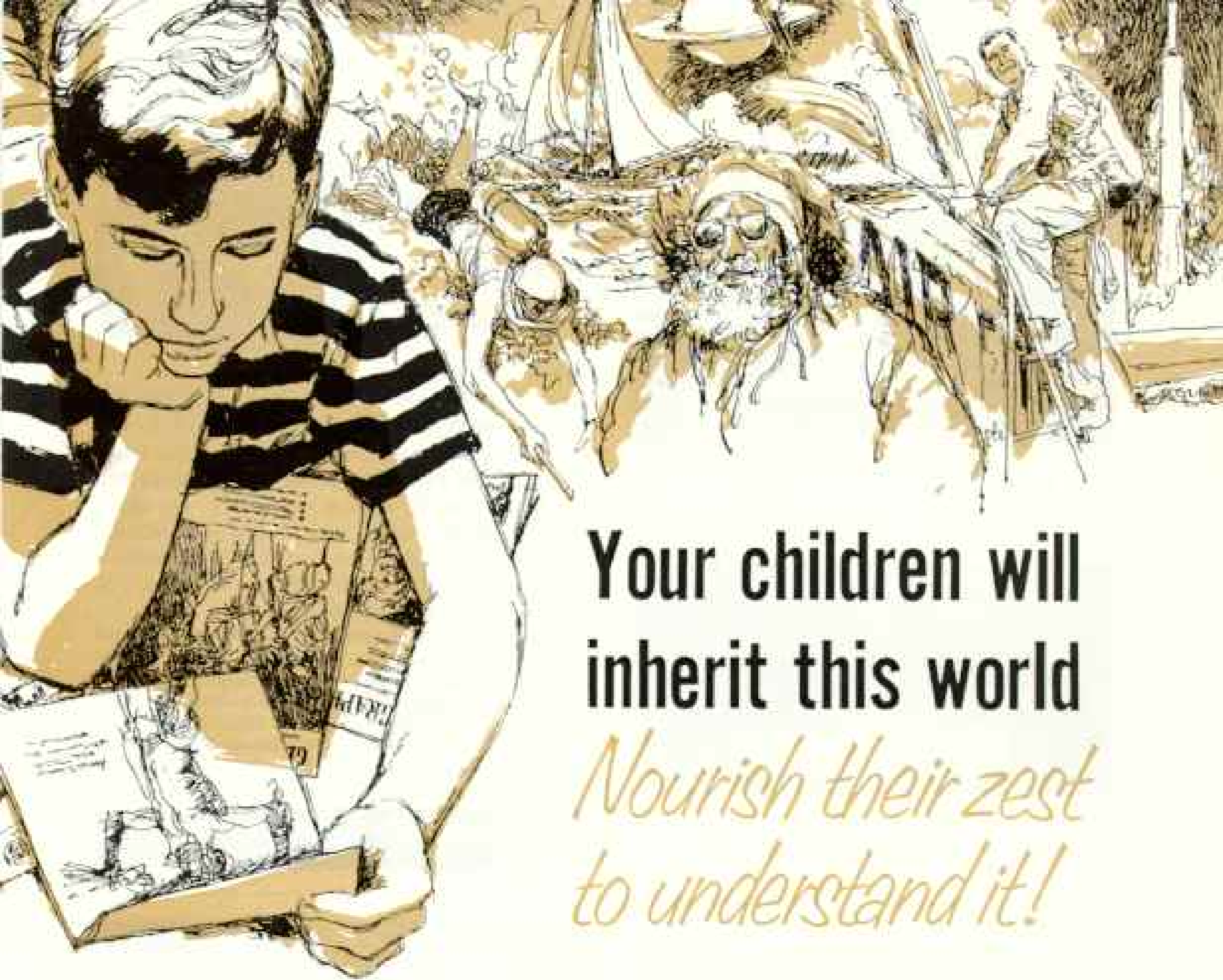
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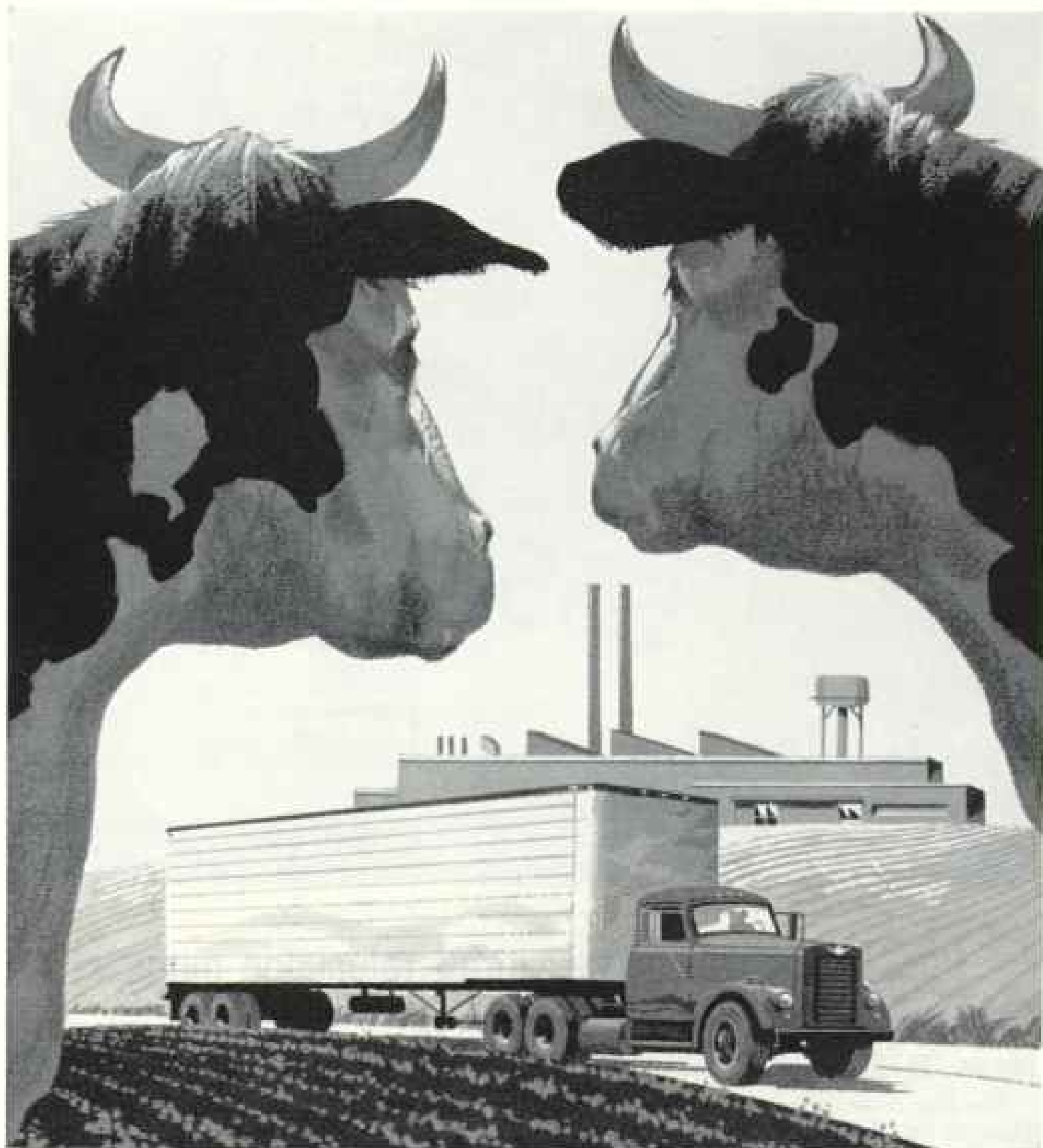
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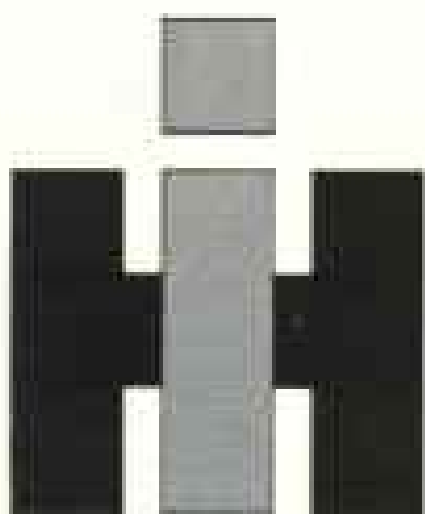
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