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NATIONAL GEOGRAPHIC



**THE SOCIETY'S GREAT
75TH ANNIVERSARY ISSUE**
INTRODUCTION BY MELVILLE BELL GROSVENOR

ROMANCE OF THE GEOGRAPHIC

By GILBERT HOVEY GROSVENOR 516

SIX TO THE SUMMIT

NORMAN G. DYHRENFURTH 460

HOW WE CLIMBED EVEREST

BARRY C. BISHOP 477

THE FIRST TRAVERSE

THOMAS F. HORNBEIN 509
WILLIAM F. LINSOELD

PRESIDENT KENNEDY PRESENTS HUBBARD MEDAL 514

THREATENED TREASURES OF THE NILE

GEORG GERSTER 567

TUTANKHAMUN'S GOLDEN TROVE

CHRISTIANE DESROCHES NOBLECOURT 625
F. L. KENETT



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1888-1963

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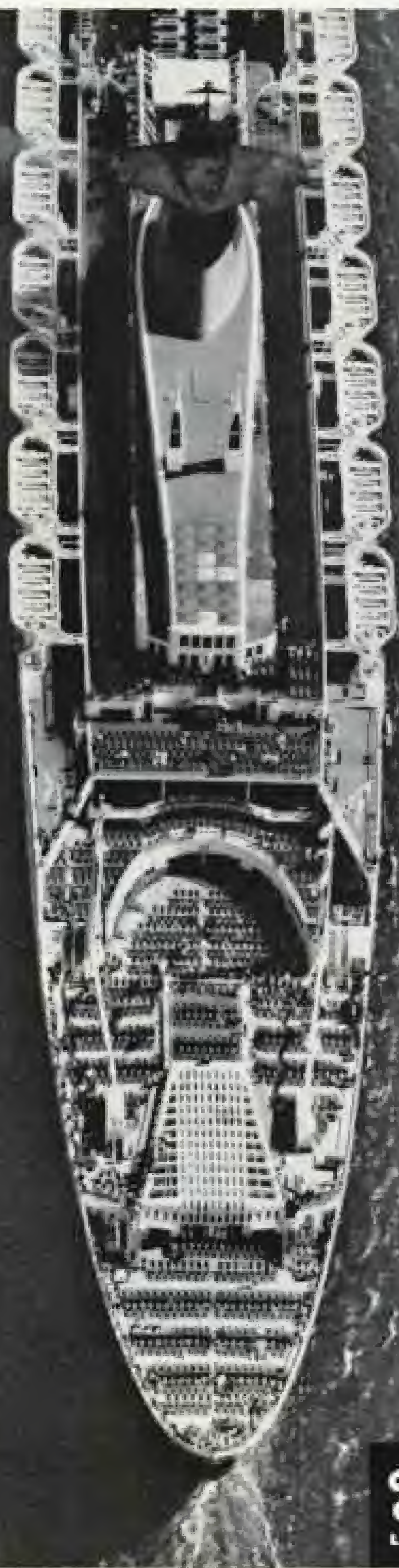
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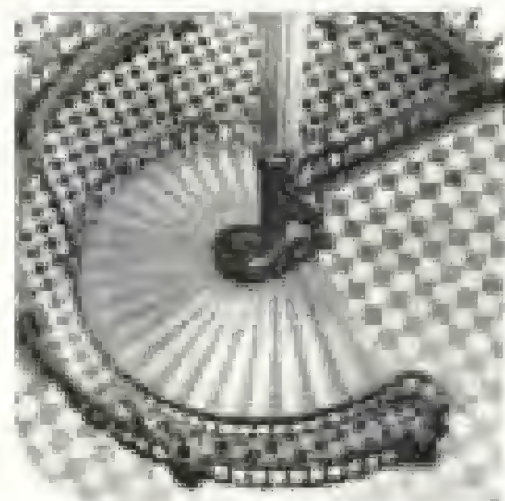
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**Shows: From top left,
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The 3.9 hp Merc 39 is not in this picture. It couldn't wait to go fishing.



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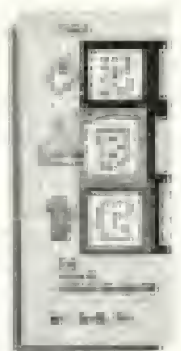
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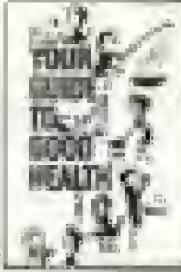
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SEVENTY-FIVE YEARS AGO the first President of the National Geographic Society, Gardiner Greene Hubbard, plotted a clear course for the new organization.

"By my election," he said in his acceptance address, "you notify the public that the membership of our Society will not be confined to professional geographers, but will include that large number who, like myself, desire to promote special researches by others, and to diffuse the knowledge so gained among men, so that we may all know more of the world upon which we live."

The first issue of the magazine, dated October, 1888, went to a total membership of 205.

President Hubbard and his fellow-founders would be pleasantly surprised, I think, if they could see this issue of NATIONAL GEOGRAPHIC, which will go into 3½ million member homes and be read on every continent. The 75th anniversary issue, with 188 pages, is by far the largest in our history, and its varied contents well represent the wide range of the Society's activities.

The romance behind the development of the Society and the growth of its magazine is told by my father, Dr. Gilbert H. Grosvenor, Editor for 55 years and now Chairman of the Board of Trustees. It is an intensely personal story—the account of a vision to which he clung despite difficulties which at times appeared insurmountable. His perseverance made the magazine a success, and thus made possible the Society's contributions to exploration and discovery.

Appropriately, one of our greatest adventures is dramatically recounted in this issue: the first American conquest of Mount Everest. The Society was the principal sponsor of the expedition, and Barry C. Bishop of the Geographic staff was one of those who achieved the summit. His pictures, I believe, stand among the great mountain photographs of all time.

Not since I saw Peary meet Amundsen in 1913 and was personally introduced by Mr. North Pole to Mr. South Pole have I been so thrilled as when I presented the returning Mount Everest heroes to President John F. Kennedy at the White House. This indomitable team represented to me the culmination of all National Geographic expeditions.

Here you will read expedition leader Norman Dyhrenfurth's inspiring account of the expedition's scope and scientific purposes; Barry Bishop offers the first-person narrative of his own climb. Thomas F. Hornbein and William F. Unsoeld recount the minute-by-minute drama of the first ascent of the West Ridge and subsequent traverse of Everest.

From the snow-swept summit of Everest you travel in your Geographic armchair to the tropic reaches of the Nile. Members receive an up-to-



October
1963

NATIONAL GEOGRAPHIC

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*On the
Geographic's
75th
birthday—*

Our Best to You

the-minute report on the efforts to preserve some of ancient Egypt's temples and monuments from the great lake which will rise behind the United Arab Republic's new Aswân High Dam.

An 11-color Atlas Map supplement shows the countries of the Nile, and in a related article we see the magnificent treasures discovered in the Egyptian tomb of the short-lived boy king of 33 centuries ago—Tutankhamun. These wondrous relics have never before been photographed so beautifully in color.

We have tried to make this anniversary issue not only the biggest but the best GEOGRAPHIC in our history. And we have kept in mind the promise in that October, 1888, issue—that the Society was organized "to increase and diffuse geographic knowledge" and "the publication of a Magazine has been determined upon as one means of accomplishing these purposes."

Gilbert H. Grosvenor
EDITOR

Six to the Summit

America's first Everest expedition takes the mountain by storm

By **NORMAN G. DYHRENFURTH**

Leader of the 1963 American Mount Everest Expedition

Photographs by BARRY C. BISHOP

National Geographic Foreign Staff



Author Dyhrenfurth organized the expedition that put three teams on top of Everest. A professional cameraman, he gives Nepalese children a peep through his viewfinder.

“**U**P GO, Bara Sah'b?” I shook my head. Above the howling of the storm I shouted, “No, Ang Dawa. Down go!” My hopes were above; my job, now, was below.

Climbing Mount Everest had been a beckoning dream to me since 1952, when I was part of a Swiss expedition that nearly reached the top. But now, 800 feet from the summit, our oxygen supply was dwindling. To force our leaden legs and gasping lungs higher would mean that we might never return.

Early that morning at Camp VI, Big Jim Whittaker and Sherpa Nawang Gombu had set off through the swirling snow toward what we hoped would be the first American ascent of Everest. I had followed this high to film the assault team ahead, and that was now manifestly impossible.

So Ang Dawa and I must go back to Camp VI to prepare hot food for Big Jim and Gombu against their return.

And return they did, on this May Day of 1963, utterly exhausted and starved for liquids—but bringing news of victory. And three weeks later, four others of our group—Lute Jerstad, Barry Bishop, Willi Unsoeld, and Tom Hornbein—also reached the top. The last two performed a feat unheard of in the enormous Himalayan peaks. They traversed the mountain, going up along the unclimbed

and horrendous West Ridge and coming down on the other side by a route they had never traveled (painting, pages 470-71).

Thus the expedition put the United States for the first time in the forefront of big-league mountaineering.

Team Spirit Key to Success

I first began to put my Everest dream into operation in 1960. Returning from my fourth Himalayan expedition, I applied to the Nepalese Government for permission to climb Everest. Then started the long, discouraging process of winning support.

Getting men was relatively easy: Some 150 applications poured in. With Will Siri, physicist of the Donner Laboratory of the University of California, as my deputy, I screened the applicants for experience, maturity, skills, and leadership. Seventeen Americans met our tests. Not one was a prima donna. All were to perform beautifully with the team spirit that is a prime requisite for success on Everest.

The final roster of 19 Americans included five with master's degrees, five with Ph.D.'s, and three medical doctors—a group of extraordinary intellectual attainment. Almost all had climbed notably difficult peaks in Alaska, in the Andes, or in Asia.

But if getting men was easy, getting money



Snow-plumed South Summit of Everest challenges climbers 25,000 feet high on Lhotse's slanting face. Bracing themselves with ice axes, steel boot spikes, and a rope fixed to the mountain, the men pause for breath in the rarefied air. Oxygen here is only two-fifths the density at sea level, and climbers must breathe bottled gas.

PHOTOGRAPH BY [unreadable]



Deputy leader, William E. Sirtl coordinated the expedition's scientific program, which embraced glaciology, solar radiation, meteorology, and man's reaction to extreme stress at high altitudes. Here he magnifies a blood sample.

Nine hundred porters converge on a log bridge that must be crossed single-file. When a man rests, he stands and supports his load on a T-bar staff.

PHOTOGRAPHS BY N. S. S.

FEBRUARY 20 Katmandu 4423

"A little war against a big mountain" begins with the assembly of the American Mount Everest Expedition in Katmandu, Nepal's capital. Thence the expedition jounces by jeep and truck to Banepa

An army of a thousand men, including climbers, Sherpas, porters, and a Nepalese Nelson officer, sets out from Banepa on the 185-mile hike to Everest, February 20



Elevations in feet a Camp site
Khola, Kosi,.... river





was not. Americans have never been noted for their interest in mountaineering. "So what, it's been climbed," said some. Others called us crazy.

Then in May, 1962, the National Geographic Society broke the log jam, becoming our primary sponsor and giving the expedition the status it needed. The Society's Committee for Research and Exploration approved grants for our studies in glaciology, weather, and solar radiation. Eventually the Geographic's support totaled \$175,000, including funds for making a documentary film of the expedition, to be shown soon on TV and later in commercial theaters.

Without this prestigious and generous support, the American Mount Everest Expedition would have been stillborn.

The National Geographic would hardly have poured funds into a purely mountaineering expedition. Rather, they were interested in our ambitious scientific program, as were other sponsors who now fell in line.

Tests Measure Reactions to Stress

In addition to the Geographic's earth-science studies, we undertook to measure how mind and body perform under the extreme stresses of the high mountains—fatigue, isolation, numbing cold, sleeplessness, apprehension, dehydration, sense of suffocation. In the oxygen-starved atmosphere far above the limits of human habitation, men come to the bitter edge of what is possible.

The Office of Naval Research, the Atomic Energy Commission, the University of California, the National Science Foundation, and the U. S. Army Quartermaster Corps helped support this work; so also did the National Aeronautics and Space Administration and the U. S. Air Force, in the hope that our findings—when the scientists have completed their analyses a year from now—may help in choosing men for space flights.

The National Science Foundation also financed our study of how men react to each other under stress. Often expedition members quarrel and become lifelong enemies. Fortunately, we held our disagreements to a reasonable level and all came home good friends.

The State Department's Bureau of Educational and Cultural Affairs gave substantial support to foster cultural exchange and promote scientific research and development.

A shakedown on Mount Rainier* in September of last year tested our fine new equip-

ment, some of it never before used in mountaineering: vastly improved tents, with outside frames, that can be set up in a high wind; dehydrated and freeze-dried foods; lightweight walkie-talkies to keep assault parties in constant touch with Base Camp.

But foremost was a revolutionary oxygen mask—simple, dependable, and easy to device—designed by our anesthesiologist teammate, Tom Hornbein. To our sorrow, Fred Maytag, whose Maytag Company made the masks free of charge for us, did not live to see his generosity bear fruit.

Finally, on February 20, our army of 909 porters, 32 Sherpas for high altitude work, 19 expedition members, and 27 tons of baggage began the 185-mile march from Banepa, near Katmandu, to Everest. Our procession must have presented the appearance of a four-mile-long millipede that took two hours to get its tail where its head had been.

Each of our tough, stocky porters bent against a headband supporting a backpack of 65 pounds. To this he added his personal gear, a blanket, water container, and several days' supply of rice. Several women porters carried babies on their packs. Small Lhasa Apso dogs scrambled up the rocky trail alongside their masters.

Ominous Events Mar the Journey

At first the days passed in uneventful, pleasant succession. To be sure, there were sore feet and blisters, for we were not yet toughened. As we reached higher elevations, we reveled in the cooler weather and in the everchanging countryside, as terraced hill-sides gave way to more rugged alpine slopes, and the rickety swinging bridges crossed streams that often turned to cascades. After the day's march we swam in these streams, to the amazement of the local people.

Early in the march-in began a series of foreboding events. On the tenth day of our trek we crossed a narrow chain bridge over a torrent (opposite). I had been making motion pictures directly under the bridge, but I decided to move to one side for a diagonal shot. That move may have saved my life. Just then one of the chains gave way, plunging 11 heavily laden porters into water and rocks 10 feet below. Miraculously no one was killed, despite cuts and bruises and one concussion.

Sick people along our route came in num-

*See "Mount Rainier, Testing Ground for Everest," by Barry C. Bishop, NATIONAL GEOGRAPHIC, May, 1963.



Hundred-pound girl carries 65 pounds across a suspension bridge above the Likhu Khola near Chyangma. The overloaded span collapsed later, injuring eight porters.

"Open wide!" Dr. Gilbert Roberts examines a boy's throat. On each night of the march the expedition's physicians held sick call for Sherpa and Thaming tribesmen and porters.

PHOTOGRAPHS © NATIONAL GEOGRAPHIC SOCIETY



Smallpox vaccination occupies Dr. David L. Dingman following an outbreak among the porters.



Muscular Thaming hauls brooms for policing Base Camp. Stolen, they were never used.

bers seeking help; we never turned them down. Our worst case was a severely burned woman. A lantern had blown up, charring her face and arms. Her flesh was shriveled like a prune. Gil Roberts, senior medical officer, said she would die without hospitalization. We had to get her to Katmandu, even though a helicopter would cost the expedition \$2,000 from its tight budget. Al Auten, communications expert, immediately broke out our radio gear. As darkness fell, the camp was in turmoil setting up the radio mast and assembling the generator.

Our excellent radio equipment was to give us the finest communications any expedition ever had. But it could not reach our contact man in Katmandu just now, for he was not yet expecting any calls. Finally Al tuned in on a ham operator in Melbourne, Australia, and told him our story. Eventually this man got a message to Katmandu through diplomatic channels and relayed our request for the one helicopter available in Nepal.

The burned woman was flown out; she recovered and met us on the return march, bringing eggs and beer as gifts.

Vaccine Halts Outbreak of Smallpox

After rain and snow had turned our trail into a slippery quagmire, we met our third crisis: smallpox among our porters.

Maynard Miller, our glaciologist, described the victim as "a boy, perhaps 14, his face hidden partly by a burlap cloth. I caught a glimpse of his mouth and saw it swollen horribly, with a greasy pall over the cheeks and nose." Again we radioed to the outside world, asking for vaccine. Fortunately our fears of an epidemic were never realized.

By mid-March we had successfully coped with pneumonia and appendicitis, but almost all of us were half sick with, as Will Siri put it, "an array of joint disorders, gastrointestinal disturbances, and respiratory infections unknown to medical science and hence untreatable." An unexpected shortage of toilet paper did not help matters. But, continued Will, "Despite the runny noses, sore throats, and aching bowels, everyone is in the best of spirits. We're all eager to get on to Everest."

As we moved up into the world of ice and snow, beyond all civilization, we began to suffer headaches and nausea from the altitude and cold, and at night we would hunch in our sleeping bags with coughing fits. We slept with the aid of pills, even then waking up at intervals gasping for breath.

A month after leaving Katmandu we had established Base Camp on the Khumbu Glacier at 17,800 feet. Here the porters dumped our trunks of scientific gear, our hundreds of waterproof cartons of items as mundane as scouring pads and butane stoves, as essential as ice axes and thermal underwear. We had 52 tents, two miles of nylon rope, and 216 cylinders of oxygen.

Severe Cold Hampers Work

Temperatures here ranged between 10° above and 15° below zero F. Will Siri recorded in his diary: "Fearful struggle to get anything done. Most of time everything in tent is frozen solid and must be thawed before use—like ballpoint pen which must be held over candle after each sentence."

Now the scientific work went into high gear. Maynard Miller and Barry Prather began drilling holes in the glacier and setting stakes to observe ablation, or surface wasting, and movement of the ice. (Preliminary calculations show a very slow movement of less than 300 feet a year at Base Camp.) They collected specimens of rock and of glacier ice while hanging on wire ladders 80 feet down in crevasses. They measured the glacier's thickness with a seismograph and a delicate gravity meter hand-carried from the States.

Weather information was gathered every three hours at three altitudes. The glacier was found to lie in a true desert environment, with very little precipitation.

Meanwhile Will Siri continued his physiological studies. He had us stepping up and down on a box for three minutes at a time to measure changes in blood pressure and respiration. We were exhausted after each such ordeal at high altitude, but many of the tough Sherpas hardly breathed deeply.

Will also collected frequent samples of

(Continued on page 472)

Fluted ice cliffs rising in terraces face tents of the Advance Base, nerve center of the climbing operations. Here, in the Western Cwm, Dr. Roberts, chief medical officer, spent six straight weeks at 21,350 feet, keeping the party healthy. Other members of the expedition returned to Base Camp periodically to get relief from the altitude.





Khumbu Icefall, a Chaos of Grinding Ice, Took the Life of John Breitenbach

Mountain walls, constricting Khumbu Glacier as it cascades from the Western Cwm at 19,800 feet, break the ice into huge blocks that push in-



EXPLORATIONS BY SAMUEL J. WOODRUFF AND JOHN W. BREWSTER. ILLUSTRATION BY HENRY W. HARRIS.

exorably downward. Climbers appear insignificant amid the frigid morass. Porters from Base Camp, risking an upheaval at any minute, passed through

regularly. Breitenbach, a Wyoming mountaineer and guide, died instantly when an ice wall the size of two boxcars collapsed and buried him.

An old route and a triumphant new one

THE EXPEDITION PUT SIX of its nearly 1,000 men on the 29,028-foot pinnacle. One pair labored up by the unconquered West Ridge and came down the other side—first traverse of a major Himalayan peak. Others took the South Col route pioneered by Hillary and Tenzing.

MOUNT EVEREST
29028

South Summit
28750

Camp VI
27450

South Col
26200

Camp V
26100

Northeast Ridge

Camp IV West
25100

Camp III West
23800

Camp II West
22800

Advance Base Camp
21300

Camp I
21200

Lho-La (Pass)
19700

Camp I
20200

WANGDRI
24412

Base Camp
17500

CHANGTSE
24780

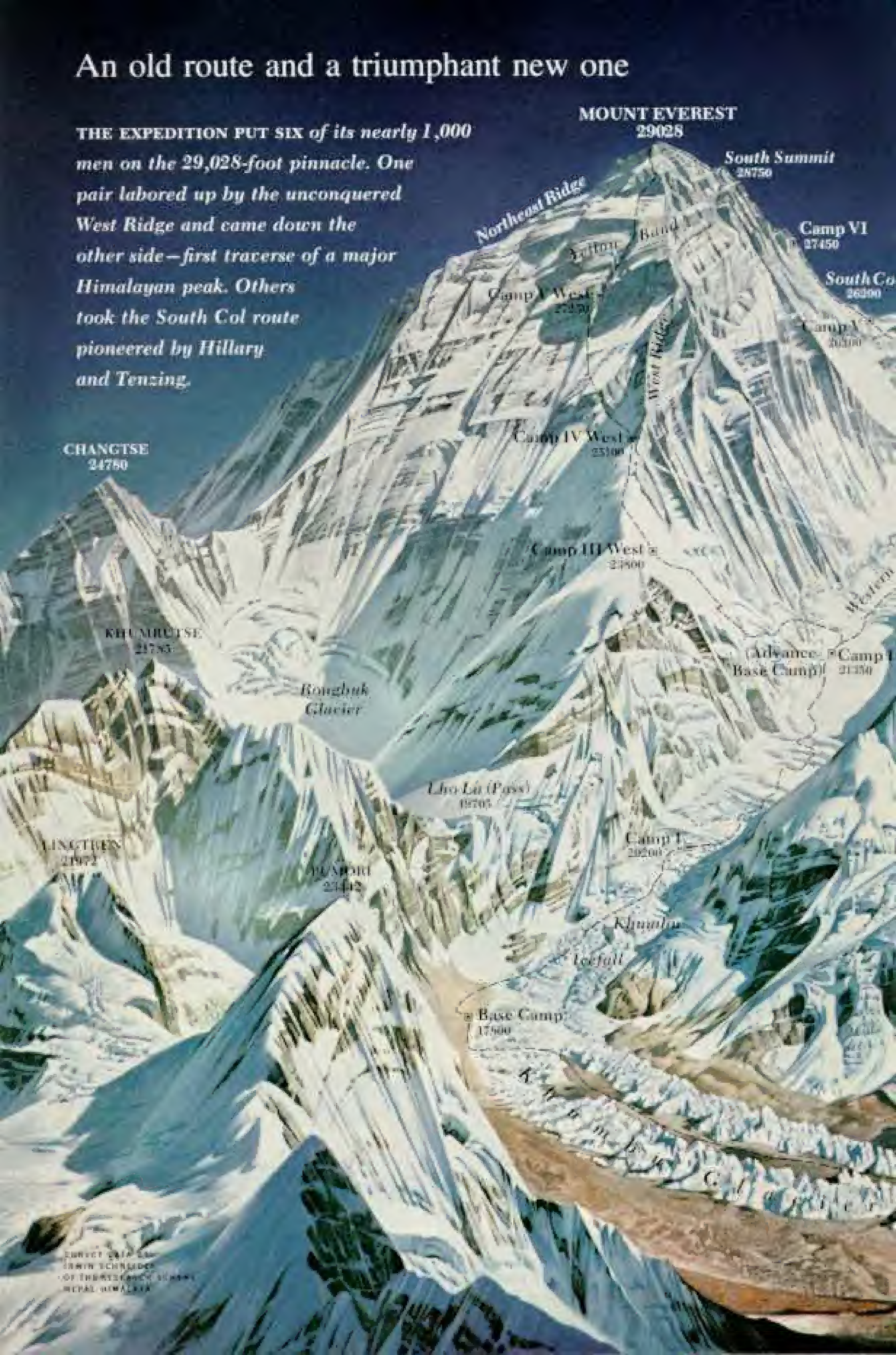
KHUMBUITSE
24785

Rongbuk
Glacier

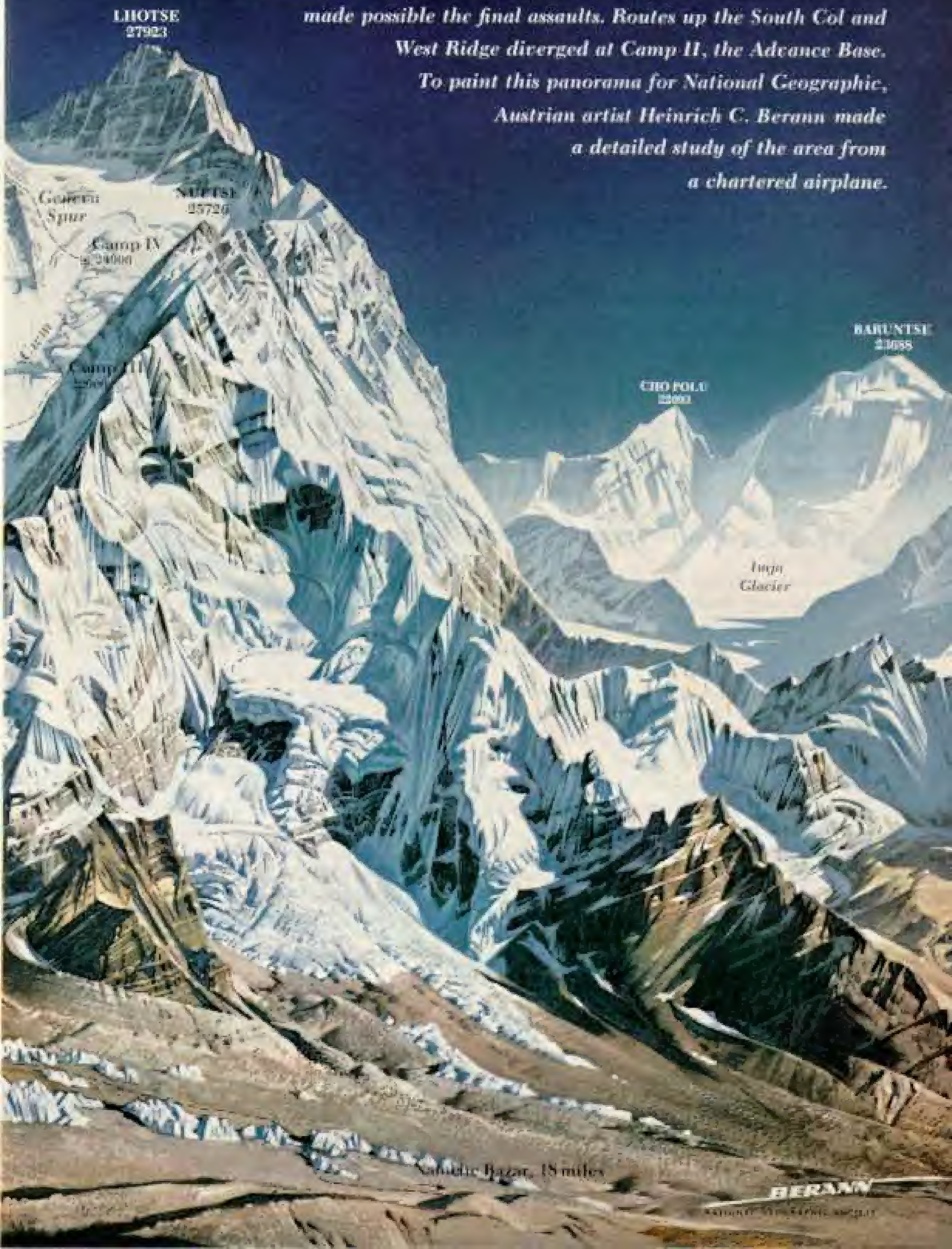
LINGTSEN
24972

Khumlu
Icefall

COVER OF LIFE BY
ERWIN SCHNEIDER
OF THE NATIONAL GEOGRAPHIC SOCIETY
RECAL. BY M. J. B. B.



WHEN THE LOWLAND PORTERS LEFT, Sherpas and American mountaineers leapfrogged supplies up the forbidding slopes through a series of camps placed a day's climb apart. At Camp VI, last before the summit, Sherpas struggled up to 27,450 feet with tents, oxygen, food, butane stoves, and sleeping gear that made possible the final assaults. Routes up the South Col and West Ridge diverged at Camp II, the Advance Base. To paint this panorama for National Geographic, Austrian artist Heinrich C. Berann made a detailed study of the area from a chartered airplane.



BERANN

Illustration by Heinrich C. Berann

blood and urine to determine how our bodies responded to stress. Wrote Lute Jerstad: "Will is playing with blood again and we all cringe. Thoughts of the needle are not popular here." And later, "Siri had Whittaker and me collecting urine again. The Sherpas think we have really cracked! With all the outdoors here, the stupid sahibs collect urine in bottles!"

(Even at a luncheon in Washington in July, Will was still taking blood samples, to the groaning dismay of the men.)

Dick Emerson, our sociologist, had us all keeping diaries. Also, he recorded our conversations and our bull sessions to see how well we communicated with each other under growing stress.

Men Dream of Red-haired Girls

Jim Lester, our psychologist, talked to us informally, probing our thoughts, our dreams, our emotions.

Paradoxically, says Jim, we did not dream about high mountains and danger, ice and snow. The subject matter tended to be people and places from the long past. And there were an unexplained number of dreams about girls with red hair!

As for our emotions, the diaries give poignant evidence:

"Feel very sad and lonely and miss family and home very much."

"Really tired. Everything dragging. Would love to lie on a beach somewhere and not freeze or gasp for breath."

But despite our frustrations and impatience, preparations for the assault progressed steadily. As the weeks passed, we carried supplies to the string of assault camps along our icy route: into the Western Cwm, the great Valley of Silence between the Nuptse wall and the western flank of Everest; up on the face of Lhotse; in the South Col; and finally at 27,450 feet on the pyramid of Everest's summit itself.

Simultaneously, during April, we began probing a possible route up the West Ridge of Everest, considered by many mountaineers as impossible. We thought differently. So we carried on two expeditions in one, for if we could pull off the West Ridge attack, it would be, to my mind, one of the greatest events in the annals of Himalayan climbing.

Here, especially, men demonstrated their team spirit. Dick Pownall, Dave Dingman, and the Sherpas Nima Tensing, Girmi Dorje, Chotari, and Kalden spent freely of their

energy to put in the South Col route and support the assault. On the West Ridge, Barry Corbet, Al Auten, and Dick Emerson performed valiantly in the hard, unrewarding work of establishing camps. These men, with no selfish ambitions, carried tremendous loads so others could get to the summit.

Just beyond Base Camp, in the most treacherous part of our climb, our minor troubles were eclipsed by tragedy. Here the river of ice on which we were traveling plunges 2,000 feet in a mighty cataract, or icefall, about a mile and a half long. This jumbled mass of shattered, tortured ice is like a prehistoric monster, ever groaning, ever shifting, ever threatening. We set up no camp in this labyrinth of crevasses and pinnacles because of the risk of collapsing ice (pages 468-9).

On March 23d two ropes of men moved up through the icefall: Dick Pownall, Ang Pema, and Jake Breitenbach on one, Gil Roberts and Ila Tsering on the other. Suddenly, with a great rumbling, a huge wall of ice toppled over on the men. Gil and Ila escaped injury, but the others disappeared under tons of white debris.

Ten minutes of frantic chopping freed Dick, who was turning blue from a half-ton block of ice pinning his chest so tightly he could hardly breathe. A few minutes later Ang Pema was freed, upside down, badly lacerated, and with a skull fracture. But Jake had been killed instantly and was buried so far back under the enormous wall that no effort could reach him. Some of the team went back up that night and continued searching for his body, but in vain.

Willi Unsoeld, in a letter to his wife, wrote the most moving epitaph: "The night we went up, the mist filled the valley with only the guardian summits glinting ghostly golden high above. Jake was a rare one. Lute and I cried like babies all up and down the icefall because we loved him—but as deaths go, this was a clean-cut, kindly one."

Tragedy Casts a Pall Over the Camp

The expedition was stunned into temporary immobility. We all felt that way about Jake. But there was no thought of giving up.

By a glacial lake a few miles below Base Camp, a Sherpa stonemason began carving an outcrop of rock in Jake's memory. But the ultimate tribute was paid a few weeks later by Big Jim Whittaker and Gombu when they planted the American flag on Everest's peak.

"Never so tired in our lives," James W. Whittaker and Nawang Gombu stumble down to camp with the electrifying news that the Stars and Stripes now streams from Everest's peak. Draughts of lemonade and oxygen at full flow revive them. Whittaker's seamed face reflects his life-or-death ordeal.

In retrospect, it is a miracle that the mountain was climbed that May 1st. Sir Edmund Hillary, on another expedition nearby, had noted the wind and pronounced the day impossible for climbing. Our own men in the camps below felt the same way.

But we knew that if we delayed much longer we would run out of oxygen, out of food, out of fuel for our stoves, and then we would have to retreat.

So that morning at 6:15 Big Jim and Gombu set out in the face of impossible weather. Temperature had shrunk to 20° below zero F. Fierce winds roared about them at 60 miles an hour, filling the air and their goggles with fine snow, clawing at their 50-pound packs, and threatening to knock them off the narrow ridge.

For nearly seven hours the two men battled upward, slowly working their way back and forth between the crumbly rock on one side of the ridge and the treacherous, wind-blown cornices of snow on the other. At last they stood on top of the world. At the very tip Big Jim drove a four-foot aluminum stake and secured to it an American flag.

Near-disaster on the descent almost turned triumph into tragedy. Shortly after leaving the summit, the two men were delicately feeling their way along a heavy snow cornice. Big Jim reported later:

"Gombu was ahead of me, at the other end



PHOTOGRAPH BY LARRY C. STANFORD © A.P.

of the rope, about 60 feet away. We were following our crampon tracks along the snow cornices. All of a sudden a big chunk of the cornice—maybe 15 tons—dissolved two feet in front of me and fell off to the left with a roar, carrying Gombu's footprints with it. There I was, looking between my feet at Tibet, 10,000 feet below."

But the mountain was climbed, in spite of weather, in spite of impossible conditions, in spite of falling cornices. And Big Jim had planted the flag, planted it so firmly that it was still there when Lute, Barry, Willi, and Tom came up three weeks later.

As Big Jim himself sums it up, "Man is at his best when reaching for something beyond his grasp." * * *





THE STARS AND STRIPES, tattered by gale-force winds, stands planted on earth's highest point. Author Bishop, who made this memorable photograph, told himself, "If you have to crawl on hands and knees, you're going to get there." His teammate, Luther Jerstad, waited for him to catch up; then the two struggled arm in arm to the top of Everest.

"We didn't know we had it in the bag until we saw Old Glory streaming there on the summit..."

How We Climbed EVEREST

Article and photographs by

BARRY C. BISHOP

National Geographic Foreign Staff



LUTE, I THINK I'm going mad." I speak through clenched teeth to Lute Jerstad, lying beside me in the two-man tent. For several hours I have been fighting a terrifying claustrophobia. We are alone at Camp VI, 27,450 feet up on the Southeast Ridge of Everest. I suppress a wild desire to break out of the cluttered tent.

As all climbers know, lack of oxygen produces weird mental effects. The thin air and the antibiotics I have been taking cause my claustrophobia—and a muddled sense of balance as well. Lying flat, I feel as if I am at an absurd and sickening angle. Nausea wrenches my stomach. Breathing is quick and shallow. By bracing myself semi-upright,

I maintain some semblance of equilibrium.

Lute tries to make me comfortable, but without success. Finally, I turn the regulator and increase the flow of oxygen into my plastic sleeping mask from one to two liters per minute. The little extra helps. Oxygen is our most precious commodity and our lives depend upon how well we conserve it: I apologize to Lute.

Drifting snows have compressed the sides of the tiny tent, robbing us of a third of our floor space. We are trying to sleep amid a chaos of equipment—clothing, oxygen apparatus, medicines, photographic supplies. Outside, a shrill wind lashes the crest of the ridge.

Disaster Threatens Summit Attempt

Tomorrow, May 22, is our big day, our try for the top. We both know that we will need every physical resource we can muster. And we both wonder if my illness will leave me too weak for the summit climb. We say nothing; consciously, we force the thought from our minds. At my urging, Lute takes a sleeping pill. Soon he rolls over in his cramped sector and drifts into uneasy slumber.

For me, braced in my awkward position, the hours pass like a slow nightmare. But the increased oxygen finally takes effect. Almost in command of myself once more, I too close my eyes and sleep.

At five o'clock I awake, feeling much better. Lute is already moving about the tent, melting snow on two butane stoves for some hot soup. Our extremely heavy breathing and the excessively low humidity at this high altitude sap the body of fluids at an alarming rate—sometimes almost a cup an hour.

Fifteen minutes later, Lute attaches a fresh gas cylinder to one of the stoves. A sudden whoosh, and a sheet of orange flame envelops the entire end of the tent. I smell Lute's burning beard. In one blinding second, the fire consumes my plastic mask. My eyebrows and part of my beard go with it. Dirty white smoke fills the tent.

Panic grips us. Lute struggles toward the zippered entrance. I try to smother the flames with a sleeping bag, but my legs are still inside and I can gain no leverage. The fire feeds greedily on the air in the tent, soon exhausting it. Our lungs ache.

I am groping desperately for a knife when Lute tears open the zipper and literally dives outside. His momentum is so great that he almost pitches down the steep slope toward the South Col. I am on his heels. We snatch the flaming stove from the tent, douse it

in the snow. The fire soon dies in the thin air.

Choking and gasping, we sag on our hands and knees. Minutes pass before we can breathe with any semblance of normality. As we crawl back inside, we say nothing to each other. But we share the same thought. The omens are bad, all bad.

At five miles above sea level, every movement is laborious and exhausting. Within the smoky, reeking tent, we struggle into layer upon layer of clothing, finally sheathing ourselves in nylon parkas. Slowly we pull on boots and overboots, lash steel crampons into place, and attach our climbing rope. Stuffing two bottles of oxygen into our packs, we attach our regulators, pull on helmets and masks, and begin inhaling oxygen at the rate of three liters a minute.

Four liters a minute is regarded as the best flow for activity above 27,000 feet. But such a rate exhausts a cylinder in four hours. At three liters, a cylinder will last more than five hours; at two liters, eight.

Since each bottle weighs 13 pounds—and since weight is critical—the summit teams restrict themselves to two per man. Throughout the expedition, seldom do we enjoy the luxury of four liters.

The bad night and disastrous morning have thrown us two hours behind schedule. Not until 8 o'clock, still with no breakfast, do we slog upward at that monotonous, dreary pace mountaineers find necessary at such elevations. The weather is magnificent—windy but clear. Fluffy cumulus clouds cling to the sides of the surrounding mountains.

Heeding the advice of Big Jim Whittaker and Nawang Gombu, who had preceded us to the summit three weeks before, we traverse the southerly slope of the ridge. With Lute at the head of the rope that joins us, we pick our

Climbers at 24,200 feet pioneer a way up Everest's untrampled West Ridge, here veiled in cloud. William F. Unsoeld (left) and Dr. Thomas F. Hornbein reconnoiter the route they took to the top on May 22.

Bladders served as oxygen reservoirs between bottles and masks. Bishop considered his mask a "delight to wear—a part of me high on the mountain." Yellow oxygen bottle is lashed to his pack (right), which he slipped off while taking this photograph.

"Eating breakfast, pulling on all our clothes, lashing on crampons, and loading packs," the author recalls, "we often took two hours in the morning just to get rolling."



Aluminum ladders in six-foot sections ride the backs of porters. Bolted together, the ladders led to the top of the last major wall (opposite) barring the way out of icefall to the Western Cwm.

EDMUND HUIE © NATIONAL GEOGRAPHIC SOCIETY



way for 500 yards across shattered, unstable rock flecked with snow and ice. Then we turn directly up a long snow slope. Our progress is slow, and I know that the night has taken a heavy toll. I am having an off day. And to have it now, of all times! Every climber has such days, but you always hope to be hot for the big ones.

Just before 11 o'clock, we attain the crest of the Southeast Ridge. From here we look down the 10,000-foot drop of the Kangshung face into Tibet. I take the lead from Lute and for another three or four hundred yards we follow a knife edge of hard snow.

The wind picks up and I feel like a novice tightrope walker as I fight to keep my balance. The fearful Kangshung face drops precipitously on my right; on my left, a steep half-mile below, lies the South Col.

Climbers Buoyed by Candy-bar Lunch

Lute resumes the lead. Dead ahead we spy our first goal, the South Summit. It towers some 500 vertical feet above us. In an exhausting two and a half hours, we gain only 200 of those forbidding feet. At a rocky outcrop, we pause for the only food we take that day—a quarter of a candy bar apiece.

Ten minutes later we continue the aching upward plod. We inch along the line of contact between steep snow on our right and rock outcrops on our left. The slope tilts at a dangerous 40 to 45 degrees. We generally keep to the snow, but when it becomes difficult, we gingerly tread upon the bare rock, enjoying the best of two very tricky worlds.

At 28,500 feet my first cylinder of oxygen runs dry. Lute checks his and finds it almost empty. So we halt on a small sloping ledge to change bottles. Discarding the old cylinders, we lean back against the mountain.

Suddenly I trip over one of the empty bottles at my feet and fly out into space. Instinctively, I twist in mid-air. Hitting the slope face-down, I claw at the snow with hands and feet. I manage to stop.

I glance to my left and see Lute beside me, holding me with his right hand. He has jumped out after me, flipped on his belly, and grabbed. We crawl back up to the ledge, and lie there for a long moment.

"That could have been serious," Lute says.

I nod. Both of us have narrowly missed falling all the way into Tibet.

We continue, our packs lighter because of the discarded oxygen bottles. I feel spent, dull. One step . . . six long breaths . . . another step . . . again six breaths. Each pace requires

almost half a minute. My entire body aches.

We cross hard, steep snow. Lute, in the lead, chops steps. We mount toward the South Summit, slowly, slowly.

An hour passes . . . another thirty minutes. I wonder if we will ever reach the summit.

Upward. Always upward. Foot by painful foot. Gradually, I become convinced that we will indeed go all the way. And at 2 o'clock, beneath a piercingly blue sky, we stand at 28,750 feet on the South Summit of Everest—our first way station. We lean into the heavy wind that buffets us with gusts of 60 to 70 miles per hour.

To the southwest my eye can trace our route up Everest from the Dudh Kosi valley. The midafternoon sun reflects off the metal roof of the shrine at Thyangboche, 15 miles away. Already we stand at a point 500 feet higher than any other mountain in the world.

Our oxygen situation becomes more critical by the minute. We know we must conserve as much as possible. Therefore we turn our regulators back to a flow of two liters a minute. The new deprivation is not immediately apparent. Our discomfort is so great, the going so hellish, that we perceive no difference.

Hillary Photograph Aids Climbers

Atop the South Summit, Lute and I peer at the awesome route to the true peak. It rises above us in craggy, snow-scarred grandeur. Long ago we memorized this view from a photograph taken by Sir Edmund Hillary.* We know it as well as we know the streets we live on. But somehow it looms steeper, closer, more forbidding than in the picture.

While on the mountain, all of us in the summit teams think of ourselves as intelligent and lucid. Only afterwards, in reconstructing our actions, do we discover how irrational we really were.

So it is that Lute looks down with dismay at a 30-foot vertical wall of rotten snow—our jumping-off-point for the North Summit. Unaccountably, he starts walking due west, down a small slope.

Later Lute explains: "I was a little bit spooked by this 30-foot vertical pitch. I thought that this couldn't possibly be the way. And I don't know whatever possessed me, but I suddenly took off down to the left.

"I walked 75 feet down the South Summit and saw some rocks, and I apparently thought I saw some footprints down there, and Barry

*Reproduced in NATIONAL GEOGRAPHIC, July, 1954, page 661.



EVEREST © NATIONAL GEOGRAPHIC SOCIETY

Mountaineers went up and down the icefall like yo-yos. Here Jerstad climbs toward a blue infinity. Cautious Sherpas, distrusting the light ladder, reinforced it with ropes and rappel pickets.



all this time thought I was completely crazy. He just looked at me and shook his head and threw up his hands and didn't know where on earth I was going. I think he thought I was going to end it all right there.

"I got to the end of the rope and I realized that I had made a very foolish mistake, and I had to grind my way back up this 75 feet—

which, at this elevation, is kind of tough."

With Lute back on the South Summit, we gird for the crucial assault. He leads the way down the nasty wall. With our goal so close, we move more rapidly now. Lute negotiates Hillary's Chimney—an upward cleft in the rock face—in beautiful style by climbing out halfway up and flanking it from the left,



ANSEL ADAMS / NATIONAL GEOGRAPHIC ARCHIVE

Finally we emerge above all the rock outcrops onto the final summit cornice ridge. Here we trudge over bump after bump of hard snow. The intense winds force us constantly toward the unsafe overhanging edge of the cornice on our right; we concentrate on staying to the left.

I plod along with my head down. Seven

Like Ants on a Whitewashed Wall, Sherpas Struggle Across an Up-and-down World

On the route to the West Ridge, a fixed rope led these men around a steep, icy slope. This day the expedition established Camp III West, both climbers and support teams carried 60 pounds each to a height of 4½ miles without oxygen. Nuptse's fluted wall towers across the Western Cwm.



PHOTOGRAPH BY NATIONAL GEOGRAPHIC SOCIETY

Foot broken by a tumbling boulder, glaciologist Maynard M. Miller keeps up his work from his tented domain on "Nob Hill," in Base Camp. He melted snow samples of previous years to measure the content of tritium, pollen, dust, salts, and microorganisms. When West Ridge climbers Hornbein and Unsoeld came into camp desperate for liquids, Miller gave them a precious sample of water from 12-year-old ice taken from a crevasse wall.

full, gasping breaths now punctuate each step. I focus on my feet . . . lifting . . . placing . . . lifting . . . placing.

Suddenly the rope that ties me to Lute, 75 feet in front, goes slack. I look up as Lute raises his right arm. I know he has at last sighted the top.

A few more agonizing steps and I too see the American flag held taut by the wind on the summit (page 475). How the sight of it affected us is vividly expressed by Lute in an account he dictated after the climb:

"Just then we came over the last rise and there was that American flag—and what a

fantastic sight! That great big flag just whipping in the breeze, and the ends were tattered. It kind of reminded me of the pictures I'd seen of this thing on Iwo Jima—the flag raising and everything. It was quite a sight.

"And we could see Jim's and Gombu's tracks from the chimney all the way to the summit; they were still there and you could see where the tracks went to the cornice and then ended where the cornice fell off between the two of them and then the tracks went on."

Lute coils in the rope as I come up to him. Arm in arm we then begin to trudge the last hundred feet to the summit. We are bone weary; our lungs suck wildly for air; thinking is a torment. But, if necessary, we would crawl to that flag.

What do we do when we finally reach the summit and flop down? We weep. All inhibitions stripped away, we cry like babies. With joy for having scaled the mightiest of mountains; with relief that the long torture of the climb has ended.

It is 3:30 p.m. The wind whips and tears at us as we perch precariously on earth's highest pinnacle. The American flag left by Big Jim and Gombu chatters in the gusts.

We cut off our oxygen—already low—and set about our tasks. Lute strikes his ice ax into the hard snow, anchors a motion-picture camera to its head, and shoots the first movies ever made from the top of the world. The ax shudders in the wind. Lute's silk-gloved fingers begin to freeze—quite literally—as he turns the camera's metal crank.

I take a series of still photographs. Movements are sluggish at 29,028 feet, and the pictures take a long time. Too long. My fingers too freeze badly.

The view is spectacular. To the north stretch the rolling brown hills of the Tibetan Plateau, crowned by range upon range of snow-capped peaks. Cloud banks some 10,000 feet below mask the east, but looming above them in the distance we see the Kanchenjunga Massif. India, to the south, lies veiled beneath a solid mass of clouds (pages 498-9). The 22,494-foot summit of Ama Dablam that I had climbed two years before seems insignificant from the lofty eminence of Everest.

I reflect for a moment on the climbers who had pioneered the Himalayan peaks only a generation or two before. They had reached—or almost reached—these heights without oxygen, without any of the complex equipment we now deem indispensable.

In my mind's eye, I see them: Mallory,



Setting out for the peak, the first team says goodbye at Advance Base, April 27. Four days later, Whittaker planted his flag on top of the world. A rope joins him to his partner, Gombu, a Sherpa who teaches climbing at the Himalayan Mountaineering Institute in Darjeeling, India.

Raven, Croaking Camp Follower, Hangs Around Advance Base

Even in a realm of eternal snow, half a dozen of these hardy goraks, the Sherpa name for *Corvus corax tibetanus*, made a good living from the garbage dump. As "grim, ungainly, ghastly, gaunt, and ominous" as anything from Edgar Allan Poe, they split the camp into pro- and anti-gorak factions.

PHOTOGRAPH BY RETIRAL-GIDRAPHIC SOCIETY







WRITHING LIMESTONE LAYERS *beneath the saw-tooth ridge connecting Lhotse and Nuptse form the famous Yellow Band. Roped together, climbers toil up Lhotse's face with supplies for Camp V in the South Col.*



Irvine, the others who struggled so valiantly on these slopes. In puttees, Norfolk jackets, and jaunty felt hats, trudging doggedly into the thin, high, freezing air.

For 45 minutes we stay on the summit—seated in deference to the powerful wind that threatens to blast us back down the mountain.

We stare long and hard down the grim West Ridge, hoping for some sign of Willi Unsoeld and Tom Hornbein, our comrades who planned to assault the peak via that untrodden route. Our straining eyes see nothing. The ridge is empty.

Lute brought pictures of his family to leave, but he forgets to dig them out of his pocket. He also brought a New Testament given him by his parents that he had planned to place at the summit. But now he decides it is too good to leave on this desolate peak.

About 4:15, short of oxygen, we begin the descent. Life-giving gas hisses once more into our masks, but we allow ourselves a barely perceptible one liter a minute. The wind, blowing strongly still, stretches the rope between us into a taut crescent that arcs over emptiness beyond the crest.

Lute goes first as we traverse a section of the corniced ridge. He disappears around a bend in the undulating snow. The rope, stiffened by the wind, catches the edge of the cornice, cuts itself a groove, hooks the edge. Danger!

I shout into the 70-mile gusts, but Lute hears nothing. The fouled rope draws me inexorably toward the edge. I dive onto the snow and wriggle out on the cornice, attempting to free the rope. My face is just above the snow. But my weight is too much; a section of the cornice at my chest gives way. I have a sudden, hair-raising view of Tibet's Kangshung Glacier 10,000 feet below.

Scrambling back, I notice that Lute's continued forward movement causes the rope to cut ever deeper into the snow. I undo the knot that secures it to my waist. It whips up and away across the whiteness. Unroped, I parallel its route. I wait until the end of the rope, like a frozen snake, slithers free of the cornice. Then I re-tie it to my waist. Elapsed time: less than a minute. Not until I tell him back in Katmandu does Lute know of this tight moment.



Hundred-mile-an-hour gusts threaten to blow Camp IV West away after tumbling two coupled tents down the slope with six men inside. Here Dr. Hornheim (left), Allen C. Auten, and James Barry Corbet desperately hunt a last ice ax needed to fight their way to safety. Violent winds lift Corbet off the ground. The men saved themselves by lying down and jamming axes into the snow.

World's highest junkyard. Castoff oxygen bottles and other equipment from previous expeditions litter South Col at 26,200 feet. Rummagers found two full bottles.



RECOVERIES BY WILLIAM F. KROGER (TOP);
 THOMAS E. HORNHEIM (BOTTOM), AND BARRY C. STEWART (MIDDLE)



Rime coats Willi Unsoeld's beard during the West Ridge climb. Fur trimming his parka is ice-resistant wolverine. Goggles ward off glaring sun and piercing wind.





We negotiate the chimneys, but barely. At the bottom of the last one, we both collapse onto the crumbly rock for a breather. When we push on, I notice that Lute is staggering. He halts, checks his oxygen equipment. He tears away a string that has been fouling the bladder. No gas at all has been flowing into his mask.

We allow ourselves a generous two liters to ascend the steep, perilous pitch angling back up to the South Summit. We thank God that it is the last climb of the day.

Eerie Voices From Above

Cautiously we ease down the sharp southeast slope. Our oxygen again cut back, our bodies drugged with fatigue, we stumble and fall. But we move steadily down.

Dusk falls rapidly. The inky Himalayan night will enclose us long before we can reach the relative safety of Camp VI. By day it is difficult enough to locate the tiny cluster of tents; in darkness it could prove impossible.

7:30. The last of the light reflects wanly off the snow. The sky is cold, moonless, black. Our feet grow colder as we lurch down the mountain.

I stop abruptly. Is it the wind?

"Helloooooo! Helloooooo! Helloooooo!"

From somewhere the sound echoes across the mountain, eerie in the enveloping darkness.

Lute stops too. We listen intently.

"Helloooooo! Helloooooo! Helloooooo!"

On Everest the wind speaks with many voices. It rises, it falls, it thunders. Sometimes it is the remote night cry of a sick child. But it is always the wind.

We hear a third "Helloooooo!" and this time it is unmistakably human.

Could it be Dave Dingman and Girmi Dorje, our support party, searching for us out of Camp VI? The wind drops and in the sudden stillness the cries have a bell-like clarity. They are floating down from above. Above!

Lute and I look at each other, elated. Willi Unsoeld and Tom Hornbein! They have made it up the West Ridge and across the summit! "Hello, hello," we bellow.

There follows a weird, wind-whipped dialogue. Willi and Tom are some 400 feet above us, descending from the South Summit. Sometimes wind swallows our loudest shouts. At others, we hear—again

Empty food cartons blow forlornly down the glaciated face of Lhoitse. Gazing into the Western Cwm from Camp IV, members of the first assault team saw Camp II, their Advance Base (blue circle) 3,550 feet below, but the ice cliff hid Camp III. They looked down on 23,442-foot Pumori, the pyramid above the clouds. On the right, Everest's icy west shoulder plunges into the valley.



with hell-like clarity—Unsoeld and Hornbein speaking to each other in conversational tones.

Once a voice from above asks, "Why the devil don't they shine their flashlights?" We shout up that we have no flashlights. A little later both climbers call out that they have just fallen into a small crevasse.

"That's it," we answer. "You're on the route."

We had fallen into the same crevasse.

During the two hours we guide them down by voice, Lute and I hang exhausted over our ice axes. I feel what little strength remains in me drain away. My feet, warm and comforta-

ble throughout the entire climb, now begin to freeze. I stamp ponderously in the snow. No help. The pain in my toes sharpens. Then, as it skirts the edge of agony, it dies in a merciful numbness. I recognize the classic sequence of frostbite.

At 9:30 two figures emerge from the darkness that has swallowed all of Mount Everest. It is a darkness so deep that Lute reaches out and touches the first climber but cannot identify him.

"Who are you?" Lute asks.

"Tom," comes the answer.

Then Willi Unsoeld arrives and drops



REPRODUCTION BY WILLIAM F. BRIDGES © N.A.S.

Sherpas toil up a 45-degree slope to take supplies to Camp V West (27,250 feet). Most of the route up from Camp IV West ran through this precipitous gully. The Sherpas did a superb job; 19 of them climbed above 27,000 feet.

yards . . . just 25 more!" Then he cajoles me into lurching still farther until we cover 50 . . . 75 . . . 100 yards I had considered impossible.

Midnight finds us below the knife ridge, but now the route becomes more complicated. Snow and rock outcrops lie directly down from the ridge for several hundred feet. A sharp turnoff leads to Camp VI. We know that in the darkness our chances of pinpointing this turnoff are poor indeed. So, at 12:30 on the morning of May 23, we decide to bivouac until dawn.

We plunk down on a sloping outcrop of rock, too tired to prepare ourselves with any care for the coming ordeal. Our site is nearly 2,000 feet above the highest previous bivouac in history.

By this time Lute and I have slipped into a stupefied fatigue. My feet have lost all feeling and the tips of my fingers are following them into numbness. We curl up in our down jackets as best we can. With his frozen fingers,

Lute cannot even close his jacket. He wraps it tightly and hopes for the best.

For the next five and a half hours we remain anchored to that rock. Willi and Tom occupy a spot where they can move a bit. Tom struggles out of his crampons. Then, with typical selflessness, Willi removes Tom's overboots, boots, and socks and warms the feet by rubbing them against his own belly.

I lie dazedly on my back, my feet propped up like two antennae. Almost too weary to care, I wonder how badly they are damaged. I try to wiggle my toes. I feel nothing. Knowing it is hopeless, I abandon the effort and

wearily into the snow. The reunion is joyous but short. Our plight is precarious and we know it. With oxygen all but exhausted, and with Tom's expiring flashlight our sole illumination, we join forces to head down the mountain.

We feel our way with cramponed feet and ice axes down the knife ridge of snow that Lute and I had ascended 11 hours before. In our weakened condition we can barely tell one side of the ridge from the other. Yet amazingly, while each of us tumbles frequently, no serious mishap mars the descent.

Willi goads me to struggle on. "Another 25

slip into a fitful sleep. Once Lute's spiked feet jab my thigh, I awaken sharply.

Although the last oxygen has long since been drained from our bottles, the masks still protect our faces from the cold. The mountain has pummeled us cruelly; but, in this ultimate crisis, Everest shows kindness. For tonight there is no wind.

Lying there in our frozen bivouac, with the temperature at 18° below zero, I recall snug nights in my sleeping bag at Base Camp. I remember hearing the wind play like a mighty organ over the ridges of the summit pyramid, then 11,000 feet above. Now I am on those ridges and, miraculously, Everest has stilled—for this one fateful night—its raging gales.

Savage Wind Produces Near-blindness

Throughout the hours of darkness I long for oxygen. My breathing is deep, fast, and painful. Lute's eyes ache from a series of small hemorrhages induced by the winds that plagued our descent. He can barely see.

My own left eye is similarly affected. So, during the ghostly morning hours, I gingerly open my right eye to peer about. Far away, over the plains of India, heat lightning etches jagged patterns beneath a layer of cumulus clouds. Yet, close at hand, the rocky mass of Lhotse stands invisible in the darkness.

Just before 4 o'clock, the outlines of neighboring peaks begin to take form. Slowly dawn overrides night. A gray tint suffuses the high peaks. As the sun rises, the gray assumes the character of merging water colors. It becomes golden; then pink tempers the gold, and the rich, glowing light cascades down the mountains. Then suddenly the sun is up. The swift, magic kaleidoscope of dawn hardens into the stark colors of day.

Stiff but rested, we treat ourselves to the luxury of waiting until the sun actually touches us on our rocky perch. Warmed, and with the renewed optimism that every dawn seems to evoke, we commence our descent with a few wry jokes.

Willi and Tom lead off, followed at an interval by Lute and me. They use our tracks of yesterday as a trail, and soon they are well on their way. I curse myself for stumbling as

I did the night before. Again my sense of balance seems to have deserted me. Lute struggles to keep me upright. Thanks to him, none of my slips brings serious consequences.

We reel down the mountain as much by feel as by sight. Lute cannot focus either eye; I can use only my right one. Still, we have no trouble finding the spot on the snow slope where we turn east and traverse over the Southeast Ridge into Camp VI.

As Lute belays me around a rock corner, I experience a surge of joy. Two figures struggle up to meet us—Dave Dingman and Girmi Dorje, laden with fresh oxygen tanks. The rock still screens them from Lute. I turn to him: "Do you want some oxygen?"

Lute thinks I have finally and unequivocally lost my senses. He just looks at me. Then I add, "Because here's Dave."

As soon as our teammates reach us, we hitch up the oxygen bottles and turn them to two liters. In mere moments we regain our vitality and our minds become lucid.

During the night Dave and Girmi had climbed to 27,600 feet in a futile search for us. Girmi had elected not to use oxygen—a tremendous sacrifice at that altitude, as we well knew—to conserve the precious gas for us.

Dave and Girmi, scheduled to try for the summit that day, unhesitatingly gave up their chance in order to search for us. Now they escort us back down to Camp VI.

Safely there, we rest and keep Nima Dorje and Girmi busy melting ice for water. We have an insatiable craving for liquids. We toss down coffee, lemonade, tea, hot chocolate, and soup as quickly as the Sherpas can produce them.

Now begins the difficult withdrawal down the mountain. At 10 a.m., we set out for Camp V on the South Col. We descend at a slow, steady pace. Pemba Tensing greets us, and again we fill up on liquids. Then down over the Yellow Band toward Camp IV. En route we pause and break out our radio. Willi had already radioed from on top, but now our teammates learn that all four of us have succeeded—and that all four are alive.

Soon the descent takes on the air of a picnic. Although we are totally debilitated, our

Distinct as the Rocks at the Climbers' Feet, Makalu Shines 12 Miles Away

Sherpas, having delivered oxygen to Camp VI, say farewell and descend into the South Col. Jerstad and Bishop remain alone on the Southeast Ridge to try on the morrow for the summit some 1,600 feet above them. Lhotse looms in deep shadow.







RODOLFO P. GARCIA / NATIONAL GEOGRAPHIC SOCIETY

Jerstad gasps thin, harsh air while preparing Camp VI. He and Bishop spent hours digging tents out of snow. Conserving oxygen, they wore no masks, but they used the gas for sleep. Shortly after leaving the summit, the team exhausted its supply.

A day from the summit, Jerstad arrives at Camp VI. After taking each short step, he halts for several deep breaths. His rope leads back to Bishop, who took the photograph. Camp consists of the two little Draw-Tite tents half-buried in snow.

success breeds euphoria. At Camp IV, I strip off my down-filled boots and for the first time examine my frostbitten feet. The toes are dead white, hard, and icy to the touch.

We hope to reach Advance Base, Camp II, before dark, but twilight overtakes us. The descent continues by flashlight. And now our feet begin to thaw. Pain flickers along our heels and each step shapes a separate agony. Faces grow taut with effort. The pace grows slower and slower. Not until 10:30 do we stagger into Camp II.

The following morning, May 24, we strike Advance Base and retreat farther down the mountain to Base Camp. Once again aching feet affect us all.

At the top of the icefall we encounter a formidable obstacle. The ice at a key point

has collapsed. But the Sherpas have rigged a Tyrolean traverse. Wrapping our legs around a rope and hanging on monkey-fashion, we slide down a 150-foot diagonal to the bottom of the ruined ice.

Dusk of that night finds us reunited at Base Camp. A party atmosphere prevails. There is much joking, much emotion. And, in a perverse way, we feel sadness that our great adventure is ending.

Dave Dingman, one of our physicians, had examined our feet at Advance Base; the expedition leader has radioed a request that a helicopter be dispatched from Katmandu to Nanche Bazar to evacuate Willi and me.

In the expedition's last radio contact from Base Camp with the outside world, we learn that the helicopter will indeed come for us.



When the last of the expedition moves out of Base Camp, Willi Unsoeld, Lute Jerstad, and I travel on the backs of Sherpas. Four porters spell each other in carrying each man. By the end of the first day, a fierce rivalry springs up between the four carrying me and the four carrying Willi (page 506). Every suitable stretch of trail inspires a foot race.

The next day, traveling fast, we move through Pangboche and Thyangboche. At 5

o'clock in the evening we reach Namche Bazar. The helicopter is scheduled to arrive within two days. Willi and I will be evacuated; Lute will be able to walk in a few days.

I awaken at 6 o'clock the following morning and note that the sky is overcast. Surely today will bring no helicopter. I close my eyes and drowse. But 25 minutes later, the whirr of chopper blades snaps me rudely into consciousness. The copter has come, weather



PHOTOGRAPH BY BARRY L. STROP © N.A.S.

notwithstanding. I feel a pang of regret. The expedition is breaking up. Never again will we all be together on a mountain.

Willi and I go aboard, and by 9:15 a.m. the helicopter is buzzing over the gleaming pagoda roofs and old palaces of Katmandu. Our pilot eases the copter down into a paddy outside the pillared white gates of the United Mission Hospital, Shanta Bhawan. From a mass
(Continued on page 507)

Spectacular View From 27,000 Feet Takes in Features of Four Countries

Makalu, flanked by its subsidiary, Makalu II, dominates the scene. At left, Tibet's 25,640-foot Chomo Lönzo looks across to the Kanchenjunga Massif, which armors the border between Nepal and Sikkim. On the distant right, India's hot, dry plains appear dimly beyond the clouds.



KODACHROMES BY BARRY C. BISHOP © NATIONAL GEOGRAPHIC SOCIETY

VIEWS FROM EARTH'S HIGHEST POINT, distant Kanchenjunga (left) and nearby Makalu burst through clouds; Lhotse forms the dark mass at right. This panorama combines two pictures taken during the 45 minutes that Jerstad and Bishop spent at the summit.

KODACHROMES BY NAMANG GOMBU AND JAMES W. WHITTAKER



FIRST TO PLANT OLD GLORY atop the peak, Whittaker and Nawang Gombu raise ice axes bearing U. S., Nepalese, Himalayan Mountaineering Institute, and National Geographic flags.



CAMERA STEADIED on ice ax, Jerstad takes the first motion pictures ever made on the crest of Everest.

SEATED SO THAT 70-mile gusts won't knock him over, Bishop proudly holds the National Geographic flag.

KODACHROMES BY BARRY C. BISHOP AND LUTHER G. JERSTAD



KODACHROMES BY THOMAS F. HORNBEIN AND WILLIAM F. UNSOELD

HORNBEIN REACHES THE SUMMIT by the West Ridge route. He and Unsoeld are the first men in history to do so.

UNSOELD UNFURLS the banner of the Oregon State College Mountain Club over the snow hummock on Everest's tip.



TIBET'S ROLLING HILLS stretch to the horizon in a view from Everest's summit. West Rongbuk Glacier at left flows into the main Rongbuk. Hundred-foot ice pinnacles, formed by differences in melting, break the surface of the frozen river.

PHOTOGRAPH BY GARETH WOODHEAD





Bishop, Frostbitten, Rides a Porter's Back at Altitudes the Helicopter Could Not Reach

Shod in felt boots, the Sherpa holds the climber with headband and trapezoidal seat; a broad grin manifests his pride in shouldering 180 pounds. He strode and even trotted 400 yards, then put down his burden for another porter to take up. Other Sherpas carried Unsoeld, a second frostbite victim. At times they raced neck and neck; and, despite the agony of their thawing feet, Bishop and Unsoeld exchanged gay banter. Eight bearers took only two days to make the 20-mile trip from Base Camp to Namche Bazar, normally a three-day march.

Blackened tips of the author's frostbitten fingers and toes indicate gangrene, or tissue death. Dr. Eldred D. Mundth of the Naval Medical Research Institute in Bethesda, Maryland, flew to Katmandu to give the men injections of an experimental drug to improve the flow of blood to injured tissues. Later, both Bishop and Unsoeld lost toes; Bishop also lost parts of the little fingers of each hand.

Helicopter delivers injured climbers at Katmandu. Unsoeld (wearing hat) and Bishop receive warm welcomes from their wives. White-coated Dr. Robert Berry treated them at United Mission Hospital.

ARRANGED BY DAVID S. HINGMAN (2001).
 ALL W. BISHOP (2001), AND MIT MEDIA (2001).





RESEARCH BY THOMAS L. WOODRIDGE | NATIONAL GEOGRAPHIC SOCIETY

Wearily but Happy, Expedition Members Gather at Namche Bazaar for a Group Portrait

Four men in the front row are Dr. William Siri (gray cap), deputy team leader and scientific coordinator; Norman G. Dyhrenfurth, expedition leader and motion-picture producer; Barry W. Prather, glaciologist assistant; and Nawang Gombu, Sherpa climber. Middle: Dr. David L. Dingman, physician; Barry C. Bishop; Dr. William F. Unsoeld; Dr. Thomas F. Hornbein, oxygen specialist; Luther G. Jerstad; Richard Pownall, food officer. Back: Lt. Col. James O. M. Roberts, transportation officer; Dr. Gilbert Roberts, chief medical officer; Dr. Maynard M. Miller, glaciologist; James W. Whittaker, equipment officer; Dr. James T. Lester, Jr., psychologist; Allen C. Auten, communications officer; two Sherpa porters; Knut A. Solbakken, helicopter pilot; Dr. Richard M. Emerson, sociologist; James Barry Corbet; and Daniel E. Doody, motion-picture cameraman. Missing: James R. Ullman, historian, kept in Katmandu by illness.

of friends, well-wishers, and news cameramen, two slim, pretty women scramble down the slope into our arms. They are my wife Lila and Willi's wife Jolene.

We hobble into the hospital for baths, breakfast, and a thorough examination. Our toes, now blackened, are cleaned and dressed. A mechanic of the U. S. Aid Mission improvises a whirlpool bath for our feet from an oil drum and a kerosene heater.

Dr. Robert Berry and the hospital staff willingly work long, tedious hours to save our feet. Our meals are specially cooked each day in the home of Bob and Margie Berry. Members of the American community, including Ambassador and Mrs. Henry F. Stebbins, send food. Books, cookies, candies, and other delicacies pile up in our rooms.

All the way from Washington comes Dr. Melvin M. Payne, Executive Vice President of the National Geographic Society, bringing Dr. Eldred D. Mundth, Navy frostbite specialist, to assist Dr. Berry with counsel and the latest drugs. I learn that the U. S. Naval Attaché to India and Nepal is sending a military plane with a built-in bunk to evacuate me to New Delhi. Willi stays behind for his Peace Corps work in Nepal.

In the quiet of the hospital, I ponder the lessons we have learned. Everest is a harsh and hostile immensity. Whoever challenges it declares war. He must mount his assault with the skill and ruthlessness of a military operation. And when the battle ends, the mountain remains unvanquished. There are no true victors, only survivors.

• • •



The First Traverse

*A historic accomplishment:
up one side of earth's mightiest
peak and down the other*

By THOMAS F. HORNBEIN, M.D. and
WILLIAM F. UNSOELD, Ph.D.

EDITOR'S NOTE: *Hornbein and Unsoeld not only made history's first ascent of the West Ridge; they were the first climbers to make a traverse of any major Himalayan peak. They give much of the credit to their teammates—Barry Corbet, Al Auten, and Dick Emerson. Tom Hornbein narrates the following account of the West Ridge assault on May 22 from Camp V West at 27,250 feet, but the words are drawn from recordings made by Hornbein during the return march and by Unsoeld in the hospital at Katmandu.*

WHAT WE WERE ABOUT TO TRY was a long shot, and we knew it. Savage winds had ripped away one of our West Ridge camps five nights ago, driving us back down the mountain to Camp III West, so exhausted we could go no farther. If we had gone on down to Camp II, we would never have summoned enough energy to come back up—that's how near we were to calling it off. We felt a washed-outness, a complete all-goneness.

But after a night's rest, we all decided to make one more try. Now Willi and I were perched in Camp V West, thanks to a tremendous carry over very difficult terrain, twice the distance we usually expect to cover

Still dog-tired, Bishop and Unsoeld (in hat) await evacuation by helicopter from Namche Bazar. Co-author Unsoeld, assistant professor of philosophy and religion at Oregon State University, is on leave to serve the U.S. Peace Corps in Nepal.



Pioneer of the West Ridge route, Dr. Hornbein designed the team's simple, reliable, and revolutionary oxygen mask.

in one day. We had one less camp than originally planned and only one assault team, and we had made no reconnaissance of our final 2,000 feet. But tomorrow we would make a last ditch effort to go as high as possible.

About 9 o'clock at night I finished filling out my diary and writing a letter to my wife Gene. I did it without using oxygen, to record the nature of my handwriting.

I slept from about 10 o'clock until 4 a.m.—a deep and comfortable sleep. I woke when the oxygen ran out, and heated water for chicken soup and consomme. Then, leaving our sleeping bags and most of our food behind, we put two oxygen bottles in each of our packs, and finally, about 6:50, we were ready to go. Our regulators leaked, but we decided to start anyway.

Willi leading, we headed up a snow couloir, finding right away that it was going to be an extremely difficult go. The snow, though hard, was granular. It was impossible to crampon up; we would just slide down. It was necessary to cut steps. At one ticklish point the couloir narrowed until it would barely permit one man to wedge through.

I found myself reaching Willi's stances almost entirely out of breath, very exhausted, and a little puzzled as to why. The reason became apparent as the day wore on. My oxygen bottle was giving me less than two liters per minute, although it was set for three. We were carrying around 40 pounds each, I should guess, with oxygen bottles, extra food, a little water, and other equipment.

We were climbing now one at a time, be-

Reconnoitering the west shoulder, climbers scan the Northeast Ridge's windswept profile. Before 1949, when Nepal eased its ban on foreigners, expeditions had to approach Everest from the north, through Tibet. While trying to scale the Northeast Ridge, Britain's George Leigh-Mallory, famed for his explanation of why men climb a mountain ("Because it is there"), and Andrew Irvine disappeared in 1924.

laying up an angle of about 45 degrees. The slope was unrelenting. There was no place to rest.

Finally, after about 400 to 500 feet of ascent—which took maybe four hours—we reached an area of rotten, downsloping yellow slab rock within the Yellow Band (pages 486-7). It was apparent we were going to have to indulge in some very messy climbing on steep, rotten rock. The covering of snow was no better. Of a floury consistency, it would slide off under your weight, cascading down on the man below.

I took the lead, trying one alternative and then another. Finally I drove in a large piton which carved its way into the rottenness of the rock. Then, being physically unable to negotiate a small outloping bit of vertical rock, I came down again, discouraged.

Climbers Lost, and Base Can't Help

But this was the obvious route. We could see gray rock up above, not too far away. Unlike the crumbly yellow rock we were on, it should be sounder and easier to climb. So we had at the vertical wall once again. Willi headed back up, using the piton that I had placed. He had to take his mittens off and climb barehanded, worming his way up.

It was well past noon, and all this time we had been conserving oxygen during the periods of belaying by turning the regulators almost all the way down.

When we finally finished the Yellow Band and were able to sit down, we established radio communication with Jim Whittaker at Base Camp. We told him we were puzzled as to where we were; we could see lots of gray rock above, but we had no idea where the summit of the mountain was. Of course Jim couldn't tell us.

We realized that the climbing had been going very slowly. The poor, unconsolidated snow was becoming unstable in the warmth of the day, and the prospects of having to go back down the snow gully were most revolting. It appeared as if we had committed our-



selves to an onward and upward effort. To descend would be exceedingly dangerous, if not impossible.

So we continued upward, finding the gray rock much easier climbing, and suddenly we got our bearings. The immense Yellow Band dropped away in all its sheerness. Below we could see snow slopes where we had once thought of putting a camp. And for the first time we could look over into the East Rongbuk Glacier.

Ahead was a great patch of snow that led us to the final summit pyramid on the north face. There we had to make our next decision: how we were going to tackle the last 600 feet.



EVEREST CENTRE • ABOUT 12,000

We were now, I would guess, at about 28,400 feet. At 4:30 p.m., Everest suddenly began to look within our reach. We had enough oxygen. Willi had used up his first bottle because of a leak, but the second one seemed to be functioning properly. I was still climbing on my first bottle.

We took very few pictures because we were really pushing. The route we had picked out through binoculars led over to the northeast of the summit. But now we decided that our best hope was to traverse back over to the West Ridge, hit it, and try to get onto some snow there to continue the ascent.

So we diagonaled upward, stopping for a

quick lunch of kippered snacks. The weather had been fine, but now the wind was beginning to blast us. Before we hit the West Ridge we had to cross the rottenest rock we had ever seen in our lives.

Finally on the ridge, with the wind really whipping us, we could look down, down over the edge to Camp II in the cwm, a very impressive drop. About this time I dumped my first oxygen bottle, which was at last practically empty. The relief of 13 pounds was tremendous, and the climbing began to be a wonderful pleasure. I felt almost as though we were on a climb in the Rockies.

As the day wore on and we came closer to

Lengthening shadows of Everest and fellow giants warn Hornbein and Unsoeld, who reached the summit after 6 p.m., that they will have to go down the mountain in darkness. Everest's shadow appears at far left; Lhotse's falls on the slopes of Makalu near the center. Most distant shadow belongs to Makalu itself.

where the summit should be, we could see the ridges converging from north and south on a little snow dome up above. I kept telling myself, as I looked at it, that can't be the summit, it's too near. The summit is still off behind a little way.

Yet it can't be very far, I reminded myself, because now we've looked over and seen the South Summit, and we're higher than it is. We're getting very close.

And then Willi, up ahead, stopped, coiled the rope, and stood there holding up his fist. I wondered why, and I came climbing up to him, moving faster. There, some 40 feet ahead, was the American flag, shining in the slanting rays of the sun and flapping wildly in the wind.

This was the top of Mount Everest.

We threw our arms around each other. I don't remember saying anything. We were beyond words.

Bishop's and Jerstad's Tracks Show Way

The wind was vicious enough now that we didn't care to tarry. Besides, it was already 6:15. Pausing probably 15 minutes, we took pictures of the sunset, Makalu, Lhotse, and the valley.

We left a few mementos, including a crucifix wrapped inside Gombu's friendship scarf, and two prayer flags given Willi by one of our Sherpas. Then we headed down to a little patch of gravel about 50 feet below, where we took out our radio and raised Camp II. We told them that we were heading down the col route. Willi's last words to camp were from Robert Frost:

*... I have promises to keep,
And miles to go before I sleep ...*

We were gratified to find the tracks of Lute Jerstad and Barry Bishop who had preceded us, as we later learned, by about three hours, and we made haste after that down the ridge, traversing to the South Summit in about 45 minutes.

At one point we came to a great gaping hole in the cornice. We could see straight down the enormous Kangshung face. Look-



ing through the gap we could see under the cornices for the first time. They seemed like ghostly arms, shadowed and misty, arching out over the abyss.

Down Hillary's Chimney we went, Willi going first. I secured him because he was beginning to feel tired, finally, after the tremendous amount of energy he had expended leading on the way up. Going up had been pretty much his chore; getting down was mine.



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Descending another step below Hillary's Chimney, I banged my oxygen bottle on a rock. There was a tremendous hissing and I thought I had lost my valve.

I began to feel a little dizzy trying to move fast to keep up with Willi's pace. The sensation without oxygen was a desperate one. Then, adjusting the regulator, I found that the leak was only because it had been loosened, and everything was all right. Once the

oxygen was restored, I was able to move again more rapidly.

We passed down the final bit of saddle between the summits, climbed the 30-foot slope to the South Summit, and there caught one brief glimpse of Camp II far below in the Western Cwm.

About this time—I guess it was about 7:15—it was beginning to get dark. The sun was setting; the last light had left Makalu and Lhotse, lingering finally on the summit of Everest itself.

Guiding Tracks Lost Amid Rocks

As we headed down the slopes, it turned dark with surprising rapidity, leaving a dream landscape of feathery vagueness. Moving together, we tried to follow the tracks of Lute and Barry as best we could, till we finally lost them in some rocks.

After some debate about the possibility of bivouacking, we decided to follow what looked like the best possible route. We cut down across the rocks to the left, out into the middle of a snow slope, and began a very slow, precarious descent.

Sometimes the snow was good; sometimes it was soft. Sometimes it was shallow over rocks so that you would drive your ax in just a few inches before it hit the rock. The wind hit us in double whammys, first a slap from one side, then from the other, right after it. It was very tiring.

We wandered down slowly. Eventually we cut our 120-foot rope in half and tied ourselves much closer together. We tried to use our flashlight to find the track marks or ice ax holes, but were not always able to do so. The flashlight was fading rapidly.

We began to yodel, thinking that we could arouse Dave Dingman from Camp VI to come and guide us down to the camp. After a time we heard faint answers to our shouts. As we continued our descent, we seemed to be getting closer and closer, and we could even begin to understand the voices below. They were asking us to shine a light and asking us where we were.

Ultimately—I would guess around 9:30 in the evening—we came upon two blotches in the massive blackness. All I remember is throwing arms around shoulders and pounding each other on the back and asking, "Who is it? Who is it?" Much to our surprise, it was not Dave and Girmi Dorje, in support, but Lute and Barry.

How good it was to have company for the long night ahead!

* * *

President Kennedy Presents the Hubbard Medal

IN MARKED CONTRAST to the piercing cold of the high Himalayas, the Rose Garden of the White House glowed in summer sunshine as President John F. Kennedy received the American Mount Everest Expedition on the morning of July 8, 1963.

President Melville Bell Grosvenor of the National Geographic Society presented expedition leader Norman Dyhrenfurth, who then introduced the mountaineers and several of the Sherpas, key figures in the success of the venture.

Dr. Grosvenor attributed the success of the American expedition—"the best equipped that has ever assaulted the mountain"—to unusually close teamwork: "As one summit man put it, 'We not only climbed up the backs of our teammates, we stood on their shoulders to reach the top.'

"Such teamwork," Dr. Grosvenor continued, "reflects immense credit upon the outstanding leadership of Norman Dyhrenfurth. Mountaineering may be a young man's game, but when Mr. Dyhrenfurth reached 28,200 feet, he won the senior championship: A few days later, on the mountain, he celebrated his 45th birthday."

In congratulating the climbers, President Kennedy expressed his pleasure at the presence of the Sherpas and his gratitude for the generous cooperation extended to the expedition by the Indian and Nepalese Governments. He noted that "though as Americans we take special pride that our countrymen have gone to the far horizon of experience . . . this is an international effort in which man pits himself against his friend and enemy—nature."

Hubbard Medal First Awarded in 1906

As he presented the National Geographic Society's gold Hubbard Medal to the mountaineers, President Kennedy recalled the first such award, when President Theodore Roosevelt bestowed it on Comdr. Robert E. Peary in 1906 for reaching the farthest point north up to that time. "In giving this medal today to the leader of this expedition," said the President, "I carry on a great tradition, as do they in demonstrating that the vigorous life still attracts Americans."

Mr. Dyhrenfurth accepted the Hubbard Medal on behalf of the expedition. "I believe this is the first time American mountaineers have been so honored," he said. "In other words, American mountaineering has come of age." He then gave the President an American flag that had been carried to Everest's summit by Barry Bishop and Luther Jerstad on May 22.

THE END





At the White House, President Kennedy entrusts the Society's coveted Hubbard Medal to the keeping of leader Norman G. Dyhrenfurth as other Everest veterans gather on July 8, 1963. Mr. Kennedy said they had gone to the "far horizon of experience." Society President Melville Bell Grosvenor and Executive Vice President Melvin M. Payne applaud at left.

Nepalese *kata*, a friendship scarf, is draped around the President by Nawang Gombu, one of five Sherpas attending the ceremony.

Hubbard Medal went to 21 teammates, to John E. Breitenbach's widow, and to the Sherpa climbers as a group. The team award was solid gold; individuals received gold-plated bronze replicas.



REPRODUCED BY PERRELLI, WOLFE AND ASSOCIATES, LARGE PHOTO BY J. R. STEWART, IN '63



The Romance of the Geographic

NATIONAL GEOGRAPHIC MAGAZINE
OBSERVES ITS
DIAMOND ANNIVERSARY



By GILBERT HOVEY GROSVENOR
Litt.D., LL.D., Sc.D.

Chairman, the Board of Trustees
National Geographic Society

Work of our lifetime, NATIONAL GEOGRAPHIC has given us a deep sense of accomplishment. Now my wife Elsie May Bell Grosvenor and I rest from our labors at Beinn Bhreagh, our summer home near Baddeck, Nova Scotia. She created the Society's flag (page 557). Laura Gardin Fraser designed the Grosvenor Medal (above).

WHEN A MAN LOOKS BACK upon a long lifetime, he may single out one event and say, "This determined my course. This is where so much began." In retrospect he knows that from the one event all else followed with a fateful inevitability.

There was just such an event in my life. Long years ago, in the Victorian summer of 1897, I strolled hand in hand with a lovely, laughing girl through the garden of Alexander Graham Bell's estate on Cape Breton, Nova Scotia. We spoke of many things, but mainly of youthful hopes and dreams. In our



PROCEEDINGS OF THE NATIONAL GEOGRAPHIC SOCIETY

words we found the little shy revelations of the spirit that were the prelude to courtship and an enduring marriage.

That laughing girl of yesteryear was Elsie May Bell, daughter of the inventor of the telephone. Her grandfather, Gardiner Greene Hubbard, then served as the National Geographic Society's first President, and her famous father would succeed to that position.

Sentiment alone does not prompt me to begin this article on so personal a note. The bond established with my wife-to-be, when I was a houseguest of the Bell family, led both

of us into a shared and joyous labor, the building of the National Geographic Society and its journal, a magazine whose very name would become synonymous with the romance of travel, exploration, and the unending quest of knowledge. Years later we would have the immeasurable satisfaction of seeing our son, Melville Bell Grosvenor, your President and Editor, ably continue and expand the work that had so long been ours.

This month the magazine that brings romance to millions completes three-quarters of a century of publication. The first issue, a



GILBERT W. GROSVENOR COLLECTION (G. W. W.)

My identical twin, Edwin P. Grosvenor (left), and I spent a holiday at Atlantic City, New Jersey, in 1901. Few people could tell us apart, and we had a lot of fun switching identities at Amherst College, where we shared valedictory honors. Later Edwin took up cigar smoking, helping friends to sort us out. A prominent New York lawyer, he died in 1930.

slim and scholarly little brochure, went to press in October, 1888. Its youthful parent, the National Geographic Society, had been organized at Washington, D. C., in January of the same year, nine months earlier.

By a happy coincidence, the month that brings your journal's 75th birthday also brings memorable anniversaries to that Victorian boy and girl. God willing, we shall celebrate our 63d wedding anniversary on October 23. And, on October 28, I shall be 88.

Recently, with the care one reserves for fragile treasures, I examined a personal copy of the first NATIONAL GEOGRAPHIC. Its cover of a terra-cotta shade bore no date, merely the imprint Vol. I, No. 1, and the magazine's now-

familiar name. The telltale date had been printed inside. The lead offering was a technical paper entitled "Geographic Methods in Geologic Investigation." Indeed, the entire issue was determinedly technical in its approach to geography. It contained not even one photograph.

The little journal was essentially unchanged when Alexander Graham Bell put me in charge of it on April 1, 1899. That date, so memorable to me, launched my career of 55 happy years as the editor of the NATIONAL GEOGRAPHIC MAGAZINE and chief executive of the National Geographic Society. At my retirement in 1954 I had also been President of the Society for 34 years.

When I came to the magazine, a young man of 23, it had a circulation of only 1,000, and I was the Society's sole employee. I personally addressed all the wrappers for the first issue I edited (April, 1899) and carried the entire mail edition to the post office in one trip. I would not care to undertake a similar task with this Diamond Anniversary issue. If all the 3,535,000 October copies could be stacked in a single pile, they would tower 110,470 feet, or 20.9 miles, close to four times the height of Mount Everest!

Minority Group Seeks Control

The magazine's evolution from obscurity to world-wide prestige makes a fascinating and often dramatic story. I hadn't been employed a year before I became involved in a fight for control of the magazine. A determined minority group wanted to publish it in New York City, sell it on newsstands, and omit all reference to the Society. If these proposals had been accepted, the magazine inevitably would have become a commercial venture. But the NATIONAL GEOGRAPHIC remains today the official journal of a nonprofit educational and scientific association. There is no personal ownership; there are no stockholders.

Once the fight for control had been won, the task began of evolving a magazine unlike any other in the world. It required an entirely new approach to the subject matter of



PAINTING BY FREDERICK MARIE LORRICHOW, 1844

At age three, Elsie May Bell showed the winsome beauty that would win so many hearts, including my own. Her father, Alexander Graham Bell, inventor of the telephone, saw his newborn baby as "a funny little thing, perfectly formed." Because his wife Mabel was deaf from a childhood illness, Dr. Bell feared for his daughter's hearing and tested it by blowing on a trumpet near the baby's bed. "The child is quite all right," he said. "[It] flung out its arms and legs and shrieked in terror."

Visiting Japan in 1898, Elsie gathered material for the first of many lectures to entertain her clubs. Like her father, she has a talent for public speaking.

Before Elsie's trip to the Orient, my mother invited the Bell daughters, Elsie and Marian, to our home in Amherst for commencement week. When Mrs. Bell telegraphed her husband for his consent, he wired back, "Children may go if they won't flirt too much."

SIRREY W. LORRICHOW COLLECTION © N.C.S.





BY ROY W. BRADSHAW COLLECTION © N.S.S.

Good omens do occur, as our wedding in London, October 23, 1900, proved. We entered King's Weigh House Church in rain but came out to find the sun breaking through. Other happy auguries: Elsie accepted me on my father's birthday and married me on my parents' wedding anniversary.

geography. It meant breaking with tradition by using photoengravings, particularly color, in unprecedented number. Above all it demanded the enthusiasm of a romanticist, young in heart, eager and inquiring.

I have told the story in a separate, book-length publication, but the assignment to write this anniversary article for the magazine led me anew into old archives and my own voluminous correspondence.* While reliving the vexing problems of my young manhood, I found references to half-forgotten facts and incidents that are disclosed here for the first time.

When Elsie Bell and I first met in that long-ago summer, we had no premonition that a great task awaited us. We swam and sailed, strolled and talked. Three weeks later

*In 1937 the Society published a revised paper-bound edition of Dr. Gilbert Grosvenor's history, *The National Geographic Society and Its Magazine*, 196 pages, 177 illustrations. The booklet is now out of print.

My flash-powder portrait of Elsie and a daughter in 1907 billowed smoke and terrified the youngsters, my son recalls.



Dinghy sailing off Beinn Bhreagh proves a tonic for our spirits. I helped organize the Cruising Club of America in 1922; in my yawl *Elsie*, we have long cruised Nova Scotia waters.

BY ROY W. BRADSHAW COLLECTION © N.S.S.



my visit ended, we parted, and in the autumn of 1897 I accepted a teaching position at the Englewood, New Jersey, Academy for Boys.

In December, 1897, Mr. Hubbard died, and his famous son-in-law, Dr. Bell, took the Society's helm. Dr. Bell had been an original member, though not a founder, and this busy man accepted the post only after considerable persuasion. He said he was not a geographer, and he knew the little organization was in a moribund condition.

The distinguished gentlemen who founded your Society had hoped that a magazine

would attract members and bring in money for expeditions and research. At first the magazine appeared at irregular intervals. Then the Board of Managers decided to issue it every month, beginning in January, 1896, and to increase circulation by newsstand sales.

But the magazine did not sell. Geography was then regarded by the public as one of the dullest of subjects, something to inflict upon schoolboys and avoid in later life. The Society's key to success, a popular approach to geography, was missing.

By the end of Dr. Bell's first year in office, the Society had an indebtedness of \$2,000, and its magazine tottered feebly on the brink of bankruptcy. The Board was much discouraged—but not Dr. Bell. He could never resist a challenge, and his extraordinary mind had been at work. Now he acted.

Inventor Suggests a Plan

In effect, this is what he told the Board. Geography is a fascinating subject, and it can be made interesting. Let's hire a promising young man to put some life into the magazine and promote the membership. I will pay his salary. Secondly, let's abandon our unsuccessful campaign to increase circulation by newsstand sales. Our journal should go to *members*, people who believe in our work and want to help. Support of exploration, research, and education is not a prerogative of the rich. Persons from all walks of life will join us if we arouse their interest with a lively journal.

Board members, though not nearly as optimistic as their President, gave their consent. The Society had been able to dispatch several notable expeditions, thanks to contributions from President Hubbard, but the magazine never brought in enough money to support itself, let alone field work. Dr. Bell's idea might help.

Now it was up to Dr. Bell to find a "promising young man." Elsie knew of the plan, and she decided her father would benefit by a little adroit prompting. With every appearance of casualness, she mentioned the identical twin

First President of the Society, Gardiner Greene Hubbard, and Gertrude McCurdy Hubbard were my wife's grandparents. A distinguished lawyer, Mr. Hubbard pioneered in education for the deaf, supported the invention of the telephone, and was a Regent of the Smithsonian Institution. Gracious and interesting, Mrs. Hubbard traveled widely, crossing the Atlantic several times in the days of sail.

OLBERT H. ADAMS COLLECTION, N.Y.S.S.A.





J. A. D. WOODS (PHOTO); AND ARTHUR W. WOODS

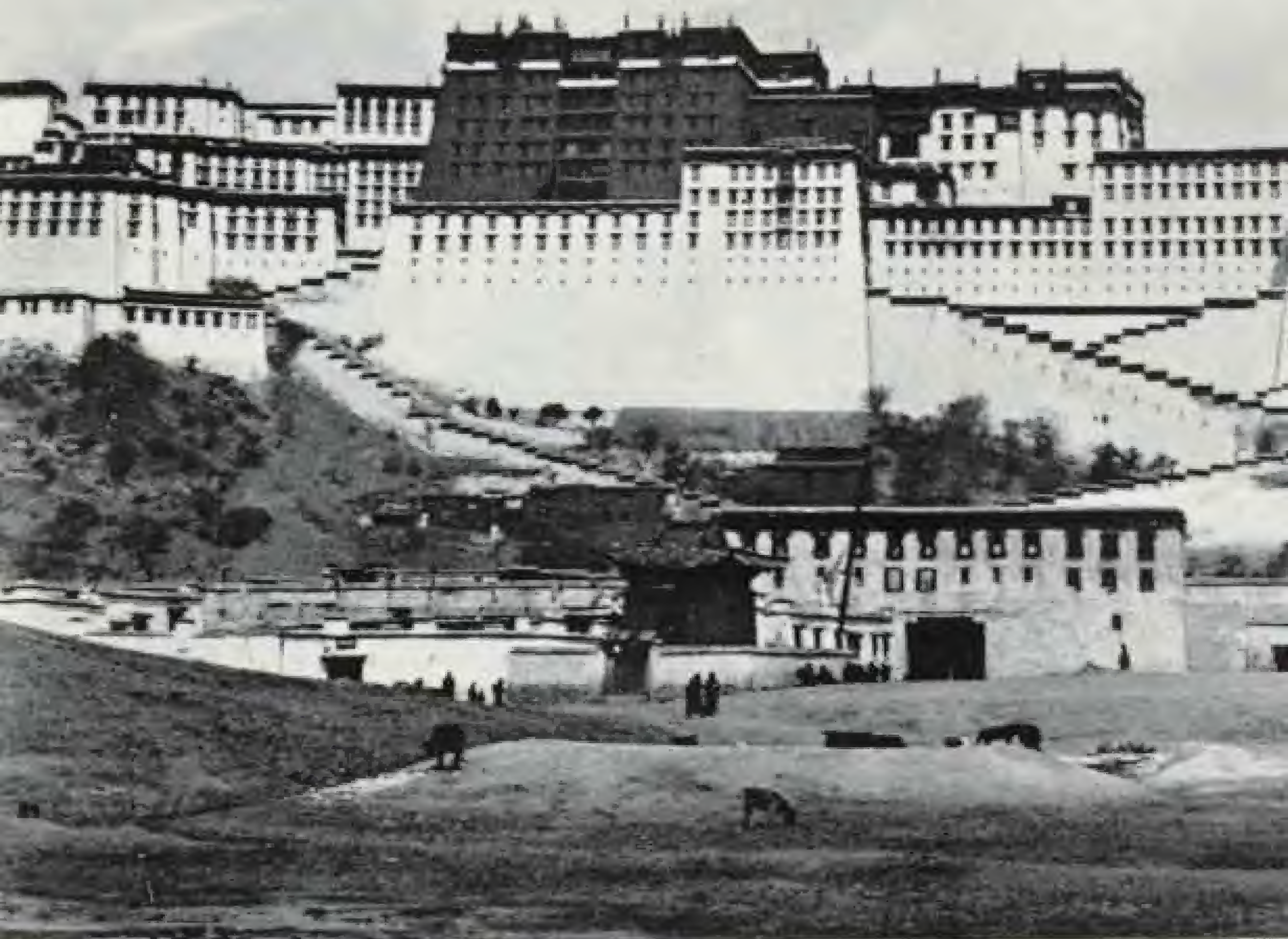
I edited the magazine several summers in this tent at Beinn Bhreagh because our home there was lively with six children and frequent visitors. Here Dr. Bell, my son Melville, and daughter Gertrude call on me.

In my early days I wrote my father: "The membership will depend on the improvement of the magazine, and I've got to peg and peg away at that."

It seems hard to believe now, but during 55 years at NATIONAL GEOGRAPHIC's helm I edited 660 issues of the magazine with more than 3,500 articles.

Two old friends, Helen Keller and my bride (left), meet in 1901. Blind and deaf since infancy, six-year-old Helen was taken to Dr. Bell, who recognized her intelligence and advised in her education. Later, when Helen visited the Bells, she, Elsie, and Elsie's sister Marian were found playing on the stable roof. "We got an awful scolding," my wife recalls, "but Helen had fun."





sons of her father's friend, Dr. Edwin A. Grosvenor, professor of European history at Amherst. Surely her father would recall that both young men had been his guests at Cape Breton following their graduation from Amherst, where they had shared academic honors. Perhaps a job in Washington, D. C., would appeal to one of the twins (page 518).

Dr. Bell, who greatly admired my father, embraced the idea as his own. Soon he was at his desk, writing to his friend. Would either of the twins, Edwin and Gilbert, be interested in a job that might be "a steppingstone to something better?"

To my brother and me Dr. Bell sent a brief personal note with a copy of his letter to our father.

Edwin was interested in a law career—a fact not unknown to Elsie. He had no desire to be an editor. Moreover, my identical twin gleefully pointed out that the offer came from the father of the only young lady we had ever known who could unerringly tell Gilbert from

Edwin. Elsie had demonstrated that ability many times at Cape Breton and at our own home in Amherst, where she and her sister Marian had been guests.

The offer was like a sign from heaven, my brother said. He recommended that I follow my heart, take the job, and be near the young lady in Washington.

Job Offer Appeals to Gilbert

I confess this consideration was the most persuasive one in my mind. Yet the idea of becoming an editor had a strong appeal of its own. It seemed to me that much of my young life had been spent in preparation for just such an opportunity.

I had been born in Constantinople (Istanbul), where for 23 years my father served as professor of history at Robert College, and years of living abroad had given me a deep interest in geography. Moreover, ours had always been a household that lived with the excitement of book proofs, manuscripts, and



First photographs from Lhasa, the little-known capital of Tibet, appeared in the *NATIONAL GEOGRAPHIC* in January, 1905. Made by Russian explorers, the pictures filled 11 magazine pages, an extraordinary pictorial coverage for that time. The Potala, the Dalai Lama's massive palace, looked then about as it does today.

Tibetan women trudge to the market place in Lhasa



publishers' deadlines. My father was a prolific author as well as a professor, and from my early childhood he taught me the arts of writing and editing. Later I became his assistant, a youth fascinated by what one could do with words and pictures.

Literary Household Grooms an Editor

For example, I helped with the proofs and layout of father's two-volume book, *Constantinople*. He persuaded the publisher to illustrate this erudite book with 230 photographs, and it became the first scholarly work (October, 1895) to be profusely illustrated by photoengravings, made by the then new Levy process. Father personally prepared an attractive brochure describing his book, and I mailed thousands of copies to editors and librarians. As a result, the edition of 3,000 soon sold out at \$10 a copy—quite a remarkable record for those days.

Dignified promotion had proved its worth, and I have never forgotten the lesson it taught

me. To some people the word "promoter" is an unattractive designation, but I have been one all my life. Promotion in good taste and for a good cause is a creative enterprise, essential in the publishing field.

My father subscribed to a clipping service that sent him hundreds of reviews and comments about his books—his *Contemporary History* and his translations of French and modern Greek works. We spent many hours each week discussing these reviews and analyzing the periodicals that came into our home: *Harper's Weekly*, *The Review of Reviews*, *McClure's*, *The Independent*, *The Century*, and others.

At times prominent family friends, among them Lew Wallace, the Civil War general and author of *Ben Hur*; Albert Shaw, editor of *The Review of Reviews*; and William Hayes Ward, editor of *The Independent*, participated in our discussions of writing and current topics.

Following such sessions, or after I had given



my father an opinion on arranging or cutting a manuscript, my mother would say, "Bert, you really should be an editor." Often she would add, "How can we get a chance for you?"

The chance came with Dr. Bell's offer. I wanted it badly. But, with the loyalty so typical of identical twins, I was unwilling to deprive my brother of an opportunity, even if he did disclaim interest in it. An old letter I wrote my father, now in my possession, shows I tried to be noncommittal. "As to which of us takes it," I said, "I don't think it makes a particle of difference for we are alike as far as qualifications go. . . . I tell Ed it is his turn to the best thing."

But Edwin, who later became a prominent attorney in New York City, was sincere in his refusal. Again he urged my acceptance.

So I wrote Dr. Bell, and he invited me to a meeting at his home in Washington. Mrs. Bell and Elsie, but no others, participated in our discussion. It proved a fateful meeting, for during it I made several decisions that affected the entire course of future events.

Dr. Bell began by showing me leading

magazines of the day: *Harper's*, *McClure's*, *Munsey's*, *The Century*.

"Can you create a geographic magazine as popular as these, one that will support the Society instead of the Society being burdened with the magazine?" he asked.

"Yes, I believe I can," I replied, "but I must proceed slowly and feel my way."

Indeed I emphasized that point repeatedly. There would have to be a period of evolution. I felt that the famous inventor did not fully realize the magnitude of the task he offered. But I was acutely aware of it, and I wanted him to remember that it could not be done overnight. As later events showed, I had gauged my man well. Like most successful men, Dr. Bell expected quick results.

Bell Offers a Large Investment

He accepted my point and then suggested a proposition that immediately made me wary. Some years earlier, said the inventor, he and Mr. Hubbard had spent \$87,000 in an attempt to establish a magazine called *Science*. Despite a distinguished editorial board and a

(Continued on page 531)

◀ Another GEOGRAPHIC innovation came when the Hon. George Shiras, 3d, a former Congressman, offered me some remarkable pictures in 1906. Mr. Shiras (foreground) originated the sport of hunting animals with light and camera; before his time no one dreamed such photographs could be made. He worked at night, slipping quietly along streams and swamps in a boat with cameras and spotlight mounted on the bow. Light from the pivoting lantern swept the bank until it caught the eyes of an animal. Then, moving closer, the photographer fired the flash powder and the camera's plates recorded the image.

Raccoon takes its own picture. When it pulled the bait, a string triggered the camera and flash.



Lynx in Ontario appears as tame as a tabby cat. Shiras's lens and flash powder proved quicker than its wary eye.

Doe and twin fawns, caught by the camera in Michigan, proved a best seller. This picture, offered as a separate print in 1913, sold 20,439 copies before its publication was discontinued in 1960.

527





First on top of the world, Comdr. Robert E. Peary shows the strain of the spring of 1909, when he pushed north toward the Pole. The Society subscribed \$1,000 to his expedition, first grant from its own resources.

Mr. North Pole meets Mr. South Pole: At our Washington home, Peary congratulates Roald Amundsen, who penetrated to the heart of Antarctica.





"Across the blinding white stretches of Arctic space the six men and their sledges crawled, dark specks on the world's icy crown." Thus I wrote in a new understanding of Peary's march to the Pole after I had followed his route by plane in 1953 (page 580). Men at left fight through jumbled ice; those below make a sounding.



ROBERT E. PEARY COLLECTION

Examining Peary's records, a distinguished panel of experts named by the Society's Board of Trustees affirms that the explorer did indeed attain the Pole. In the absence of similar evidence from Dr. Frederick A. Cook, who claimed prior discovery, the committee in 1909 acclaimed Peary as first at the apex of the earth. Left to right: Editor Gilbert Grosvenor; O. H. Tittmann, Superintendent of the U. S. Coast and Geodetic Survey; Society President Willis L. Moore; Comdr. Robert E. Peary; committee chairman Henry Gannett, Chief Geographer of the U. S. Geological Survey; and Rear Adm. Colby M. Chester, a former Superintendent of the United States Naval Observatory.

529

CLINTON NET 228613





Wheel-shaped kite flies at Beinn Bhreagh in 1908 under the eye of its inventor, Dr. Bell (right). My son Melville scampers beneath it.

Convinced that man would fly and that he himself might invent the machine, Dr. Bell had been experimenting with kites for many years.

Bell's experiments coincided with one of mine. In 1903, desperate at having failed to find a ready source of photographs, I spent more than a month's salary on a camera. Thereafter I recorded Dr. Bell's historic work on film. As the only person to photograph this kite, I have had countless requests for prints.

With kitchen scales attached to kite cord, Mabel Bell measures the kite's lift. She proposed her husband's famed Aerial Experiment Association and backed it financially.



DR. BELL, GROSSENER, HUBBARD, AND BELL'S, BOSTON

prominent scholar as editor, the magazine had failed, and he and Mr. Hubbard had sold the name *Science* for \$25—although they had paid \$5,000 for rights to the name. Despite this editorial tragedy, he offered to invest an equal sum, \$87,000, in the *GEOGRAPHIC*.

I knew that sheer weight of money would not accomplish what he wanted. Time, imagination, and enterprise were needed. I also realized that, despite Dr. Bell's good will, a youth of 23 was not prepared to administer so large a sum. A wonderful opportunity had come to me, but I could not hold onto it if I plunged Dr. Bell into extravagant spending. Older men, men unwilling to experiment, inevitably would push me aside, and I would have little opportunity to create and to try new ideas. Yet, without a new approach, there could be no hope for the magazine.

So, firmly and determinedly, I said I would take the job only if Dr. Bell limited his gift to \$100 a month for my salary—considerably less than I received as a teacher. He was reluctant, but Mrs. Bell gave me strong support. "Bert, I am much relieved by your attitude,"

she said. "All our money is in my name. Mr. Bell gave his share of the telephone patent to me as a wedding present. I feel that I hold in trust for him all that I own. You are right to insist that he limit his donation. Money is not the answer. You have a difficult job, and as you said, you must proceed slowly."

Dr. Bell finally accepted my condition, and the meeting ended. Elsie and I had a moment alone before I left, and she whispered, "I told Papa I thought you had the talent he sought and would like to come to Washington!"

The headmaster of my school generously permitted me to leave my position before the end of the school year. His final words to me were, "Remember, Grosvenor, Mr. Bell wants you mainly because you are your father's son."

So, on April 1, 1899, Dr. Bell took me to the Society headquarters on the fifth floor of the old Corcoran office building, across the street from the U. S. Treasury. It consisted of half of one small room (the other half occupied by the American Forestry Association), two rickety chairs, a small table, a litter of papers and ledgers, and six enormous boxes crammed



With his grandfather, Alexander Graham Bell, my son Melville spent many happy, instructive hours at Beinn Bhreagh. Dr. Bell planned his studies and enlisted his help in experiments. "A very generous boy," Dr. Bell once wrote. "He exhibits kindness and thoughtfulness for others."

with *GEOGRAPHICS* returned by newsstands.

"No desk!" exclaimed Dr. Bell. "I'll send you mine." That afternoon deliverymen brought me a handsome roll-top desk made of Circassian walnut. (Many years later, after I had moved into a magnificently equipped new office, Mrs. Bell asked me for her husband's desk, saying she needed an extra one. "I won't part with it for its weight in gold," I replied. I thought she would be offended, but my reply delighted her.)

In the days that followed, Dr. Bell introduced me to his colleagues in the Society, all much older men than I, and gave advice and encouragement. Then he left for his laboratory at Cape Breton. His family soon followed—but not until Mrs. Bell had obtained a promise from Elsie and me that we would not correspond with one another during the sum-



"Grampie," as Dr. Bell was known to my children, takes three of them for a stroll: Gertrude (left), Lillian, and Mabel.

mer. Despite this restriction, Mrs. Bell asked her mother, Mrs. Hubbard (page 522), to look out for my welfare, and I spent many pleasant weekends at the Hubbard estate, "Twin Oaks," in northwest Washington.

When Dr. Bell learned of his wife's action, he slyly made Elsie his secretary when writing to me, and all the many letters I received from him that summer were in her familiar handwriting. That helped both of us, but Elsie never inserted a personal note. She kept her word to her mother, and so did I.

Meanwhile I dug into a monumental task. It was clear that I must proceed simultaneously on two fronts. First, I had to get new members, lots of them, and quickly. The Society's bank account was exhausted. Secondly, I had to issue the magazine on time (it had been habitually late) and make it more read-



SECRET H. GROSVENOR COLLECTION © N.S.S.

Bell and Grosvenor families spent the summer of 1903 together at Beinn Bhreagh. The picture shows Dr. Bell (left) conversing with his father, Alexander Melville Bell. I hold young Melville; Mrs. Bell, baby Gertrude. My wife stands at right.

able and better known. Of the two tasks, the first—increasing the membership—seemed to demand the greater initial emphasis.

But how to do it? I began by asking prominent men to nominate their friends for membership. Initially that meant seeking nominations from my father and Dr. Bell, and my letters reveal that I badgered them unceasingly, unmercifully. I was scarcely less persistent with the officers and Board members of the Society, and they responded generously. As fast as the names came in—all distinguished men and women—the Admissions Committee would approve them, and letters would be sent inviting the nominees to join.

I don't know how I found time to pen personal letters, but I did—scores of them. Years later many were returned to me by family and friends because they comprise an almost day-by-day chronology of a highly critical period in the Society's history.

My membership campaign gathered quick momentum. By June 20, 1899, I could write

my father exultantly, "We are going to have a bully number for July. I have obtained 100 new members at \$2 apiece and one life member at \$50 since June 1. How's that! Going to get more though."

On July 13 I thanked my father for three lists of names, then added pointedly, "We'll be glad of a lot more." When he obliged with a fourth list, I assured him "they are a fine lot" and gave him a brief respite. But in a week's time I was writing, "You seem to have an unlimited supply of names and probably have by this time found out that the more I get the more I want."

Letters Exhort Family Action

Throughout the summer and fall I wrote my patient father almost daily, and my letters soon took on the tone of an athletic coach exhorting his star performer with a psychological "pep talk." Here are a few excerpts, each from a different letter: "Your men are doing fine. . . . Your men have done the best of



Photo by Gilbert H. Grosvenor

THE CATHEDRAL OF ST. BASIL'S: MOSCOW

St. Basil's is remarkable for its bizarre outlines and the gaudy color of its exterior. The interior is very disappointing, being divided into eleven small and gloomy chapels, which resemble dungeons. In this they are unlike the typical Russian church, which is elaborately adorned in gold and other rich colors.

My camera recorded splendors of Tsarist Russia when my wife, parents, and I traveled to Moscow in 1913. Color film had yet to be perfected, so I shot black and white. Taking notes of colors, I had 17 of my photographs hand-tinted, including one of St. Basil's (opposite), and published them in "Young Russia," November, 1914.

In September, 1959, NATIONAL GEOGRAPHIC printed a newer picture of St. Basil's, taken with Kodachrome (right). It is interesting to compare the two illustrations and see how close we came in the early days. When you count up our mistakes, consider the fact that the Russians could have changed the color scheme in 46 years. Built in the 16th century by Ivan the Terrible, St. Basil's in 1913 was a revered church; now it serves as a museum.

My mother stands before the wheel, my father beneath the barrel, and Elsie seems to be trying to hold up the whole thing. This king of cannons, weighing 40 tons, was long considered the world's largest. It had never been fired when I took the picture at the Kremlin. On this trip, my father—for 23 years professor of history at Robert College, Constantinople (now Istanbul)—continually gave me historical references. I followed with my 4A Folding Kodak camera.

535



PHOTOGRAPH BY EDWARD LUGGER © N. G. S.

ILLUSTRATION BY EDWARD LUGGER



any, even better than Mr. Bell's . . . 14 new members to your credit . . . Your lists have almost a clean record . . . Two more of your people—George W. Cable and General Lew Wallace—have joined . . . Your men keep coming in so fast I have ceased to count . . .”

Meanwhile I was successfully using similar tactics with Dr. Bell. Finally, almost in self-defense, he wrote me that I could nominate in his name 100 of the most prominent men in the National Education Association, 100 in the American Association for the Advancement of Science, and the entire membership of the National Academy of Sciences—a grand total of 300 names. Then, with typical humor, he added this postscript:

“You asked for an inch and I have given you a mile. You asked me to nominate 100 members, and I have given you permission to nominate 300. Is that enough for Your Royal Highness! Or will you have the face to ask me for any more.”

Conservative Officials Resist Change

Today I shake my head and smile at the extremes of my youthful zeal, but zeal was precisely the stimulus needed. Other membership promotion methods also proved effective, such as a letter to members inviting them to nominate friends and the first appearance in the magazine of the now-familiar blank nomination form.

That letter, I recall, brought about my first difficulty with conservative members of the Board. Soon after reporting for work, I drafted a message to members stressing the need of their cooperation in building the Society, and Dr. Bell approved it before leaving for Cape Breton. Soon, however, I had to send him a new version.

“The original letter,” I wrote, “the one which I submitted to you that last Sunday afternoon, was condemned by the Board of Managers in a most emphatic way; in fact, the different men tore it so to pieces, the idea, language, begging character, and undignified method of procedure as they put it, that nothing was left when they finished . . . A committee was appointed to draw up this letter, but as each wished the others to write it . . . I had to do it myself.”

This incident illustrates a recurrent problem of those first few years. The executive structure of the Society then was top-heavy with various committees, all composed of busy men of affairs, and I often had to do the work of these groups and make decisions

(Continued on page 543)





GILBERT A. BRONKHORST



Horse-drawn carriages and long-skirted sightseers were in vogue on our 1913 visit to the Kremlin. I photographed this bell, largest in the world, near the Monastery of Miracles. The story goes that Muscovites contributed 72 tons of gold and silver for the casting in 1755. The bell fell from its cradle when fire swept Moscow two years later.

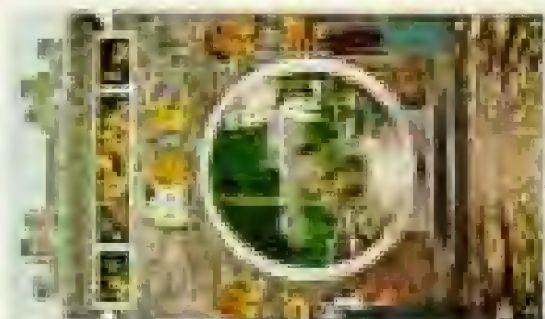
Russian schoolboys visiting the Kremlin gave me another picture subject. With the photograph I ran an old Russian saying: "Above Moscow there is nothing but the Kremlin; above the Kremlin, nothing but the sky." Times don't change much, do they?



William W. Chapin's photographs, published in November, 1910, marked a turning point for the magazine. Returning from the Orient, Mr. Chapin offered me his entire collection of black and whites, most of which a Japanese artist had tinted by hand. Determined to introduce new features into NATIONAL GEOGRAPHIC, I printed 24 pages of color in one number; no editor had ever run so much before. The issue created a sensation and brought in hundreds of new members. Thereafter I inserted a color feature in every November issue.

We captioned the photograph below: "Manchu women, Peking, China." Our description of the scene above was equally brief: "The Manchu family tiring, Peking, China." Nowadays we require our photographers to gather more information in the field.





Each of these pages of Chapin's "Scenes in Korea and China" cost four times as much as black and white, but membership enthusiasm made the innovation possible.

With such illustrations we set a pattern that, in 1954, won for the magazine the University of Missouri's Honor Award for Distinguished Service in Journalism. Its citation commends us for "matchless service over more than half a century as a teacher of geography and related sciences... friendly attitude toward the peoples of the world and... extraordinary success in integrating popular interest with sound scientific fact."

Chapin's walking haystack is a Korean farmer dressed for rain.



Tug-of-war intrigues wild men of northern Luzon. Dean C. Worcester, United States Secretary of the Interior of the Philippine Islands, introduced the games to divert the people from head-hunting. We published Worcester's account in March, 1911. Charles Martin, a U. S. soldier working with him, contributed pictures; later he became director of our photographic laboratory. An American (right) coaches the losing team from Talubin village; winners from Samoqui shriek with joy (lower).

Pipe-smoking girls are dancers of a Philippine tribe. NATIONAL GEOGRAPHIC never dressed tribal women prudishly in Western clothing; we pictured them in their natural state.

540

CHARLES MARTIN





LEON C. WHITCOMB





PHOTO BY JAMES

I give a white-tie dinner on May 26, 1914, to honor Theodore Roosevelt before his National Geographic lecture about his South American explorations (below). He delivered his first report to the Society. From left, seated: Jules J. Jusserand, the French Ambassador; Colonel Roosevelt; myself; and Juan de Riaño, the Spanish Ambassador. Standing are men who served as Society Trustees: Frederick V. Coville, George Shiras, 3d, Adm. Robert E. Peary, Gen. A. W. Greely, and Gen. John M. Wilson.

The former President eats in another setting: the wilds of Brazil, where he was first to explore the Rio da Dúvida, or River of Doubt, now named the Theodore Roosevelt River.

LIBRARY OF CONGRESS



(Continued from page 536)

when they failed to act. It required the greatest tact and diplomacy.

Dr. Bell himself had suggested the nomination blank in the magazine. One day I wrote him that arrangements for it had been made with the printer, with the consent of my immediate superior, a very conservative Board member whom I shall call "Mr. X."

Then I added, "I have this moment remembered that the Board sat down on the idea most heavily two months ago, but I don't think I shall remind Mr. X of that fact."

Our membership growth continued, and on September 15, 1899, in a letter to my mother, I was able to report financial improvement:

"I had a talk with our treasurer yesterday. I've been maintaining that I was paying expenses. He was a little skeptical. Well, he made out an estimate of expenses and receipts which showed a net gain of \$400. Of course that's all nonsense for we are not yet making money, but we are paying expenses."

By the end of the first year of my employment, I had more than doubled the Society's

membership, raising it from 1,000 to 2,200.

In the meantime I had not been neglecting my "second front"—improvement of the magazine. Funds were so limited that I could not pay authors, let alone publish pictures on a major scale. But I could, and did, obtain numerous articles of general rather than academic interest. Sometimes my father and Dr. Bell, both omnivorous readers, suggested timely topics. I also spent long hours polishing sentences. As I wrote Dr. Bell in a letter dated September 11, 1899, "I have been trying to get members and at the same time make the magazine readable and hence quotable, for that seems to guarantee the quickest and most immediate return."

As the summer of '99 waned, I was able to increase the number of pages in the magazine and to step up the print order from 2,000 to 3,000. But in many ways I had to move slowly and temper my wishes with those of the Board. The magazine then had a nominal Editor in Chief and no less than 12 Associate Editors, all unpaid and all members of the Board of Managers. Many of them, being

543



A birthday party for Mrs. William Howard Taft at "Wild Acres," our home near Washington, added this 1929 picture to the family album. Front row, from left: brother Edwin and his wife; Mrs. Taft; my cousin, Chief Justice Taft; Elsie and I. Behind Mrs. Taft stands Associate Justice Harlan F. Stone, who became Chief Justice twelve years later. Others include Senator Théodore Burton of Ohio, George E. Hamilton, Esq., and Congressman Allen Towner Treadway of Massachusetts.





HORACE ALBRIGHT

On a mission to save the giant sequoias, I went to California in 1915 with a group of eminent Americans at the invitation of Stephen Mather, then Assistant to the Secretary of the Interior. In the Giant Forest overnight, others chose to sleep in tents, but Horace Albright and I pitched our sleeping bags at the foot of a tremendous sequoia.

Men and horses encircle the General Sherman, a 272-foot giant now protected by Sequoia National Park. After my visit, the Society and members gave \$100,000 to preserve 2,239 acres of the trees.

My picnic photograph was the only one that developed successfully, because I judged that the exposure under the trees would take three times longer than the other photographers thought necessary. By using a delayed-action trigger on my camera, I was able to seat myself in the picture before exposing the film. Mr. Mather sits at the head of the table; I, on his left. Others in the party include Burton Holmes, famous travel lecturer; Horace Albright, Director of the National Park Service from 1929 to 1933; F. H. Gillett, later Speaker of the United States House of Representatives; author Emerson Hough; and Henry Fairfield Osborn, President of the American Museum of Natural History.

545

WALTER W. LOUGHEED (LEFT AND CENTER)





ON BRISTLE ANGEL TRAIL
GRAND CANYON, ARIZ.
ELEVATION 8000
JULY 6 - 1914
PHOTO KOLB BROS.

technical minded, wanted to insert material unintelligible to the layman. It was often difficult to excise or simplify this material without giving offense.

Dr. Bell, remote from the scene, did not always appreciate my situation. I had stressed to him that we would have to feel our way for a time, but he liked quick results. Each letter to me contained numerous suggestions. Some were quite helpful. For example, he suggested a timely article on hurricanes that I published in the September, 1899, issue. But many of his ideas were not practical.

I recall, in particular, that he suggested



Muddy to the knees, I balance on a log with camera and tripod in hand. No one on our 1915 trip remembers where or why I got into this predicament, one that is fairly common among hard-working photographers.

Elsie leads the train down Bright Angel Trail in the Grand Canyon to the exciting Colorado River, a mile below. Man with black tie in center is Emery Kolb, of the Kolb Brothers, canyon concessionaires.

1915 PHOTOGRAPH

we expand our Washington lecture series to include programs in major cities all over the United States. When Dr. Bell was the young and dramatic inventor of the telephone, he had lectured widely and very profitably, always to large crowds. But he simply did not realize that other lecturers were not famous inventors and what he recommended was impossible for any single organization to arrange and sponsor, let alone the impoverished little Society. On another occasion he suggested an "educational department" in the magazine. I countered by pointing out that the entire journal should be educational.

After six months at my tasks, I wrote Dr. Bell: "If you will give me time, I confidently believe you will have the circulation, the 'aids,' the influence and reputation that such a publication should have. But it takes more than six months to make a *Century*."

In the latter sentence I referred pointedly to the inventor's fondness for one of the leading magazines of the day. He sometimes thought of *The Century* as a guide we should follow, but I knew it was imperative that we not copy another publication but evolve something new and fresh.

"Notices" Publicize the Magazine

Dr. Bell, however, never posed as an Olympian figure issuing orders. He was both warm-hearted and reasonable. No one was more pleased than he when one of my first GEOGRAPHIC articles, "Plans for Reaching the South Pole," (August, 1899), illustrated with the first map I prepared for the magazine, was reprinted in *The Literary Digest*. Also, he gave me unstinting credit for the attention the magazine was receiving in other publications. Each month I mailed out digests or excerpts of the most interesting material in the NATIONAL GEOGRAPHIC, and many were reprinted with appropriate credit. We called this promotional technique "getting notices." In this way, people all over the Nation learned for the first time that there was a journal called the NATIONAL GEOGRAPHIC MAGAZINE.

Responsibility for both the business and editorial affairs of the Society left me few spare moments, but in September of 1899 I decided I would have to do something about the lecture series in Washington. The committee charged with responsibility for the annual program had failed to make any firm arrangements. So I inquired of Dr. Bell, "Is



ALBERT W. SANDERSON COLLECTION

Climbing Mount Whitney, summit of the old 48 states. I found this cairn perched on the 14,495-foot peak in 1915. Today a National Park Service plaque replaces the rocks and calls attention to the Nation's highest trail running across the mountain. No path marked the way when I was there, but I sprinted the last several hundred feet so as to photograph the party coming up. As it happened, they pictured me, too. Going down, we ran into a storm that brought lightning, hail, snow, and rain.

Opening the highway through Tioga Pass in Yosemite Valley in 1915 called for a celebration, and we had one. Stephen Mather (center) prepares to run up the American flag. Elsie smiles at left.

Motoring in rain forest on Washington's Olympic Peninsula, my family and I explored in 1915 one of the several Western wonderlands that would become national parks. Throughout the years, the Society has lent its support to the creation and protection of those reserves, so beneficent to the human spirit.

548

DAVID WHITCOMB



that included under the Assistant Editorship? If so, I will take it up immediately."

Yes, he replied, and I had a third job.

I immediately thought of an old family friend, former Secretary of State John W. Foster. My father helped me enlist him as the opening lecturer of the season, and he spoke as an expert on a major topic of the day, "The Alaskan Boundary." A sellout crowd attended, and I, the nervous impresario, projected Mr. Foster's lantern slides myself.

Mr. Foster's talk, though excellent and newsworthy, won only local notice, but when I published it as an article in the November, 1899, issue of the magazine, long editorials about it appeared in important newspapers throughout the nation.

Thus we entered 1900 with rising prospects—or so Dr. Bell and I thought. However, the Executive Committee, a five-man minority of the Board but a determined one, believed our plans hopelessly optimistic. These men wanted

to stop "undignified" membership promotion and sell the magazine on newsstands, although that approach previously had led to a debt-ridden Society.

Dr. Bell himself had invited many prominent editors and publishers to Washington as consultants. The most influential was S. S. McClure, publisher of *McClure's Magazine*, with a circulation of 370,000. The Hubbard family had invested substantially in *McClure's*, though no dividends were ever received, and Dr. Bell had granted an interview for an article in its very first issue (June, 1893).

McClure Says, "Move to New York"

Mr. McClure's success commanded respect. But I was deeply disturbed by the suggestions he made: (1) publish the NATIONAL GEOGRAPHIC in New York, since it is impossible to establish a popular magazine in Washington; (2) change the magazine's name to something simpler; (3) abandon the plan to





Autograph by Franklin Price Knox

THE POETRY OF MOTION AND THE CHARM OF COLOR

build circulation by membership in a geographic society; (4) depend upon newsstand sales and advertising to increase the circulation; (5) never mention the name National Geographic Society in the magazine, since people abhor geography.

Mr. McClure's eloquence entranced the members of the Executive Committee. They knew little of editorial and publishing problems—less than I, despite my youth. To them the fact that I had more than doubled the GEOGRAPHIC's circulation in less than a year quite naturally seemed unimpressive compared to the enormous readership Mr. McClure had built.

These men were not interested in reading the letters from new members, but I was—I

read all of them. Each day, often with Elsie Bell's help, I opened the membership mail, studied it, listed the enclosed dues, and took the money to the bank. Both Elsie and I were deeply impressed by the letters. A phenomenal 99 percent contained some expression of faith and gratification in the Society's altruistic aims. The new members' desire to help promote science and education through a cooperative union was as strong as their desire to get a good NATIONAL GEOGRAPHIC MAGAZINE.

I felt that I had made more than a thousand new friends, and the prospect of breaking faith with them—as we would have to do if Mr. McClure's ideas controlled the magazine—rasped painfully on my conscience.

Invention of the Lumière Autochrome opened a new world in photography, and we were quick to take advantage. Franklin Price Knott, a talented amateur photographer, gave us this beautiful picture of Ruth St. Denis and Ted Shawn, a famous dance team, published in April, 1916. Color lent vivid definition to Knott's Tunisian carrot peddler and his donkey, which we ran the same year.

Circular mosaic shows a magnified section of Autochrome's color screen. Minute grains of potato starch, dyed green, red, and violet-blue, filtered the light and captured the color. Developed in France and marketed in 1907, the Lumière Autochrome was the first commercial process in color photography, but expositives were slow.

PHOTOGRAPHED BY FRANKLIN PRICE KNOTT





Three generations: Melville Bell Grosvenor, a midshipman at the United States Naval Academy, my father, Dr. Edwin A. Grosvenor, and I. My father, a noted author and historian, gave me invaluable help during the early, troublesome days of the magazine. He wrote to me nearly every day, counseling, "Just be patient, be patient."

Fortunately the Board of Managers saw the pitfalls. It reaffirmed its belief in Dr. Bell's plan, and on June 30, 1900, the inventor took his family to Europe, believing he left me free to carry out our agreement.

Before her departure Elsie May Bell told me that her mother had done a strange thing. She had ordered a new trunk for Elsie with the initials E.M.G. instead of E.M.B. When her blushing daughter inquired why, Mrs. Bell had replied, "I think for the next journey you make those initials will be right for you."

One can imagine how that story buoyed my spirits! I had told Elsie's father that I wanted to marry her, but her parents had counseled both of us to observe a waiting period so that we would be sure of our hearts.

No sooner had the Bells sailed than the depressing difficulty with the Executive Committee resumed. My father and two members

of the Board of Managers, Gen. A. W. Greely and Frederick V. Coville, had submitted to me a grand total of more than 1,100 nominations for membership, yet the five-man Executive Committee ordered me not to accept any of them. So I pushed the nominations to a corner of my desk and worked doggedly on magazine copy, though often tired and drawn from sweltering heat that persisted week after week.

"Learn to Labor and to Wait"

Occasionally I clambered onto the fire escape outside my window for a breath of air, and one day I heard beneath me the strident tones of a burdy-gurdy playing Sousa marches. On the curb an organ grinder cranked tinny tunes while a monkey capered, grimaced, and bowed. It was absurd, ridiculous—and delightful. Listening every day to that burdy-

Romanian immigrant to the U. S. lands at New York in 1906. We devoted the entire December, 1918, issue to "The Races of Europe" by my father (opposite page).

Varied cultures of earth's peoples added fascinating pages to the magazine, as this 1918 picture of a Balkan girl reveals.

Not all our readers liked the same things. One wrote: "Your photographers have a mania for photographing costumes. I am a nudist and do not care what people wear. I am nevertheless an epicure, and I enjoy reading about the foods of other people."

Clearly our emphasis on variety had paid off. Foreign costumes left the nudist cold, so to speak, but we balanced out with an appeal to his stomach.



with my troubles. But, on August 6, 1900, with the summer waning and the time near for his return to Washington, I wrote him frankly. It was his fight, too, and he would soon have to face it again.

"Naturally I am very much distressed with the committee," my letter said, "but as I firmly believe that they are working not against me personally . . . but against your plans for the Society and for their individual interests, I do not intend to get out of their way, as they plainly hint they want me to."

Courtship Brightens Editorial Gloom

However, a development in my personal life soon drove all but happy thoughts from my mind. Elsie wrote that she would be glad to marry me if I hadn't changed my mind! You may be certain I lost no time in assuring her on that point. Dr. Bell telegraphed his warm congratulations, and a few days later Mrs. Bell sent a letter to my mother that is still a treasured memento.

"Of course, Elsie would not have written to Gilbert as she did at this time without Mr. Bell's and my full approval," the letter said. "We feel that Gilbert has proved his mettle in this summer's trials and deserves the reward Elsie wants to give him. He has certainly had a hard summer—meeting treachery where he expected loyal help and friendship—but I

gardedly became my sole diversion from care, and today, 63 years later, it seems I can still hear Sousa's stirring music.

During those trying days my father counseled, "Just be patient, be patient." His advice brought to my mind a line from Longfellow's *A Psalm of Life*: "Learn to labor and to wait." This became my philosophy during the dreadfully hot summer of 1900, but I did write my father that I would resign in the autumn if the Executive Committee and Mr. McClure's ideas prevailed.

I had been unwilling to burden Dr. Bell



doubt whether Elsie would have been as sure of her own mind if all her love and sympathy had not been aroused by her indignation at the attacks upon him."

In September Dr. Bell convened the Board of Managers in Washington. The Executive Committee had no support in this distinguished group of scientists and men of affairs. Board members pointedly complimented me on my work, unanimously reaffirmed my permanent status with the Society, appointed me Managing Editor, and increased my salary, the increase of \$800 to be paid by the Society.

I assumed that our house divided, the Society, was made whole again. It proved a wrong assumption, but my personal happiness permitted no doubts to intrude. I obtained

554

WILLIAM W. BASTIAN



Testing my new Speed Graphic bought in London in 1913. I found I could take pictures at 1/500 of a second, an immense advantage in stopping the action of the hydrofoil boat.



"I want to ride!" Mabel Bell begs her husband. But this dear woman, plagued with a faulty sense of balance since a childhood illness deprived her of hearing, was not permitted in the *HD-4*.

Our children considered it an honor to hold their "Gammie's" hand and steady her on walks. Near the end of her life she confessed to her niece: "All my life I have tried my hardest to have you children and everyone else forget that I am not the same as your mother, for instance."



PHOTO BY W. L. BROWN

Torpedo-shaped hydrofoil boat, the *HD-4*, designed by Dr. Bell and Frederick W. (Casey) Baldwin, skims Baddeck Bay in 1919 and sets a new world speedboat record, 71 miles an hour. The revolutionary boat, pioneered by the Italians, rides out of water on thin steel blades, or hydrofoils. British and U. S. naval experts acclaimed it "a surprising and marvelous invention," but failed to see its potentialities for a long time. Nearly 40 years later Mrs. Grosvenor and I rode a hydrofoil ferry across the Strait of Messina.

Concentrating, Dr. Bell (below) did not note that I was recording the historic trials on film (opposite, lower).





RAYMOND OWEN WILLIAMS

Society sponsorship of Arctic exploration took me (center) to Battle Harbor, Labrador, in the summer of 1925. There I said goodbye to Comdr. Donald MacMillan, the expedition leader (left), and Dr. Wilfred Grenfell, the medical missionary, on board the flagship *Bowdoin*. Carrying short-wave radio equipment, the explorers broadcast for the first time day-by-day progress reports to National Geographic headquarters.

INTERNATIONAL SECRETARY



National Geographic flag went north with MacMillan in his probe of a vast unexplored area between Greenland and the North Pole. The expedition pioneered in use of air support, carrying three Navy aircraft under the command of Lt. Comdr. Richard E. Byrd. Thus did Byrd acquire knowledge of Arctic flying that later enabled him to reach both Poles by air: MacMillan and I stand on the *Peary* off Brooklyn, New York, May 20, 1925.

Everyone smiles as President Calvin Coolidge presents the Society's Hubbard Medal to Commander Byrd for his North Pole flight in 1926. The Chief Executive, my friend at Amherst, seems pleased with the audience; I (right) beam at Byrd, who grins at Mrs. Coolidge (just out of the picture).



OUR WORLD

a long leave, and Elsie and I were married in London on October 23, 1900 (page 520).

When Dr. Bell had sent congratulations on our engagement, I had replied, "By persuading Elsie Bell to marry me, I have done more for the National Geographic Society than has happened to it in all of its twelve years of existence."

The Lady With the "Magic Touch"

And so it proved. Mrs. Grosvenor brought a magic touch to the work of the Society. With dedication and unwavering faith, my wife became my partner in transforming the Society and its magazine.

Mrs. Grosvenor has read many hundreds of manuscripts, examined thousands of pages of proof and tens of thousands of photographs, and has contributed three notable articles of her own.* She has been at my side during hundreds of thousands of miles of travel across the length and breadth of the

globe. She designed the Society's honored flag, with its stripes of brown, green, and blue.

Her interest in geography had been strong long before our marriage, for she had studied in France and Italy and traveled in England, Norway, and Japan with her parents.

Elsie and I had reached Vienna on our honeymoon trip when I began to worry about the magazine. I had an instinctive feeling that something was wrong. We had hoped to go to Constantinople, city of my birth and boyhood, but instead we rushed home, arriving early in December, 1900.

And just in time, too. The Executive Committee had arranged to have the magazine printed in New York by McClure, Phillips &

*See in the NATIONAL GEOGRAPHIC: "Alaska's Warmer Side," June, 1956; "Safari From Congo to Cairo," December, 1954; "Safari Through Changing Africa," August, 1953, all by Elsie May Bell Grosvenor. In recognition of Mrs. Grosvenor's services to geography, the University of Alaska made her an honorary alumna by the award of a Doctor of Laws, May 13, 1957.



We found the going rough on our ascent to the summit of Manna Loa's volcano in Hawaii, 1920. Elsie, riding third from the rear, was among the first women to visit the top. Here we see gas and smoke from neighboring Kilauea.

"We traveled through this frightful waste," I wrote in the February, 1924, issue, "dismounting only when the trail became especially rough or our mules sank to their bellies in the powdered glass." I predicted that Manna Loa would eventually be made accessible by easy trails, hotels, and rest houses because "this volcanic height is one of the marvels of the world." But I was wrong.

My son traveled to Hawaii earlier this year and found that it is still hard to get to the crater's rim. Those who wish to go up 13,680 feet must do so on foot or over a jeep trail.

A tremendous crater, Haleakala holds several smaller ones. We added color by hand.





SILVESTRE BRONKHORST



Company. Mr. McClure's eloquence had made a deep impression upon Dr. Bell, as well as the committee members. The New York editor's success in creating *McClure's Magazine*—one of the first prosperous 10-cent monthly magazines—was proof of his ability, and Dr. Bell had countenanced the agreement. He had participated in long discussions and, as far as I know, had never opposed the negotiations or the contract that was signed.

Facing a Policy Problem Alone

My father-in-law had returned from Europe shortly before us, but he held aloof from events that followed. I showed him a very costly bill from McClure, Phillips & Company for the printing of the January, 1901, issue and told him that the New York firm had failed to get us any new members, subscribers, or advertising. His only comment was, "Well, Bert, the Board made you the Managing Editor. You are responsible now."

So the fight was mine to face alone. As Managing Editor I had authority to act, and I went to New York immediately. Two issues, January and February of 1901, were printed there before I could reverse the Executive Committee's action.



In helmet and goggles, Mrs. Grosvenor (above, right) experienced her first airplane ride at Atlantic City in 1919. Obviously pleased, I took to the air (opposite) on the same occasion. Descending after a 15-minute flight, my pilot cut the engine. I thought it had failed, but we floated down safely. The flights gave us a personal experience in a long-time interest: the science of aviation.

This interest was well stated in the August, 1927, NATIONAL GEOGRAPHIC: "Since Langley pioneered thirty-one years ago; since Alexander Graham Bell flew his man-lifting kite; since the Wright Brothers boldly rode the skies in the first crude, careening biplane, the growth and progress of air travel have been steadfastly aided and encouraged by the National Geographic Society."

As Editor, I continually scheduled aeronautical articles; today their listing alone requires nearly five pages in our Cumulative Index. We took readers aloft in kites, balloons, gliders, seaplanes, dirigibles, helicopters, jets, and finally space capsules.

We established a transpacific first on May 14, 1937, after Pan American Airways set up its Orient run, becoming the first couple to fly from San Francisco to Hong Kong as paying passengers. Our seatmate was Carlos Romulo, who later became the Ambassador from the Philippines to the United States.





Recently I came across the original contract I signed with the printing firm of Judd & Detweiler after returning the magazine to Washington. The costs per issue add up to half what we paid for New York publication.

That incident marked the end of dissension. Committee members congratulated me. Escape from ruinous cost loomed large in all our minds. But I knew I had saved something more important than dollars: Dr. Bell's original plan to enlist members who would help us create a great educational institution.

I wish to remark here that S. S. McClure and John S. Phillips and their associates were fine gentlemen. They expressed regret that their responsibilities had become so heavy that they had not been able to help the GEO-

GRAPHIC and Mr. Bell as they had hoped. They wished me well sincerely.

In February, 1903, I was made Editor, with full authority to try my own ideas for development of the magazine, and also the Society's Director, with control of all business and membership affairs.

I thought of geography in terms of its Greek root: *geographia*—a description of the world. It thus becomes the most catholic of subjects, universal in appeal and embracing nations, people, plants, animals, birds, fish.

Thus we would never lack interesting subjects. I had long considered how that interest could be captured in words. At night I pored over other geographic journals and studied great geographic books that had been widely



Flying around the North Atlantic, Anne Morrow Lindbergh (above) and her husband Charles A. Lindbergh (right) pioneered a transoceanic air route in 1933. For her service as copilot and radio operator, the Society awarded her the Hubbard Medal in 1934. The Lindberghs told their story in the September, 1934, magazine.



Stopping over at Halifax, Nova Scotia, Colonel Lindbergh (right) works to moor his Lockheed Sirius seaplane as Anne watches from the cockpit.





President Coolidge presents the Hubbard Medal to Colonel Lindbergh "for his heroic service to the science of aviation by his solitary flight from New York to Paris, May 20-21, 1927." On stage in the old Washington Auditorium, the 25-year-old aviator (second from right) sits on my left; Mrs. Coolidge, on my right. We face one of the most distinguished audiences ever seen in Washington—6,000 persons, including Cabinet officers, Congressmen, diplomats, military chiefs, and members of the Society.

read—Darwin's *The Voyage of the Beagle*, Dana's *Two Years Before the Mast*, Joshua Slocum's *Sailing Alone Around the World*.

What was there in Herodotus's travels, *The History*, written 2,300 years earlier, that gave the book such life that it had survived 23 centuries and was still going strong? What was the secret of the great geographic books that men and women should turn to them through the decades and the centuries?

Experiments Test a Popular Style

Finally I was convinced I had the answer, one we would put to good use in NATIONAL GEOGRAPHIC: Each was a vivid eyewitness account, each contained simple, straightforward writing that sought to make pictures in the reader's mind.

Next I undertook an experiment to determine the kind of article readers liked. It would have been simple enough to insert my own articles in NATIONAL GEOGRAPHIC, but I decided a sterner test would be to see if other editors would buy my writing. That should be a good gauge of popular appeal.

So for several years I wrote and sold numerous articles. For the yearbook of the Smithsonian Institution, Secretary S. P. Langley accepted a survey of 19th-century exploration and explorers and paid me \$100. The New York Herald Syndicate distributed widely an article on James Smithson, founder of the Smithsonian Institution, a story entitled "Reindeer Breeding in Alaska," and one on Dr. Bell's flight experiments with tetrahedral kites. I got a total of only \$75 for these, but I felt like Croesus when *Century Magazine*, then the leading quality publication, paid \$250 each for three articles.

"If I could write all the articles I am asked to, I'd make a fortune, but unluckily my ability is limited," I wrote my mother.

Photographs Scorned by Many Editors

Outside writing gave me useful experience, but my editorial duties at the GEOGRAPHIC soon required all my time.

In those days many publications scorned photographic illustrations. The famous and successful editor of *The Century* had gone so



First successful aerial color photographs published used the new Finlay process. They were made in 1930 by my son Melville, who started working with cameras at age 11. Flying in U. S. dirigibles to avoid the vibration of airplanes, he captured unique views of the Statue of Liberty and the U. S. Capitol.

Red-green-and-blue checkerboard under the microscope, the Finlay screen had 175 lines to the inch. Its increased speed permitted color aerials for the first time.



far as to predict in print that "people will tire of photographic reproduction, and those magazines will find most favor which lead in original art." This same editor once told me that he—and the public!—considered our halftone photoengravings "vulgar" and preferred steel engravings costing \$400 a plate. Our halftones, made by the Levy process, now universal, cost us \$7 to \$8 for a full-page picture.

I rejected the conservative view, and it was like striking gold in my own backyard when I found Government agencies would lend me plates from their publications. I illustrated numerous articles in this way. For example, plates from the U. S. Bureau of Education illustrated my article on "Reindeer in Alaska" in the April, 1903, issue.

Sometimes, if I had suitable photographs and enough money, I contracted for photoengravings. A popular feature of 1903, Dr. Bell's article on "The Tetrahedral Principle in Kite Structure," was accompanied by many photographs. A later article by him, "Aerial Locomotion" (January, 1907), proved even more popular. These papers, incidentally, marked

the beginning of the GEOGRAPHIC's long and authoritative coverage of aviation.

Your Society's much-traveled flag was born in this period. Elsie Grosvenor designed it for the 1903 Ziegler Polar Expedition. We both wanted an emblem that could be instantly recognized, and she chose the now-familiar stripes of blue, brown, and green—for sky, earth, and sea—with "National Geographic Society" in large capital letters.

Society Acquires a Headquarters

Late in 1903 the Society moved into a handsome new headquarters given it by the family of Gardiner Greene Hubbard—an expression of confidence in the future. Today the structure appears modest and small; we use it as our library. Sixty years ago, however, it seemed like the Taj Mahal, and it gave a picture of affluence hardly warranted by the Society's circumstances. By the end of 1904 we had 3,662 members, not enough for good financial health. I resolved to take some calculated risks in the new year 1905, knowing they would make us or break us.



PHOTO COURTESY OF NATIONAL GEOGRAPHIC SOCIETY

By sheer chance I received in the mail 50 beautiful photographs of Lhasa, the mysterious capital of Tibet, on the very day that I urgently needed 11 pages of material for the January, 1905, issue. The Russian explorers who took the pictures offered them free. So I filled the entire 11 pages with the photographs, raiding the Society's slim treasury to make the plates (page 524).

That night I told my wife I expected to be fired. But when the magazine appeared, people stopped me on the streets of Washington to congratulate me. Membership applications took a decided upturn, and in January of 1905, shortly after the Lhasa pictures appeared, the Board of Managers (now the Board of Trustees) unanimously elected me a member at age 29. I was also elected to the Executive and Finance Committees.

Soon another pictorial windfall came my way. My cousin William Howard Taft told me that in April the U. S. Government would publish a copiously illustrated Census Report of the Philippines. I borrowed 32 full-page plates—138 pictures—and printed them in

the April, 1905, magazine. The Philippines number brought a flood of new members, so many I had to reprint the issue.

Now seemed the time for a determined campaign to build the membership, but the Secretary of the Society, Mr. O. P. Austin, felt the expense would be too great. Mr. Austin was a brilliant journalist, and I had great confidence in his judgment. Reluctantly I deferred the matter, but a few days later, he told me that he had to take a six-months' round-the-world business trip. Mr. Austin proposed that he resign and the Board make me the Secretary. I had no desire for the job, but offered to serve as Acting Secretary in his absence.

He had scarcely put to sea before I hired additional clerical help and began pouring money into an all-out membership drive. It was an audacious gamble, one I took on my own responsibility, but by the middle of 1905 it was clearly paying off.

"I have never worked so hard in my life as during the past few months." I wrote my mother-in-law, Mrs. Bell, on June 23. "I have made up my mind that it was time the Society



With binoculars and smoked glass, Dr. Bell prepares to observe the eclipse of the sun on May 28, 1900. To get the best view, he, Mrs. Bell (standing at center), and 250 members of the National Geographic Society traveled by steamer to Norfolk, Virginia.

was self-supporting and that the Society must 'go bust' or become independent this year. It's been awfully hard work and worried me too, for during the past two months I have been spending money like water. I wasn't sure whether I'd get it back. . . . As it is, everything has turned out even better than I had hoped."

When the Secretary returned in September, the membership had zoomed to more than 10,000, three times the September, 1904, figure, and he was not only astounded but delighted. By the end of 1905 it reached 11,479.

1905 Marks "End of Beginning"

The joy of a college president successful in acquiring donations for his institution could never surpass the pleasure I felt as dues from members accumulated. Later these dues would enable me to improve and expand the magazine, increase our explorations, salaries, and payments to authors and photographers, and construct comfortable buildings to accommodate a growing staff.

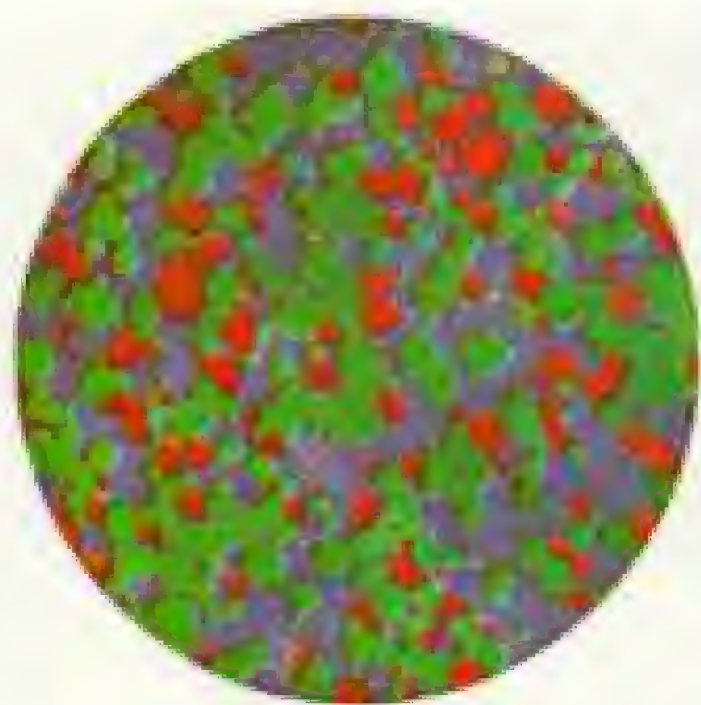
The year 1905 marked the turning point in

the Society's fortunes, the "end of the beginning." In September I reported to the Board that we would end the year with a surplus of \$3,500. I then offered the following resolution:

"Resolved, That the National Geographic Society, through its Board of Managers, thank Dr. Bell for his generous subscription to the work of the Society from 1899 to 1904, and inform Dr. Bell that the Society is now on such a substantial basis that it can relieve him of his subscription for 1905."

Elsie and I were jubilant. At last her generous father had seen his dream realized: a geographic magazine that would support the Society. His total gift to establish the magazine was \$6,900 instead of the \$87,000 he had offered in 1899.

Meanwhile, NATIONAL GEOGRAPHIC was becoming known as a magazine on the move, with articles that were not only interesting but frequently newsworthy. For example, John W. Foster, former Secretary of State, contributed an article on China in December, 1904, that won wide attention. Mr. Foster had



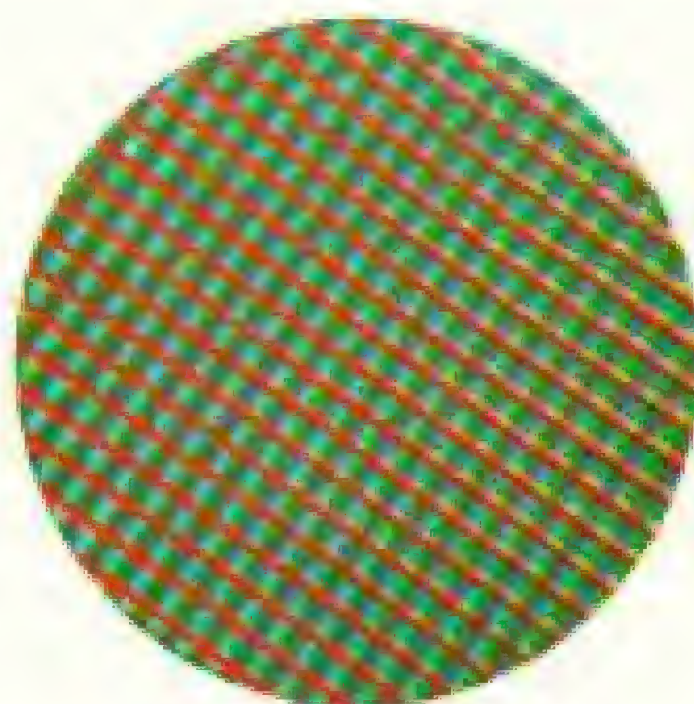
Agfacolor, a German development, permitted the photographer to record action in color at twice the speed allowed by the Lumière process (page 551). Our 1936 picture of a shower bath in a Berlin park demonstrates the innovation's value.

Essentially, the Agfacolor process differed from Autochrome in the making of its color screen (above). In the German method the screen was formed by bits of dyed resin rather than the dyed starch grains of Autochrome. Agfacolor allowed exposures of a fifth to a tenth of a second in brilliant sunshine by lenses of relatively large aperture.

Moon blots out sun, and the corona flares into view: the first natural-color reproduction of an eclipse, made in Russia on June 19, 1936, with Dufay film. Irvine C. Gardner made this historic photograph.



AGFACOLOR BY HANS WILKENHARD



Dufaycolor utilized film rather than cumbersome glass plates. This process had a ruled screen made up of parallel lines of blue and green crossed with lines of red. Dufay proved advantageous when the National Geographic Society-National Bureau of Standards Expedition traveled to Ak Bulak, Russia, to study the 1936 eclipse (left).



REPRODUCED BY W. R. MOORE

Kodachrome, introduced by Eastman in 1936, made possible dramatic action in color by photographers finally freed from heavy cameras and glass plates.

The 35-millimeter transparency below has faded considerably since publication in April, 1938, but that weakness has long been remedied.



represented China in the settlement of the Sino-Japanese War in 1895.

For the August, 1905, issue, William Howard Taft wrote an authoritative report on our country's altruistic program in the Philippines, a program he had initiated as Civil Governor of the Philippines. Later he contributed two other articles on this important subject. They explain the foundation on which the firm friendship of the Filipinos for the United States has been built.

High Standards Maintained in Ads

By 1906 the magazine's increased circulation warranted a campaign for additional advertising, a task I assigned to John Oliver La Gorce, whom I engaged in September, 1905, to assist me.* I gave him a free hand except for policy rules that I imposed, among them

*See "Colleague of the Golden Years: John Oliver La Gorce," by Gilbert Grosvenor, NATIONAL GEOGRAPHIC, March, 1960.



Swirling skirts of Burgenland dancers (left) and fluttering ribbons on cattle returning from Austrian pastures show the film's original clarity in a 1938 engraving.



a firm ban on liquor, beer, wine, tobacco, and patent medicine advertisements. The magazine even then was widely used in schools. Also, I decided it would benefit both advertisers and readers if ads were printed separately from pictures and text.

Incidentally, these rules still apply. Our advertising philosophy is unchanged.

Ishbel Ross, writing 25 years ago in the old *Scribner's Magazine*, put it this way:

"Dr. Grosvenor once said that he would take his readers around the world and that he would take them

Slow Autochrome limited photographers to still subjects such as this posed Greenland girl.



First woman to fly alone across the Atlantic, Amelia Earhart smilingly acknowledges cheers of the crowd on touchdown at Londonderry, Northern Ireland, May 21, 1932. Reporting to the Society a month later, Miss Earhart said, "I really was afraid that an Irishman would shoot me as I stepped out of the plane, thinking that I was just a smart aleck from some big town come down to scare the cattle."



first class. He has done it and, most remarkable of all, he has done it without letting his fireside travelers have a drink, a smoke, or a bicarbonate of soda."

Solvent Society Sponsors Research

In 1907, with the greatest satisfaction, I advised the Board that our receipts permitted the Society to begin annual grants for research, and I recommended a subscription of \$1,000 toward the cost of Comdr. Robert E. Peary's final assault on the North Pole. This was the first grant by the Society from its own resources for the express purpose of exploration.

Since then the Society has sponsored more than 200 expeditions and research projects.*

Compared to the \$1,000,000 in research grants, public service funds, and educational subsidies authorized by our Board of Trustees in 1962, the aid to Peary may seem insignificant, but it was a vital first step. We had kept faith with the thousands of loyal members who believed in our non-profit objectives.

In 1906, a remarkable amateur photographer, George Shiras, 3d, walked into my office with a box full of magnificent flashlight photographs of wild animals. Mr. Shiras, a former Congressman from

*See "73 Years Exploring Earth, Sea, and Sky," by Melvin M. Payne, NATIONAL GEOGRAPHIC, January, 1963.



I welcome Miss Earhart to Washington in June, 1932, for a presentation of the Special Gold Medal (page 582). She was the first woman so honored by the Society.



ROBERT W. ADVERTOR

Sunrise on the summit of Japan's Mount Fuji climaxed our predawn climb in August, 1928. Our 17-year-old-daughter Carol (right), now Mrs. Walter Kendall Myers, and K. Sakamoto (left), the *Geographic's* Japanese photographer, accompanied us. Chief priest (center) of the sacred peak's crowning temple made us welcome.

Our ascent of the 12,388-foot mountain began on the previous day's dawn when we mounted horses to ride to the 10,000-foot 7th station, our overnight stop. At each way station, officials marked our staffs with a special brand. At nightfall we bedded down with 100 other pilgrims on the floor of a rustic inn and slept to the music of tinkling bells as climbers passed up the trail in the darkness.

We woke to bitter cold and a sky brilliant with stars. I had warned my wife and daughter to dress warmly, but it had been so hot at Fuji's foot, they ignored my advice. Unknown to them, I had packed my knapsack with spare sweaters, shirts, and socks. Now I pulled out the extra clothing, and they gratefully bundled up for the final climb.

Here (left), Elsie and I pause as the sun's first rays strike the trail. Coming down, we sat on gunny sacks and slid, tobogganlike, on the soft volcanic ash.



R. W. ADVERTOR

Snow-capped Mount Fuji wore a wreath of clouds when my son Melville photographed it on a round-the-world trip in 1959; Lake Ashino gleams in foreground.

Pennsylvania, had invented the technique for taking such pictures; his work had won medals and diplomas at expositions in Paris (1900) and St. Louis (1904).

With mounting excitement I sorted the photographs into two piles, one towering, the other small. Mr. Shiras had been able to interest a leading New York publication in only three of his pictures, so he was astounded when told I intended to print every photograph in the large pile. And I did—74 of them on 50 pages with only four pages of text, in the July issue (pages 526-7).

When these extraordinary pictures of wildlife appeared, letters poured in demanding more natural history. But two distinguished geographers on the Board resigned, stating emphatically that "wandering off into nature is not geography." They also criticized me for "turning the magazine into a picture book."

All other members of the Board encouraged and supported me. The Society owes much to those men. Their help was particularly important during the years when I was experi-

menting with the contents of the magazine. Without such backing, our plans for a great Society would have faded.

I recall two of these early Board members with special gratitude: John Joy Edson, our Treasurer, a prominent banker who had been Chairman of President McKinley's 1901 Inaugural Committee, and the previously mentioned O. P. Austin, our Secretary. These two influential men, both of whom served the Society without pay for 30 years, became my staunch friends.

My heart bids me pay warm tribute also to 14 able, farsighted men, none now living, who served on the Society's Board of Managers during the critical years 1901 to 1910. Success would have been impossible without the patience, understanding, and loyal support of Alexander Graham Bell; Charles J. Bell,* President, American Security and Trust Company; Henry F. Blount, banker; Colby M. Chester, Rear Admiral, U. S. Navy; Fred-

*Indicates a founder of the National Geographic Society.





Elsie in Peking strolls through the marbled Forbidden City, where China's Manchu emperors once reigned. Our 1937 visit was part of a lifetime program of seeing at first hand every part of the earth. And we did, indeed, succeed in traveling extensively on nearly all the continents. My wife was always kind and patient enough to stand or walk before my camera so as to give the photographs a bit of life.

erick V. Coville, botanist; David Fairchild, botanist; Henry Gannett,* Chief Geographer, U. S. Geological Survey; G. K. Gilbert,* Chief Geologist, U. S. Geological Survey; Daniel C. Gilman, President, Johns Hopkins University; A. W. Greely,* Major General, U. S. Army; Rudolph Kauffmann, Managing Editor, *Washington Evening Star*; C. Hart Merriam,* Chief, U. S. Biological Survey; O. H. Tittmann,* Superintendent, U. S. Coast and Geodetic Survey; and John M. Wilson, Brigadier General, U. S. Army.

In April of 1907 I filled 24 pages with another series of photographs, "Women and Children of the East," and it made a great hit. The next issue showed immigrants landing in America. Still in the picturesque costumes of their homelands, they look surprised and a bit apprehensive at the wonder that was New York even then.

In this period American Consul General to

Smyrna Ernest L. Harris persuaded me to run three articles by him on buried cities of Asia Minor, illustrated with his own photographs. I was doubtful concerning the reaction of members, but they expressed overwhelming approval, and archeology remains one of our most popular subjects.

First Color Published in 1910

SOON NATIONAL GEOGRAPHIC became widely known as a magazine that published photographs in unprecedented number. But your journal underwent an even more striking change when I introduced color illustrations. Frank Luther Mott, in Volume IV of his Pulitzer Prize-winning work, *A History of American Magazines*, says color "transformed the GEOGRAPHIC into a kind of periodical never before known."

Our first series of color illustrations, "Scenes in Korea and China," appeared in November,

1910. Twenty-four pages long, it was the largest collection of photographs ever published in color in a magazine.

These pictures were contributed by a wealthy and much-traveled member of the Society, William Wisner Chapin of Rochester, New York. Color film had not yet been perfected, so he took careful notes on costumes and backgrounds and had a Japanese artist color his photographs (pages 538-9).

Other color series by Mr. Chapin followed. Since each color page cost four times as much as a black-and-white page to reproduce, I was tempted to print the pictures a few at a time throughout the year to spread the cost. But I

decided this would spoil the effect. I always used Mr. Chapin's beautiful photographs as a full series of 16 to 24 pages of color, printing one such series each year until membership response enabled me to do it more often.

By 1910 income was sufficient for me to start a photographic laboratory. Soon the NATIONAL GEOGRAPHIC began pioneering in the use of color photographs made by the Lumière Autochrome process and later by other processes—Agfacolor, Finlay, Dufay (pages 551, 564, and 567). As each improvement became available, the magazine put it to superlative use.

All but the Dufay process involved the use

Canals of China and their bustling life proved intriguing. Unfortunately I lost my notes giving the location of this waterway. Perhaps some old China hands among our members will recognize the scene and help me to identify it.

575



of heavy, cumbersome, fragile glass plates. W. Robert Moore, Chief of the Foreign Editorial Staff, recalls taking 150 pounds of Finlay glass plates to China in 1931. Camera and holders added another 50 pounds. Mr. Moore led the staff cheering when color film in rolls—the first 35-millimeter Eastman Kodachrome—was introduced in 1936. This easily portable film, with its faster emulsion, removed the shackles from our photographers by permitting them to make dramatic action pictures in color.

In addition to color, I introduced the use of large photographs or paintings as supplements. With the June, 1911, issue, we included a panoramic view of the Canadian Rockies, more than eight feet long and seven inches high, made by Charles D. Walcott, Secretary of the Smithsonian Institution. It remains to this day one of the most marvelous mountain photographs ever taken.

Map Department Founded in 1915

At first our large supplement maps were obtained from commercial cartographers, but by 1915 I was able to organize the Society's own Cartographic Department. Through the years this excellent group has produced and distributed nearly 290 million 10- and 11-color maps, while winning world renown for the quality of its work.

During World War II a number of the Society's maps were enlarged and reproduced in great quantity by the Armed Forces. Indeed, the Commander in Chief himself, Franklin D. Roosevelt, followed the course of the war on National Geographic maps mounted on rollers in a cabinet just behind his desk.

Shortly after Pearl Harbor, the President had requested a map showing a town near Singapore, then under Japanese attack. I sent it to him, and the next day dispatched the special cabinet to the White House. Within an hour it was behind his desk, and two days later he wrote me his thanks for "one of the most convenient and complete collections that I have ever seen."

Two years later, at the President's request, we made a duplicate map cabinet, and President Roosevelt gave it to Winston Churchill as a Christmas gift at their conference in Cairo in 1943. "I am perfectly delighted with it," Mr. Roosevelt wrote me. "I know the Prime Minister will find it as useful as I have found mine."

After the war, when Mr. Churchill visited

the United States, I wrote and asked him if he would care to return the cabinet to the Society for preservation "because of its association with the greatest Englishman and greatest American of our time." I assured him we would replace it with a newer one filled with later maps.

In his graceful reply, Mr. Churchill said he appreciated the Society's desire to preserve this historic cabinet, but added: "I feel, however, that as this was a gift from my true and devoted friend, I wish to keep it with my family possessions. I hope you will understand my sentiments."

Planning the contents of each issue held a special fascination for me. With the whole world to choose from, selection was exciting always, never a bore. What nation, city, remote region shall we portray in this issue? How I savored and enjoyed each intriguing possibility! But perhaps I derived greatest pleasure from bringing our members interesting subjects that were neglected or overlooked by other magazines.

The June, 1913, issue, for example, contained full-color portraits of 50 common birds from paintings by Louis Agassiz Fuertes. My twin brother Edwin had told me that the U. S. Department of Agriculture's edition of 100,000 copies of a circular, *Fifty Common Birds of Farm and Orchard*, had been exhausted in two weeks and that the department was receiving thousands of applications for more, which it could not supply. So I borrowed the color plates and republished the bulletin as an article, of course with credit.

This proved to be one of the most enduringly popular features ever published in the magazine. Later I engaged Mr. Fuertes and other artists to paint bird portraits for us.

Eisenhower Gift Wins a Colleague

Many of these paintings, with their accompanying articles, were assembled in the Society's two-volume *The Book of Birds*. This work proved extremely popular, but I was somewhat mystified when I received an urgent cablegram request for a set from Gen. Dwight D. Eisenhower during the difficult days of World War II.

Of course I forwarded the books at once to the general in North Africa, and he duly acknowledged their receipt. But not until after the war did he have opportunity to explain the incident to me.

General Eisenhower liked to be on a first-



We hiked along the top of China's Great Wall on a pathway wide enough for two automobiles. Elsie (center) rested from time to time in one of the crenels while I took pictures of the scenery around Nan-kow Pass. Like the French Maginot Line, this barricade did not work, the Mongols pierced it at will.



PHOTOGRAPH BY GUY WATSON FOR NATIONAL GEOGRAPHIC SOCIETY

name basis with the military leaders of our Allies, but he had never ventured to penetrate the British reserve of Gen. Sir Alan F. Brooke, Chief of the Imperial General Staff. Sir Alan (later Lord Alanbrooke) was an avid bird watcher and photographer, and one day he confided to General Eisenhower that he had been trying unsuccessfully to obtain our *Book of Birds*.

The general immediately dispatched his cablegram. When the volumes arrived, Sir Alan's reserve was breached. From that moment on, it was Alan and Ike.

World's Peoples Shown in Color

Not only birds but the whole range of nature appeared in the growing magazine's increasingly colorful pages—from the ant to the elephant, and from the tiny reef-building coral polyps to the whales.

NATIONAL GEOGRAPHIC has also brought members many penetrating and valuable ethnographic studies. Two early articles that established our high standards in this field were Dean C. Worcester's masterly "Non-Christian Peoples of the Philippine Islands," illustrated with 32 pages of color photographs, in the November, 1913, issue, and Dr. Edwin A. Grosvenor's memorable "Races of Eu-



Sailing a felucca on the Nile was an adventure that came near the end of a three-month, 30,000-mile safari from Kano to Cape Town to Cairo. A timeless transport on the river, the felucca handled easily, I discovered.

Riding an ostrich, Elsie found, differs somewhat from riding a horse. She straddles the bird on a South African farm. Although my wife had read hundreds of manuscripts and examined thousands of photographs, she never wrote a magazine article before our trip. Her two "Safari" articles in 1953 and 1954 were notable contributions.

"Take our picture," Nigerians say, and I pause on a Kano street to oblige.



ELSI HARRIS, PT. GARDEN, NIGERIA, AND N. JERRY, KANO, NIGERIA.





STEWART N. STEWART, NATIONAL GEOGRAPHIC STAFF

I get a bird's-eye view of the U. S. A. from a B-29 bombardier's seat while en route to Rapid City, South Dakota, for the 10th anniversary of the stratosphere flight of the balloon *Explorer II*. Maj. Gen. Curtis E. LeMay (left), now Chief of Staff of the U. S. Air Force and a Society Trustee, flew the propeller-driven plane low so that we could enjoy the scenery, a rare opportunity in these days of jets.



STEWART N. STEWART

Flying in an Air Force C-54, I followed Peary to the Pole in May, 1953. Here I interview Lt. Col. Charles R. Meyer, a veteran of 32 polar flights.

Glassy wilderness of ice surrounds the North Pole. Luckily, a large floe marked 90° North at the moment of my photograph. Later I carefully measured to pinpoint it. By shooting from all angles, I was the first to locate the Pole from the air by photographs.



rope," which filled the December, 1918, issue.

Often the GEOGRAPHIC has published definitive articles which have performed a distinct public service. President Woodrow Wilson so appreciated the magazine's first flag issue (October, 1917) that he sent me his congratulations "on the thoroughness and intelligence with which the work has been done. It constitutes," he wrote, "a very valuable document indeed."

The second flag issue, in September, 1934, reproduced 808 of the world's flags and emblems, the most comprehensive collection ever published in color. A truly vast undertaking was the publication during World War II of *Insignia and Decorations of the U. S. Armed Forces*.

Through the years many famous and distinguished men have contributed personal narratives to your journal. Here are the travel observations of former Presidents, foreign statesmen, men of letters, prominent scientists, aviation pioneers.

Long ago I evolved an editorial policy to govern these many and varied contributions. One principle was absolute accuracy. Others required that each article be of permanent value and avoid partisanship and controversy. I also decided that no derogatory material would be printed about any country or people. Too often in my long lifetime have I seen unfair and erroneous statements made about other nations in the name of "objective reporting" or "constructive criticism." The GEOGRAPHIC has always dealt in facts, not bias, rumor, or prejudice.

Society Scores Firsts in Color

In photography—and particularly in the use of color—we have led the way from the first. Other magazines maintained a stolid indifference to color illustrations for 20 years after your journal pioneered in their use.

Perhaps this was due to the difficulty of early color photo processes. To master each process, the Society sent its technicians to photographic research laboratories in England, France, Germany, and to the Eastman Kodak headquarters in Rochester, New York. As a result, NATIONAL GEOGRAPHIC men have scored many notable firsts in color photography.

The late Charles Martin made the first successful natural-color photographs beneath the sea in 1926. He hypersensitized Autochrome plates, then devised a means of lighting the

water for a diver with a camera. There were no flash bulbs in those days, so Mr. Martin rigged a raft containing a pound of flash powder. The undersea camera triggered the powder, and a reflector bounced the blinding flash down into the water.

It was extremely dangerous. Premature ignition of a full pound of flash powder would have been as lethal as a bomb.

Dirigibles Drifted for Historic Pictures

Four years later, in 1930, Melville Bell Grosvenor made the first published natural-color photographs from the air. He used the Finlay process, with a faster emulsion speed than Autochrome. An airplane's vibration and speed would have spoiled the pictures, so Melville flew in dirigibles over Washington, D. C., New York City, and Asbury Park, New Jersey, to make his historic photographs. At his signal the dirigibles cut their engines.

"Frequently the photographic voyages consisted of shadow-chasing," your President and Editor recalls. "Sometimes, after scurrying over Washington at express-train speed, the ship would arrive at the desired spot just in time to have a wisp of cloud form between the scene and the sun."

As the journal of a nonprofit educational and scientific association, the magazine has no stockholders, no profits. All funds derived from its publication go into its work of increasing and diffusing geographic knowledge and improving its facilities. This policy has contributed greatly to the magazine's loyal support by members.

Indeed, you, the members, own the National Geographic Society. It is directed and supervised in your behalf by a Board of Trustees of eminent Americans.

The highest officials of the Nation have honored your Society by participation in its affairs. Presidents Theodore Roosevelt, William Howard Taft, Woodrow Wilson, Calvin Coolidge, and Herbert Hoover, and Vice Presidents Charles W. Fairbanks and Lyndon B. Johnson have presented National Geographic Society medals to prominent explorers at meetings of the Society. Coolidge and Hoover, as well as four other Presidents—Franklin D. Roosevelt, Harry S. Truman, Dwight D. Eisenhower, and John F. Kennedy—have awarded medals in the Society's behalf at special White House functions.

Several of these men participated in the Society's work after their White House ten-



GILBERT S. DRIVENDER COLLECTION

Theodore Roosevelt and I arrive at the Smithsonian Institution to view an exhibit of his African animals in May of 1914.



In the garden of the White House, President Herbert Hoover gives the Special Gold Medal to Amelia Earhart in a ceremony before motion-picture cameras.

Mrs. Hoover (right) was a long-time member of the Society; in the January, 1903, magazine we printed her name and London address in a list of our members, who then totaled 7,433. As our membership grew, this practice had to be discontinued.

In the office of President Franklin D. Roosevelt, Lincoln Ellsworth accepts the Hubbard Medal on April 15, 1936, for "heroic and extraordinary achievements in Arctic and Antarctic exploration, 1925 to 1936," as the citation reads. Mrs. Ellsworth and I flank the explorer. John Oliver La Gorce, who succeeded me as Editor and President May 5, 1954, stands at right.

In giving Mr. Ellsworth the award, President Roosevelt said, "This occasion . . . is a reminder that the world still holds high adventure for those who have the spirit to seek it."



ARTHUR L. BRYEN/II, NATIONAL GEOGRAPHIC STAFF

HARRY S. TRUMAN



33d President, Harry S. Truman gives Gen. H. H. (Hap) Arnold the Hubbard Medal for "contributions to . . . aviation"; November 16, 1945.

Society's gift of maps brings thanks from President Eisenhower. Thomas W. McKnew, now Vice Chairman of the Board of Trustees, appears at left. Melville Bell Grosvenor, who stands behind the map case, has served as President of the Society and Editor of its magazine since 1957.

ARTHUR L. BRYEN/II





APOLLO/GETTY IMAGES; GUY LAWRENCE/ISTOCK

We stand together still after 63 years of partnership. Someone asked me if Mrs. Grosvenor kept notes during our work and travel. No, but she kept something better; she kept memories. Even more important, she made memories—the best of my life.

ures. Mr. Taft, my cousin, and Mr. Coolidge, a worthy opponent at handball in our student days at Amherst, served on the Society's Board of Trustees. Both appeared on the Society's annual lecture program, as did Theodore Roosevelt.

Mr. Taft Mislays His Spectacles

Mr. Taft addressed the Society in Washington no less than ten times. I recall one occasion when he arose to speak, placed his manuscript on the rostrum, and then began a puzzled search through his pockets. Finally he began to chuckle, then laugh, and he had a booming laugh in keeping with his formidable size.

"I've lost my spectacles," he announced, "and I can't read my speech. Perhaps someone in the audience might lend me a pair that would be right for my eyes."

With the audience in a merry, uncontrollable uproar, we passed around hats and collected 50 pairs of spectacles. Mr. Taft, still shaking with laughter, tried them on until he found a pair that suited him. The remaining spectacles were claimed by their owners from a table near the speaker's dais. Mr. Taft then held his audience with one of the best lectures I ever heard him give.

In 1910 Theodore Roosevelt thrilled Society members with an account of his adventures on an African safari. But when he addressed members in 1914 shortly after returning, tired and sick, from explorations in South America, he could scarcely speak above a whisper. After presenting Mr. Roosevelt, I sat in the front row and could hear only part of what he said. Yet, with the courage so typical of him, he completed his speech—and not a person in the audience of 5,000 left the hall.

Mr. Wilson Objects to Flash Powder

President William McKinley, an honorary member of the Society, was one of the first of many notable men Dr. Bell introduced me to in Washington. Later it became a tradition among occupants of the White House to attend annual banquets given by the Society for its Washington membership. Our growing roster eventually made such functions impractical, but they were gala news events in their day.

I recall that Woodrow Wilson, who attended one of our banquets and presented the Special Gold Medal to Col. George W. Goethals, strictly forbade any photography, saying the smoke of the flash powder bothered his nose.

As Trustees, ex-Presidents Taft and Coolidge were no mere honorary figureheads. The National Geographic Society's Board of Trustees has always been a harmonious working group. It is composed of men distinguished for achievement in Government or military service, science, exploration, banking, or industry. These 24 busy men have many demands upon their time, but the average attendance at our Board meetings is gratifyingly high.

To these men, and to the many who preceded them, I am deeply indebted for sage advice and unswerving support. But my personal debt is equally great to the Society's able staff, which has grown in my lifetime from a single paid employee to more than 1,450 men and women. To many I have paid individual tribute in my detailed history of the Society and its magazine.

From 1,000 to 3½ Million in a Lifetime

My heartfelt gratitude goes, too, to the thousands of persons who have contributed articles and illustrations to the magazine; and the millions of members who have believed wholeheartedly and enthusiastically in the educational purposes of the National Geographic Society and have strengthened the Society by obtaining new members.

In my own lifetime I have seen a small educational and scientific society grow into a great world force for knowledge and understanding. In the nine years since I retired as President and Editor, Elsie and I have rejoiced at the great and continuing progress of the Society under the able leadership of Vice President and Treasurer Robert V. Fleming, Executive Vice Presidents Thomas W. McKnew and Melvin M. Payne, Associate Editor and Vice President Frederick G. Vosburgh, and President and Editor Melville Bell Grosvenor. Members numbered 2,041,000 when I left my editorial desk. Today the figure is a great and gratifying 3,500,000.

As I look back upon the long vista of the past, it hardly seems possible that 66 years have come and gone since a boy and girl strolled hand in hand through Alexander Graham Bell's garden, dreaming bright dreams and forging a lifelong devotion. Though the years have fled swiftly, they have been wonderfully kind to Mrs. Grosvenor and me. We gratefully and humbly praise Him from Whom all blessings flow.

THE END





Threatened Treasures of the Nile

The Aswân High Dam brings hope for hungry millions, but its rising waters will imperil Nubia's ancient way of life and a priceless heritage of antiquities

By GEORG GERSTER, Ph.D.

Photographs by the author

“**W**HAT ELSE IS LEFT to us,” Hassan exclaimed, “but to drown the past in order to save the future?” Beauty must perish, my friend was saying, so that life itself might be better.

For the moment his blunt words hung in the air. Hassan, a young Egyptian construction supervisor, seemed to be thinking of ancient temples and tombs, of fortresses, statues, and inscriptions—the heritage of thousands of years of human suffering and triumph in the Nile Valley. But quickly he returned to the present, the threshold of the future.

We stood on a cliff above the Nile, four miles south of the old Aswân Dam. Drills rattled against granite, and the dipper buckets of gigantic excavators made crunching noises. Below us, dump trucks poured rubble into the river.

We were watching the construction of the Sadd el Aali, the Aswân High Dam across the Nile. This was an early stage—the excavation of a diversion canal and the filling of coffer dams, to keep the building site dry. Hassan, trained in Texas, was eager to explain what a stupendous achievement the Sadd el Aali will be

Gigantic statues of Ramesses II at Abu Simbil, objects of concern to archeologists and art lovers the world over, typify monuments that must be moved before Nile waters reach their full height behind Aswân—or be forever lost.

when it is completed sometime in 1968. It will tower 364 feet above the bed of the Nile, he said, and its crest will be more than two miles long. Pressing against the High Dam will be 127 million acre-feet of water, forming a reservoir more than 300 miles in length (see the Atlas Map, *Africa: Countries of the Nile*, with this issue; also the map on pages 594-5).

"Granted," Hassan said, "it will not be the highest dam in the world, or the longest. And the reservoir will not be the greatest lake created by man. But has a more productive dam ever been built? The Sadd el Aali should repay construction costs in less than two years—with great advantages to shipping, electric power for new industries, and protection against floods."

Above all, the High Dam will be a wall against hunger. Ninety-nine percent of all Egyptians, almost 27 million of them, live on less than 4 percent of the land. Every year adds half a million people.

"Here we are like ants on a stick of candy," Hassan declared. "But the Sadd el Aali will help set the table for everybody. It will increase by a third the amount of land that can be irrigated the year round."

Still bubbling with statistics and enthusiasm, Hassan impressed on me the difference between the new and old Aswān dams.

The old dam, begun in 1898 and completed in 1902, has twice been improved by making it higher. Normally, its 174-foot height equalizes the high water of summer and the low water of winter. But the Nile's flow varies not only seasonally but from one year to the next. The record annual high, in 1878-9, was 5,333 billion cubic feet; the record low was 1,483 billion, in 1913-14. Both spelled catastrophe.

The very size of Sadd el Aali will curb the lethal whims of the river. In years of heavy flow, the new reservoir will store the excess

water against dry years to come. Thus the High Dam is designed to dispel forever the Biblical Pharaoh's dream of the seven fat and the seven lean years.

To appreciate the impact of the High Dam, one must become acquainted with the Nile Valley's geography, history, and way of life. A good introduction, I found, is a boat ride south of Aswān, upriver in Nubia. The Nile burrows through sandstone; barriers of hard, crystalline rock create dangerous rapids.

A handful of these sills of granite and diorite are counted by geographers as cataracts of the Nile. Many more go unnamed and unnumbered, and the Second Cataract is merely a prelude to a 100-mile-long valley full of rocks, the unique *Batu el Hagar*, or "Belly of Stones"—a chaos of hundreds of shiny-black little islands.

Nubia Fights Encroaching Sands

This is Nubia—a boundaryless area stretching from the Nile's First Cataract, in the United Arab Republic, to midway between the Third and Fourth Cataracts, in the Republic of the Sudan; it is Nubia because the people speak Nubian.

In much of Nubia the Nile is squeezed: From the east by mountains, which the Eastern and Nubian Deserts push to the very edge of the river; from the other side by the sands of the Libyan Desert. But fertile land is not entirely lacking. Fields and palm groves form narrow strips of green, irrigated by well-sweeps and by creaking water wheels. And yet man's toil has earned him no dominion over this land. The desert reclaims it at will.

Since my first trip several years ago, I have returned frequently—alone, or with my wife Isabel. Sometimes I take passage on the express steamer or the mail boat that ply between the First and Second Cataract. Or I charter the dilapidated river boat *Hurriya*.

In winter, after the inundation, the storage lake of the old dam is full and Nubia is lined with half-drowned palms, mimosas, and tamarisks (pages 620-21). The Nile flows sluggishly and becomes so broad that not even the braying of a Nubian donkey carries from shore to shore.

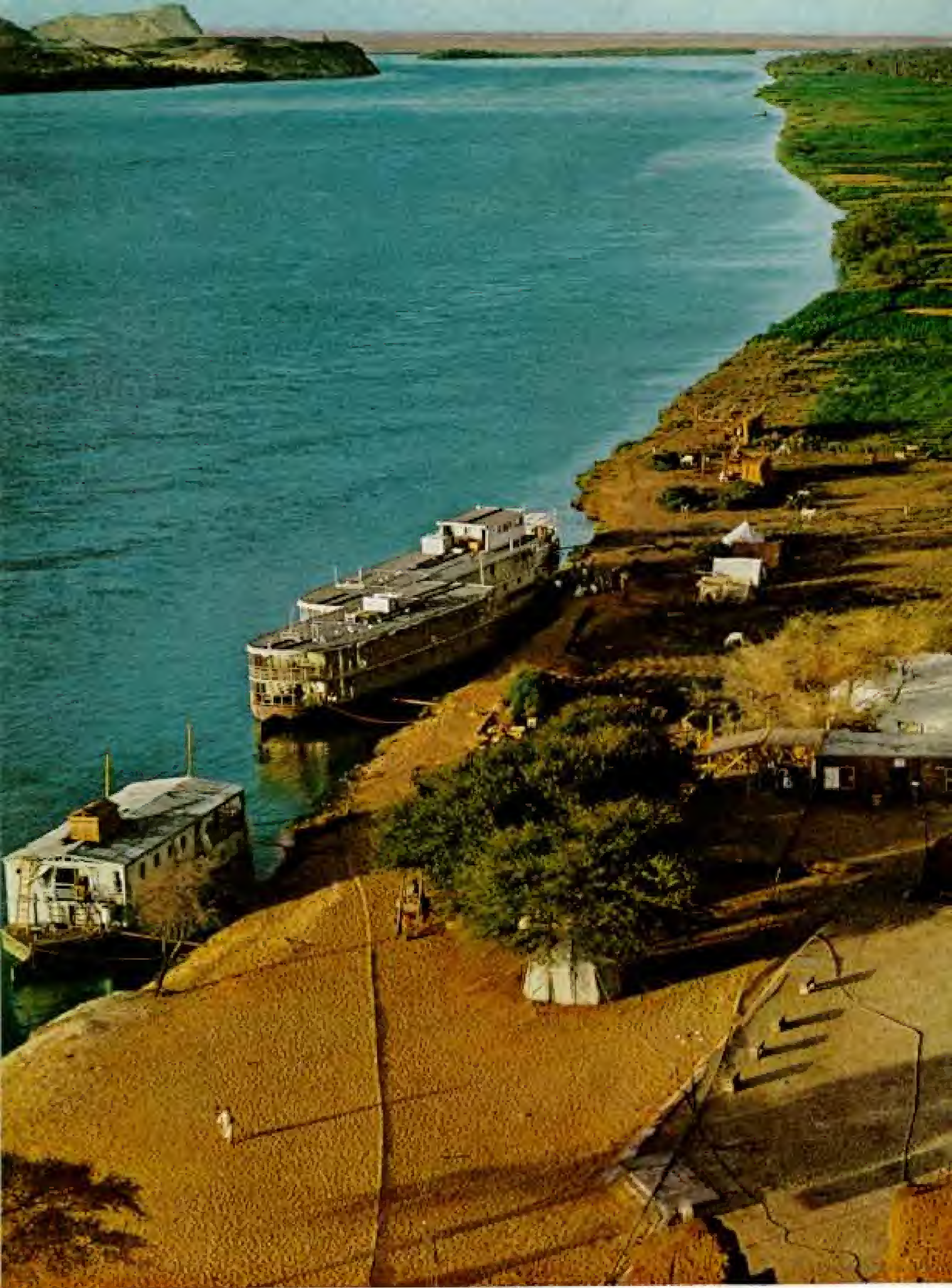
In summer the reservoir is emptied. The river, so laden with sediment that its color reminds me of melted chocolate, recedes to its bed. In some places, newly exposed reefs

The Author: After graduating from Zürich University, Swiss explorer Georg Gerster gave up philology to become a writer-photographer specializing in the Arab world. His books include *Sahara: Desert of Destiny*, published in the United States in 1961.

The written language of ancient Egypt, like the Arabic written by its present-day inhabitants, used no vowels; individual authorities insert them according to probability. In these pages, Dr. Gerster uses spellings recommended by John D. Cooney, noted Egyptologist of the Brooklyn Museum.

Jeweled women sing on their way to a Nubian festival. When the Nile forces Nubians to move to new settlements downriver from Aswān, they will leave behind not only villages but the centuries-old way of life preserved by Nubia's isolation.





**Cliff-hewn Colossi Stare Across the Nile
as Engineers Study How to Move Them**

Aswân High Dam would send the Nile rolling 170 feet above the six-story-high images at Abu Simbil. To save them, UNESCO has approved a plan of the United Arab Republic, prepared by



ILLUSTRATION BY NATIONAL GEOGRAPHIC SOCIETY

Swedish engineers, to cut the statues and temples into sections and reassemble them in a natural setting on the plateau above. The United States has provisionally offered to pay one-third of the cost.

One of the heads fell to the ground centuries ago. The rising sun strikes every morning between the central figures; twice a year, in spring and fall, it fully illumines Ramesses' statue 200 feet inside.

and sandbanks stop traffic altogether. But now more than seasonal changes are in prospect. The water impounded by the old Aswān Dam rises to 396 feet above sea level; it forms a narrow lake stretching more than 200 miles to the south, all the way to the Egyptian-Sudanese border. Within the next decade or so, as the reservoir of the High Dam fills (maximum height—nearly 600 feet above sea level), the lake will widen and creep southward until it has swallowed the Second Cataract, and finally the whole belly of stones.

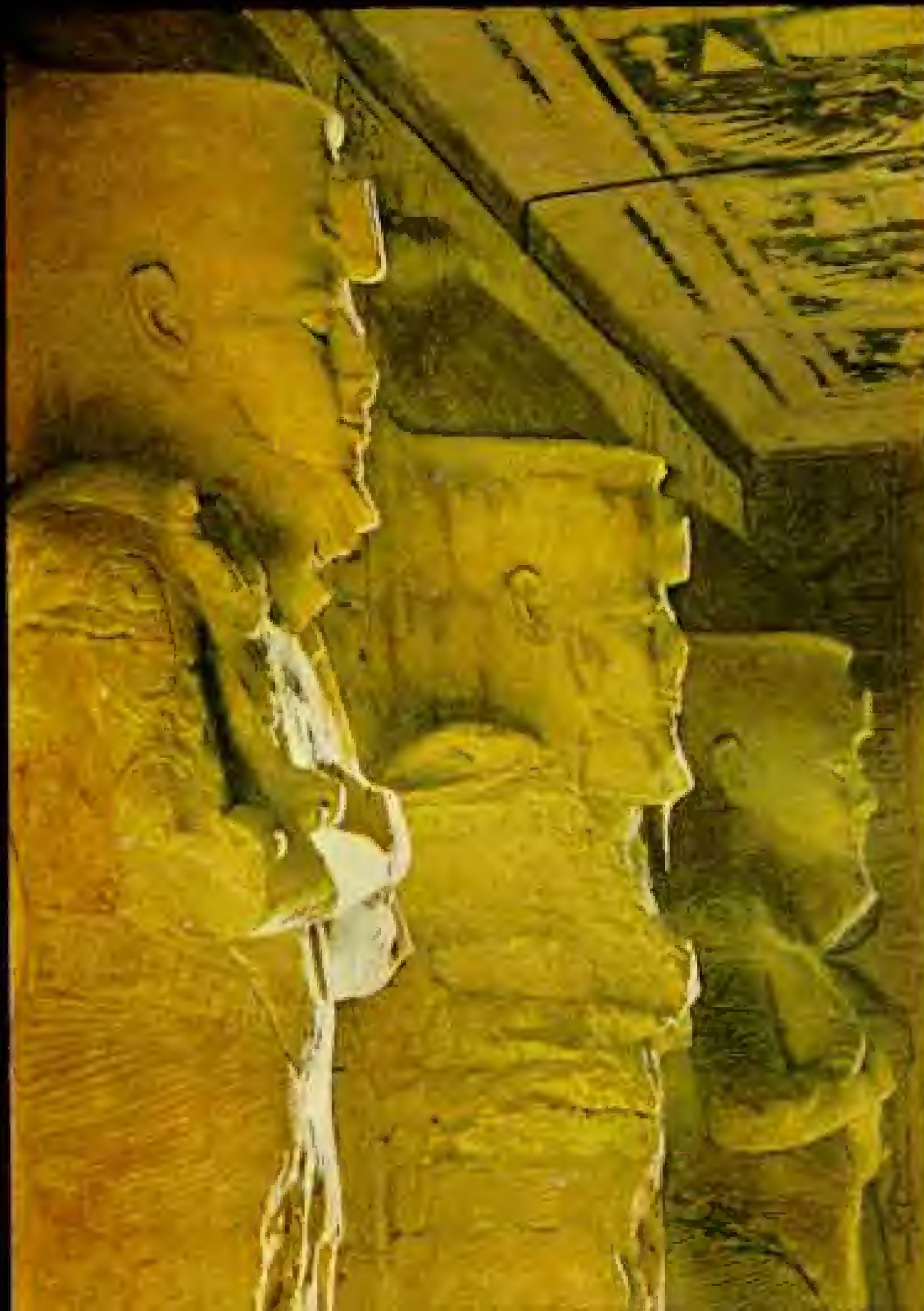
For a time it appeared certain that the precious storage water would also swallow the world's archeological treasures here. For Nubia is a gigantic outdoor museum, where temples and fortresses and cemeteries along the Nile are the legacy of a parade of cul-

tures harking back to the dawn of history.

Five thousand years ago, Egyptian Pharaohs left their mark on Nubia. Some two thousand years later, the Egyptian heritage was Africanized by the Nubians. For centuries, the Ptolemaic Greeks, and especially the Romans, helped shape Nubia's destinies, only to give way as a Christian culture gradually came in. The Middle Ages saw the Arabic influence, modern times the Turkish.

In all, some two dozen salvageable monuments of these civilizations, and hundreds of other antiquities, survive in the threatened part of Nubia (map, pages 594-5).

Hoping to save them from the encroaching waters, the United Arab Republic and the Sudan turned for help to UNESCO, the United Nations Educational, Scientific and Cultural



Hewn from living rock, 30-foot statues of Ramesses II dominate the interior of Abu Simbil.

Cow ears stick out from wig of Hathor, goddess of love, in a smaller temple that Ramesses II built for his beloved queen, Nefertari.



COBACHROMES BY DAVID S. BOSTER (LEFT), AND GÖRG GERTNER © N.G.S.

Organization. Thereupon, UNESCO appealed to all member states, and to private organizations and individuals as well, to assist in saving these mighty mementos of man's past.

Since then, a gigantic international salvage operation has sprung up, and I have visited Nubia more than half a dozen times to observe its progress. How eagerly I always looked forward to that poor, mysterious land. And my expectations were never more intense than at each first glimpse of Philae.

Every traveler who has held an Egyptian pound note in his hand is acquainted with Philae's landmarks, the Kiosk of the Emperor Trajan and the Temple of Isis. But few have come really close to this splendid preserve of Ptolemaic and Roman temples, barely 500 yards long and 160 yards wide; still fewer

have set foot on it. For Philae is an island in the Nile, and most of the year it is covered almost entirely by the waters held by the old Aswân Dam.

Only when the Nubian summer reaches its peak does Philae emerge from the flood. And only when its covering of mud has dried and cracked does it invite the visitor to walk with wonder through the colonnades that lead from the landing place to the great Temple of Isis (pages 598-9). In all Nubia there is no more harmonious combination of architecture and scenery. But summer's end brings rising waters, and once again Philae sinks beneath the Nile.

All this may change. After the High Dam is completed—and contingent upon a proposed six-million-dollar contribution by the



H3. EXTRACTED BY GEORGE GERSTER © NATIONAL GEOGRAPHIC SOCIETY

DIAMOND-TIPPED DRILLS of Swedish engineers disturb the millenniums-old peace of a chamber deep in the cliff at Abu Simbil. Delicate instruments probing the soft sandstone will measure internal stresses that might complicate salvage operations. On the wall, Ramesses kneels before a seated deity.

United States—three dikes will be constructed to protect the monuments. In a decade, visitors may stroll once more, as perhaps Cleopatra did, under Philae's acacias and palms.

I found the roof of the pylon of the Isis temple an ideal place for contemplating this ancient highway that is the Nile. Beside me sat Dr. François Daumas, a French Egyptologist. We spoke of Nubia's long past; one could imagine the spectacle of Pharaoh's soldiers pressing through the valley.

Even in the very early days, Nubia linked the Mediterranean with Africa south of the Sahara. And as with many such corridors, it was a battleground. There is the famous report of a campaign under the Egyptian King Snefru 4,600 years ago: "The land of Nubia hacked to pieces; 7,000 men and women and 200,000 cattle and sheep led away."

In quieter times, Egyptians exploited Nubia's mines and quarries. In the Turin museum, Dr. Daumas and I recalled, is a papyrus with the location of gold mines—believed to

be those in the Wādi el 'Allāqi—sketched on it. It is one of the oldest maps in existence.

Traders passed on their way south with honey, wheat, and cloth, and returned with ebony, panther skins, ivory—and once, according to an old record, with a pygmy.

Eventually, Nubians took power over all Egypt, ruling from 750 to 656 B.C. as the Pharaohs of the XXVth Dynasty. Then Greek and Roman conquerors swept the Nile Valley. In time, the Roman garrisons were pressed by the Blemmyes, a nomadic people of the Eastern Desert, and other tribes. For centuries the Romans struggled against them.

Tradition has it that Christianity reached Alexandria in the middle of the first century; the new religion gradually replaced the old Egyptian gods. Islam conquered Egypt in the year 641, but Christian kingdoms lingered in southern Nubia for another 800 years. Nubia is a place where great changes have always come slowly; where neither the three Nubian dialects nor the Arab settlements scattered through Nubia have altered their identity; where time—like the Nile—has seemed to have neither beginning nor end.

Only now, as the shadow of the High Dam falls on this sunbaked land, have months and days and hours begun to matter. The time left for salvaging operations is short, and the



DRAWN BY LISA BICANTOLI
COMPILED BY DOROTHY A. NICHOLSON
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Stamp-armed figurine and foot-long drinking-glass exemplify small but important finds made by scientists of many lands who dig to save Nubia's antiquities. Cairo University team found the pottery image. Nubian Expedition of Chicago's Oriental Institute, working with Cairo's Swiss Institute, discovered the glass.

PHOTOGRAPHS BY W. H. RAY

task is tremendous. In the Sudan, the temple at Bubon has been dismantled and reconstructed at the capital, Khartoum. Temples at Kumma and Semna West will be moved out of danger. In Egyptian Nubia, many of the shrines will be relocated on the shores of the new storage lake.

Indeed, five temples—Dandūr, Dābūd, Tifa, El Dirr, and Ellesīn—have been designated as gifts to countries making donations for the salvage work. Already the stones of some of these temples lie on Elephantine Island, opposite Aswān, awaiting shipment to nations as yet unnamed.

I can testify to the worry and the sweat that go into such operations.

In the summer of 1961, Isabel and I visited the temple of Kalābsha, one of the largest of Nubia's ancient structures (page 604). The West German Government was financing its relocation, and a team from the Egyptian Monuments Recording Center was working feverishly to complete its studies.

The man in charge, an Egyptian, congratulated us on the cool weather we picked for our arrival. Then I glimpsed a thermometer: 117° in the shade. But our host was not joking, for all that. His party had seen the temperature reach 125°.

It was high noon when I entered the temple. The walls seemed as hot as glowing coals. Although Isabel had tied cold compresses around my head and a worker followed me with a bucket of water to re-soak them, the searing heat almost overcame me.

World Comes to Abu Simbil

When I returned a year later, I saw water-borne cranes lift the first stones onto waiting barges (page 605). Altogether, some 13,000 blocks, averaging a ton apiece, journeyed down the Nile to Kalābsha's new site near the High Dam. A superhuman task, I thought, comparable to dismantling Notre Dame in Paris and rebuilding it 30 miles down the Seine.

Still, the moving of Kalābsha was a modest undertaking by comparison with what is planned to save the huge temples at Abu Simbil (pages 590-91). Rock weighing hundreds of thousands of tons must be cut from a cliff in large blocks and lifted to the plateau above if the temples are to be preserved.

Seven years ago, when I first visited Abu Simbil, I shared its orange sandbank with a crocodile. The express boat dropped me off with provisions—ten pieces of toast. A fellow passenger urged me to take his pistol. In those days, Abu Simbil was a lonely adventure.



ILLUSTRATION BY JEFFREY J. WILSON, COURTESY, EGYPTIAN MONUMENTS RECORDING CENTER



Trucks Open a Cut for Aswan's Diversion Canal

This channel, seen at day's end, will carry the Nile while the High Dam rises. Laborers on the near bank loosen rock. Across the cut, in a fog of dust, trucks lumber up a slope to dump rubble into the river. Tall towers cap drills that bore holes for high explosives; the project requires several tons daily. Russians made and operate the heavy equipment.

Umbrella shades a surveyor, who lines up a tunnel that will lead water to the power plant.

Blaze of light floods heavy machinery that rumbles through the cooler hours of night. During the day's shimmering heat, blasting throws down rock for another night's hauling. Some 23,000 men swarm in the dam site area.

THE ENLIGHTENMENT BY HERB ROSTER © N.Y.S.







On one recent visit I had to be careful not to tread on people's toes. Swedish and Yugoslav experts bustled everywhere with drills, compressors, and coiled cables. More recently, I saw tourists troop by, brought for quick visits by a hydrofoil boat on the Nile; it makes the 170-mile trip from Aswân in five hours.

Salvage Problem Challenges the World's Experts

This mammoth shrine was carved into the mountain 3,200 years ago by the best stonemasons of the Pharaoh Ramesses II. It honored the sun god Re-Harakhite and Ramesses himself, like all Pharaohs a god in the eyes of his contemporaries. A similar but smaller temple nearby was dedicated to Hathor, goddess of love, music, and the dance, and to Ramesses' wife Nefertari.

Abu Simbil is the most challenging salvage operation of them all. Engineers throughout the world submitted ingenious schemes to rescue the huge sandstone masterpiece from the rising waters. An Italian engineer proposed to lift the temples some 206 feet—the height of a 19-story building—with hydraulic jacks. A French proposal would have floated them to ground above the projected water level in immense concrete tanks.

One British plan called for enclosing the temples within a hollow pyramid. Another envisaged a thin membrane dam around the front of Abu Simbil. Elevators would lower visitors to the hollow bottom of the dam's wall for an underwater view of the temples.

All but one plan, however, proved unsatisfactory or prohibitively expensive. In the end, UNESCO, upon the recommendation of the United Arab Republic, accepted the plan of Swedish consulting engineers which calls for dismantling Abu Simbil's temples and reconstructing them on the desert plateau overlooking the present site.

Water-stained temples of Philae Island, just above the present Aswân Dam, rise forlornly from Nile mud. Each year impounded waters cover walls once gay with color. As late as the sixth century A.D., ailing pilgrims sought the Temple of Isis (right) for healing. Or-nate kiosk at left, still unfinished, rose under Roman rule. Three dikes are planned to keep the Nile's waters from submerging the island.

Cars on rails beside the road will haul away a year's deposit of silt from the channel. Donkey carts head for the landing with cargo.

Kindly Bes, Egypt's protector against evil, plays a harp on a Philae column.



Nubia preserves old ways



Bridegroom in nuptial garb watches offerings for wedding expenses accumulate at Tushka village. He or his family will repay the money piled beneath his Koran—more than \$500—as the contributors themselves marry. The groom sits outside his house to accept donations.

Woman, Baby, Basket Suggest a Totem Pole

Woman brings home cloth bought at Qasr during a *mulid*, a Nubian celebration of a saint's birthday. Child wears an improvised hat of new fabric.





BRIDEGROOM'S GARDON AND THE FIFTY ARE AN EXCELLENCE © NATIONAL GEOGRAPHIC SOCIETY



Gift of shoes for the bride arrives from the bridegroom at sunset. Second woman carries a similar gift for the mother of the bride.

Women Bake Thin Bread for 500 Wedding Guests

Straw fires and flashing smiles light an impromptu bakery in Tishka. Women raise the unleavened cakes from the hot griddles with sticks, then turn them with the hands. Rising waters of the old Aswān Dam had dispersed relatives and friends of the two families; guests came from far up and down the river.

This solution will require an estimated 33 to 39 million dollars, with the cost to be met by contributions of UNESCO member states, private groups, and individuals. The United States has provisionally agreed to put up one-third—between eleven and thirteen million dollars—in U. S.-owned Egyptian currency derived from the sale of surplus American agricultural products.

With the reservoir's rising waters due to lap at the feet of Abu Simbil's majestic statues in the fall of 1964, bids have been requested on a coffer dam to protect the temples while they are being sliced—piece by precisely calculated piece—out of the living rock.

I watched engineers probe the rock walls of Abu Simbil for inner tensions and collect measurements preparatory to the salvage operation. Inside the Great Temple I inspected several drillholes with an engineer who had been at Abu Simbil for two months. During this time, the 65-foot-high statues of Rameses had gazed over the Nile every morning at dawn. Twice the milky light of the full moon had shone on the rosy sandstone of the temple façade. But the engineer had seen none of that. He marveled at the temple as an engineering feat, and that was all.

As we stood in the sanctuary inside the mountain, nearly 200 feet from the temple threshold, I tried to impress the engineer with the temple's political importance. The very size of the structure was an exaltation of the power of the Pharaoh. But Ramesses also was a subtle propagandist: The relation of the temple to the sun proves that. One can scarcely exaggerate the impression on Ramesses' subjects when, once each spring and fall, the rays of the rising sun penetrated the full distance inside the Great Temple—to shine, like fire from heaven, on the god-king in the company of his fellow gods.

Archeologists Comb Nubia's Sands

UNESCO has also urged archeologists to look into the unopened pages of Nubian history while time remains. Dr. W. Y. Adams, a UNESCO archeologist conducting excavations in the Wadi Halfa area for the Sudanese Government, showed me a map marked with hundreds of threatened sites in Sudanese Nubia alone. And I met hard-digging archeologists from Canada and the United States, from France, Scandinavia, Great Britain, West Germany, Switzerland, Austria, the Netherlands, Italy, Spain, India, Argentina,

Ghana, Czechoslovakia, Poland, and the U.S.S.R. The United States Government has contributed more than one and a quarter million dollars to assist American parties in the field, and two and a half million dollars for removal of Nubian monuments.

Among private sponsors, the National Geographic Society is supporting the intensive excavation of an ancient fortress and cemetery at Gebel Adda (map, pages 594-5).

With this legion of archeologists at work, discoveries succeed each other helter-skelter. To date, the most spectacular find has come to light at Faras West, almost astride the Sudanese-Egyptian border.

There a Polish expedition under Dr. Kazimierz Michalowski unearthed the almost complete remains of the largest church ever found in Nubia, a basilica of the eighth century or earlier. On its interior walls, archeologists found more than a hundred paintings, along with inscriptions in Greek, Coptic, and Old Nubian. One of the outstanding paintings depicts the Biblical scene of Shadrach, Meshach, and Abednego in the fiery furnace, with the wings of the Archangel Michael protecting them from the flames.

Nubians Retain Old Egyptian Ways

By now many people have heard Nubia called the world's greatest open-air museum. But that this museum is full of living human beings frequently causes surprise. Actually, the Nubians themselves form an intrinsic part of the treasure on exhibition.

An Egyptian from the time of the Pharaohs would feel more at home among Nubians than anywhere else in today's United Arab Republic. He would recognize their flat-bottomed boats, almost as broad as they are long, which defy the rapids of the cataracts. He would recognize the tunnel-vaulted architecture and the furniture in Nubian dwellings, the wooden locks on the doors, and the receptacles made of Nile mud for the storage of grain and lentils. And the tiny braids of Nubian women, shining with pomade—wasn't that the ancient Egyptian fashion?

Are these people, whose country now is threatened by the deluge, truly the sons of the old Nubians, or only their heirs?

We shall never know. There is no such thing as a Nubian race, not any more. Intruders from both north and south have left their traces. By turns, the blood of Negro slaves has darkened Nubian faces, and the

TRIANGULAR SAILS shear the fading
light of day as festival-goers head
home from Qazr on the Nile.
Deck space is so limited
that passengers must stand.
One man perches
far out on a plank to adjust
an oft-patched sail.
Decorative strips
at sail tops show
the Star and
Crescent of Islam.

—MONTY BRANTON





Stone by stone, Kalâbsha temple escapes drowning in the Nile





ENCLOSURE BY JOHN BENTON © NATIONAL GEOGRAPHIC SOCIETY

KALÁBSHA WAS ERECTED during the reign of the Roman Emperor Augustus (27 B.C.-A.D. 14) in honor of the god Mandulis. Reliefs were never finished; one inscription, added about A.D. 249, orders herders to keep swine out of the holy place. Paintings of Biblical scenes, now washed away, indicated that the temple was once used by Christians as a church. Barge-mounted cranes above remove stones for reassembly near the Aswán High Dam.

Broken capital from a column swings from shore to barge. Fallen long ago, it was replaced atop its column in the early 1900's. Early restorers' liberal use of concrete throughout the temple preserved the monument but impeded the moving gang's task.

At low water Kalábsha emerges entire. Colors on walls faded when the surface of the present Aswán reservoir rose above all but the top course of the façade.

blood of Turkish mercenaries from the Balkans and the Caucasus has made them lighter.

Today the very whereabouts of Nubia remains somewhat vague. A German authority, Dr. Rolf Herzog, counseled me to stick to this definition: "Nubia is that part of the Nile Valley where the inhabitants speak Nubian."

This Nubian language area ranges from the First Cataract, in the north, to the southern end of the great Nile bend, halfway between the Third and Fourth Cataracts. Today's Nubians are Moslems, but superstitious beliefs are deeply rooted among them. In Tūshka,



KODAK SAFETY FILM © NATIONAL GEOGRAPHIC SOCIETY

Old sheik and granddaughter typify inhabitants of Lower Nubian towns. As a rule, only the elderly, the children, and the women remain. Lacking land or jobs, most young men migrate to Cairo, coming back every few years to see their wives.

Juicy Stalks of Sugar Cane Refresh Passengers on Nile

At this market village in Ballāna District, the desert comes to the water's edge, and the river steamer, like a canoe, gently nudges the sandy shore. Farmers meet the boat to hawk their wares.

an old man told me that water wheels must rattle, to frighten off the evil spirits in the night. In El Dakka I saw a Nubian woman draw a protective circle around her house while she murmured magic spells and scattered kernels of grain. And in Tifa, when I wanted to photograph a little boy's evil-eye amulet, I was hard put to dispel his mother's fear of the "eye" of my camera.

Threat of Rising Water Haunts Nubians

Wherever we traveled in Lower Nubia in the festive days before Ramadan, the month of fasting, again and again we met the same happy faces, the same women in costumes as colorful as Easter eggs, with glittering ear pendants and necklaces, and rings for their noses, arms, and fingers (page 589). Their pendants, brooches, belt plates, pins, and anklets looked more like a bedecked harness than individual ornaments. And everywhere we heard the same gossip, the same tittering, the same songs, and especially the latest Nubian hit: "Darling, I know you are sweet. With your eyebrows you slay the people. . ."

None of the gossip or singing mentioned Sadd el Aali, the High Dam. But Marianne Bühler, a German missionary-nurse who is one of the three Nubian-speaking Europeans I know of, told me that her patients had nightmares because of the High Dam.

"Some jump out of their sleep," she said, "and they cry 'the water is coming!'"

In Sudanese Nubia, this nightmare is something new. But in Egyptian Nubia, the dream of terror is as old as our century. The old Aswān Dam, and its two elevations of 1912 and 1933, affected the life and economy of northern Nubia decisively.

The Nubians had always cultivated their dates, cereals, and vegetables with exemplary devotion. But their narrow strips of fertile Nile shore scarcely yielded enough food for survival, and therefore many Nubians had to emigrate even in ancient times.

The neat, intelligent, and honest servant from Nubia has been a familiar figure since the days of the Pharaohs. When the old Aswān Dam and its additional elevations reduced the arable land of Egyptian Nubia to fewer than 15,000 acres, the number of Nubians seeking employment abroad increased sharply.

Nubians are esteemed as cooks and male nurses, and hold positions of trust in many a household. They can also be found as drivers and mechanics, and lately they have shown a



growing aptitude for white-collar jobs. Heavy work, however, does not suit them.

The Nubians' love of home and tradition, and their feeling of superiority over their neighbors north of the First Cataract, cause them, when away from home, to associate with fellow Nubians in clubs organized by villages and districts. When a foreigner takes interest in them, their suspicion is great. But once convinced that his interest is unselfish, their helpfulness knows no bounds. When I complained to Ali, a leading Nubian in Cairo, that I had never seen a Nubian wedding, he said obligingly: "You know, I could marry off my son. You need only give me a date that suits you." All was as good as his word. The wedding took place soon after in the village of Tushka (pages 600-601).

Children Greet Visitor Boisterously

I have stopped in so many Nubian villages that I have forgotten their number. Clay-brown and shiny-white villages. Villages with simple but artistic mosques, and villages without a place for prayer. Villages clinging to the sheer cliffs, or hiding behind palms and mimosas. Some have no name; some have five.

But one's arrival in a Nubian village is always the same. Drove of children descend on the stranger, hungry for diversion. Their older sisters and mothers run into the houses, crying "*Şura, şura*—Picture, picture." Then, yielding to curiosity, they peer from cracks in doors and windows.

They would love to be photographed, but custom is against it. The pictures I took of them were obtained only after persuasion—and even then few would look at the camera. A Nubian divorced his wife, I was told, when he saw her picture in a Cairo magazine.

Nubia is a barren, poor country—the farther north one goes, toward the old dam, the poorer and more barren it becomes. The men there go abroad—Cairo, too, is considered abroad—hoping to return sometime. They may yearn for their villages all their lives, these villages without stores and cafes, without hospitals or doctors, without moving pictures, automobiles, or bicycles, without telephones or electric lights.

Few men in their prime can be seen in the northern Nubian villages. A handful, armed with stick and shotgun, act as field guards and representatives of the civil government in each district, which may include two dozen villages in a strip seven miles or more long. The bulk of the village population are old men, children, women, and marriageable girls.



In the cool of night, an Egyptologist's aide mounts a ladder to take measurements of the gateway of Dandir temple. This shrine, built by Augustus, honors two deified heroes. Guardian cobras flank the solar disk above the doorway. Archeologists dismantled the temple for ultimate shipment abroad.

Faint Light in Tomblike Garf Husein Shows Six Giant Images of Ramesses II

At first glance, the vault resembles the interior of Abu Simbil (page 392), but the statues are smaller and lack grandeur. They appear to be the work of clumsy stonecutters. Straps painted across the cheeks hold the false beard that dignifies Pharaoh when he is shown in the guise of Osiris.





At high water, only the pylon and grand gateway of the drowned temple at El Dakka appear above the wavelets.

Chanting workers, pulling in rhythm, dismantle El Dakka. Here, during the river's season of low water, a 10-ton slab slides on rollers in a manner already old 45 centuries ago. El Dakka will rise again near El Sibú'.

The Nubian woman passes her life in waiting. She waits for her husband, who often is gone for years. She waits for her grown son, who returns to his village to be married and leaves again a few weeks later, also for years. She waits for cash remittances from relatives abroad, from Cairo and Alexandria, or from Khartoum or Riyadh or Jidda.

The Nubian woman waits for the traveling tradesman. She waits for the weekly mail boat, for in Nubia love works through the post office. The mail boat is also the Nubian calendar. One day I inquired about an old man and was told that "He died three mail boats ago."

The woman is the guardian of tradition. Nubian men are bilingual, but only about one woman in five can manage even kitchen Arabic. She embroiders little caps and weaves trays for her house and for sale, but she is too



proud to work for wages as a maid. She goes unveiled, but tradition restricts her freedom of movement. Only a short time ago, a trip to the other shore of the Nile was out of the question, and until recently she stayed confined to her house for two years after the birth of her first child.

Lately, more and more Nubian women accompany their husbands to Egypt; they are not even sent back to bear children. Nubians give many reasons for this, but the most convincing reason they generally discreetly conceal: Boys born south of the First Cataract used to be exempt from military service; but now, in the United Arab Republic, this old privilege no longer exists. Nevertheless, at least half of the Nubian emigrants still choose to leave their wives at home.

I believe that the architecture of the Nubian house aims to ease the mind of the departing husband. A rectangular wall encloses several one-story rooms which open on an

inner court—a common ground plan in this part of the world, but in Nubia the walls are higher than elsewhere. I saw veritable castles, looking as if they had been designed jointly by a confectioner and a fortress engineer (page 616). When I asked about the owners, the usual answer was: a cook in Cairo, a doorman in Port Said, a waiter in Jidda. I always added mentally, as I looked at one of those stately houses: the palace of the wife who stayed behind—and her prison.

Strange Remedy Seems to Work

To know Nubia, one must see it in the summertime. Nubians are well prepared for the blazing months, and every dwelling has a room for summer, usually towering above the wall of the courtyard and facing north, the only direction from which a bit of cool air can come. Most residences have outdoor sleeping places on clay platforms in the yard.

When Margot Veillon, a visiting artist, and



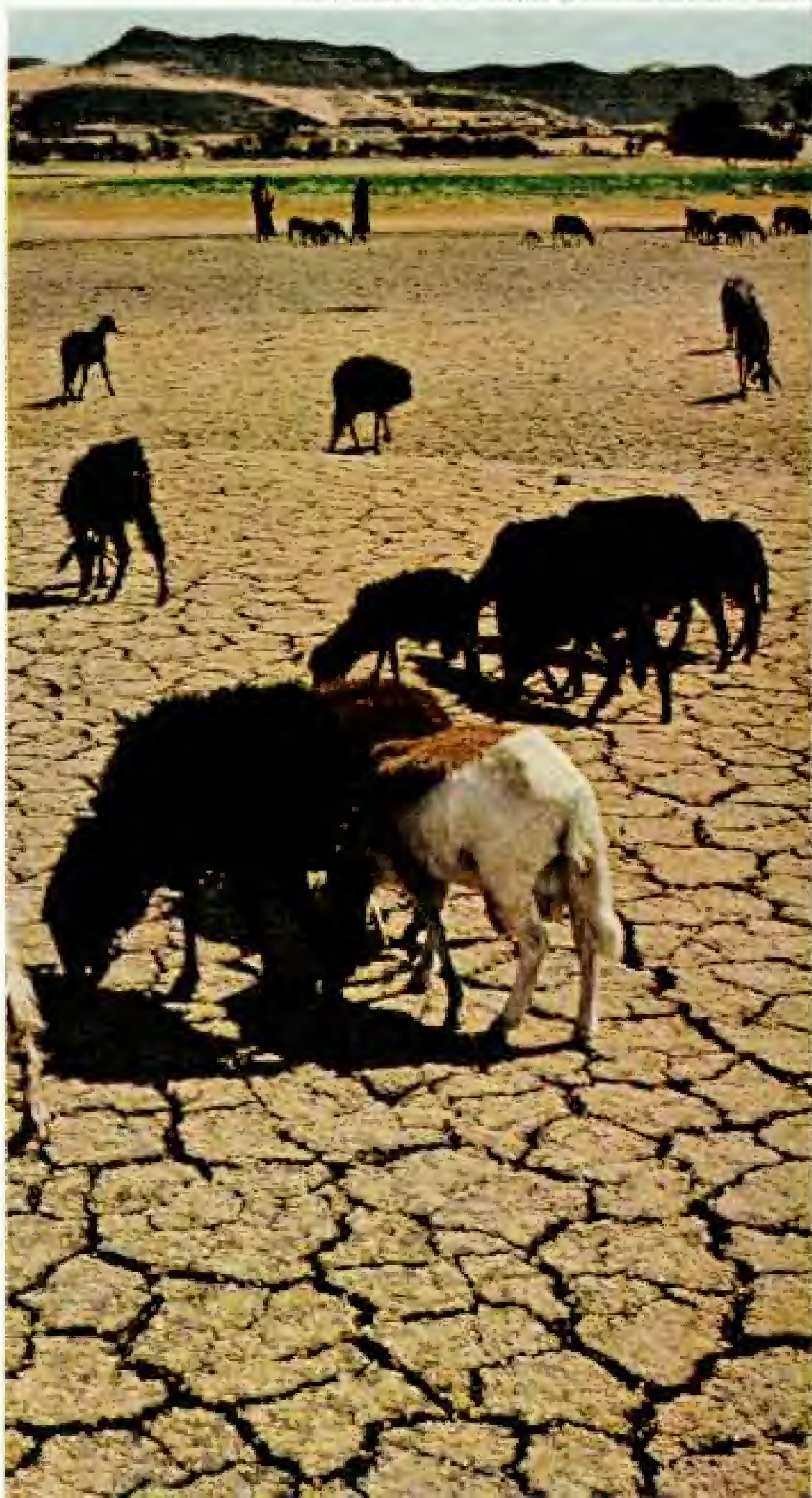


Twilight Cleaves a Dune Into Gold and Gray

Less than 4 percent of the United Arab Republic is arable. Aswān High Dam, whose tremendous reservoir could hold the Nile's entire annual flow, will increase cultivated lands by a third, throwing open a million acres of desert to year-round irrigation. This large dune cuts through a village near Kumna in Sudanese Nubia.

Sheep and goats scour cracked earth for vegetation that may remain two months after Nile waters receded near Karusku, Egyptian Nubia. In many places the desert marches to the river's brink, and hills hem in the narrow valley. Only a few fertile patches can be farmed. Present Aswān reservoir, created by the old Aswān Dam's second elevation in 1933, bares the ground only briefly before water starts to rise again, so that crops have but a short growing season. Beans and grain sorghum, sown behind the retreating waters, burst upward with fantastic speed but must often be cut while immature.

ILLUSTRATION BY GUY W. HAYES © NATIONAL GEOGRAPHIC SOCIETY





ANTHONY M. RAYMOND/ANTHONY M. RAYMOND

I were dizzy from the June heat, I swallowed salt pills but she permitted herself to be treated in the Nubian manner. A clever boy, appointed doctor by the village youths, put drops of salt water into her ear—with astonishing success, or so Margot declared.

In a sense, Nubia awakens only at this time of year—when women scream as they put their bare feet into the burning summer sand; when the scorpions get angry; when birds by the hundreds alight on the river and the rocky shore, and the swallows begin to play in the updraft before the sitting colossi of Abu Simbil.

This awakening is especially apparent in Egyptian Nubia, which all winter has been swallowed by the waters behind the old dam. In May and June this water cascades out, to enlarge the Nile in northern Egypt before the next flood. Now the kingfisher hovers almost motionless over the lagoons left behind as the Nile returns temporarily to its original bed. The water boils with shiny fish whose retreat has been cut off.

Birds and men alike lie in wait for easy prey. South of 'Ineiba, fishermen set up hundreds of salt depots. With both fixed and cast nets, they scoop out of the ponds a harvest

of catfish, perch, and carp and salt them on the spot. But, curiously enough, no Nubians participate in the catch, perhaps because they are preoccupied with farming activities at this time. The fishermen come from farther north, mostly in small boats.

To be sure, the widespread notion that the eating of fish is taboo in Nubia is not true. When we saw a sizable catfish adrift in the Nile, injured or somehow stunned, the fishing passion awoke among the crew of the *Hurriya*.

The first mate threw the gangplank into the Nile, placed himself on it, and paddled flat on his stomach to sneak up on the fish. He grabbed the fish with his bare hands. Judging from the lingering aroma, this 20-pounder graced the menu of our crew for several days.

The Nile Gives—and Takes Away

Summer covers the plain with a green carpet—a welcome pasture for flocks of goats and sheep and a few camels and donkeys. The villagers also profit from the shore land which the Nile yields up temporarily, well fertilized with mud. As soon as this black alluvial mush has hardened enough to support the weight of a man, it is parceled out and seeded. Where-

Sphinxes Crouch in Water and Sand

Mutilated sphinxes give this 3,200-year-old temple its name—El Sibū', the Lions.

When Ramesses II built El Sibū', he listed his children, then numbering more than 100, on its walls. Early Christians used the shrine's cliff-cut halls as a church, and painted frescoes over old reliefs; in one, peeling plaster causes Ramesses to present flowers to St. Peter.

The temple will be reconstructed on the shore of the new reservoir, a few miles inland from the present site.

Man-headed lions dry out at El Sibū'; nine months of the year they soak in Nile water up to their crowns. Badly damaged sphinx at the far end represents Ramesses himself; it lies at the temple's entrance (opposite)



APRIL 1967 © NATIONAL GEOGRAPHIC SOCIETY

ever a scraggly stand of grass sprouts, haying follows without delay.

The feverish activity of the people seems to infect the seed millet. Crops flourish with a speed unusual under other skies. Even so, in regions adjacent to the dam the growing period is too short. Two months do not suffice to ripen the millet before rising waters swallow the fields once more.

Thus northern Nubia is visibly a victim of the old Aswān Dam. But in one way, at least, that dam brought good things: I am thinking of the houses and their charming decorations, seemingly endless in variety.

In Sudanese Nubia a handful of specialists ornament the houses. But in Egyptian Nubia, in the vicinity of the old dam, this is a task for the children and young women. The closer one gets to the dam, the more luxuriant the ornaments. Apparently this stems from the paucity of arable land near Aswān: As women and children are less and less needed in the fields, they reach more and more for brush and palette. Perhaps the ornamentation of the houses, and of the women's festival finery, is a protest of life and color against the monotony of the desert. Practicality isn't involved; women buy canned milk, dump

the milk, and use the cans for decoration.

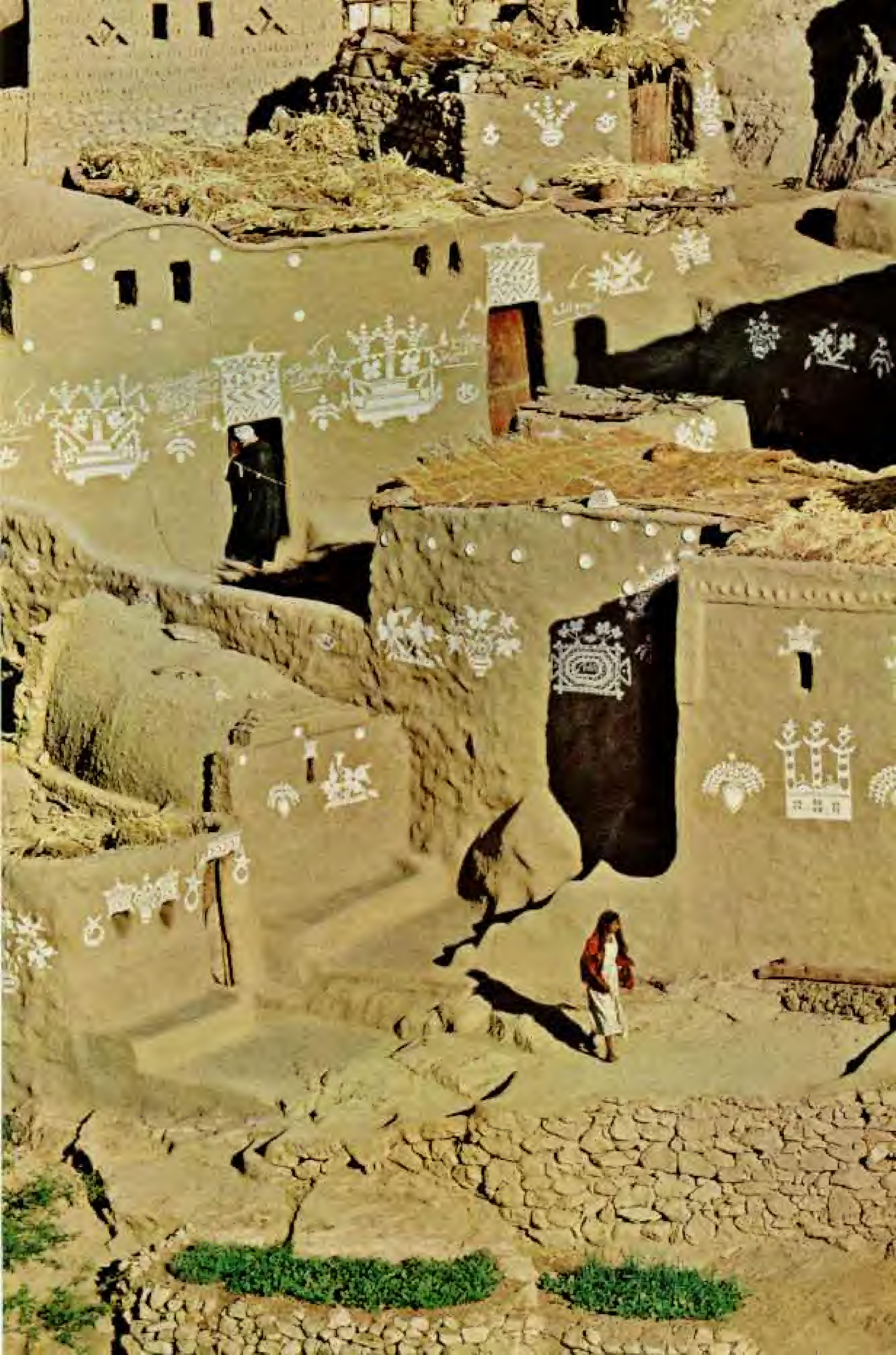
The Nubian craving to beautify seems unlimited. It begins with the portals—magnificently adorned with brick ornaments, porcelain dishes and lids of soup tureens, paintings and stuffed animal skins, and various objects coated with white plaster (page 617).

This sheer delight in decoration spreads from the portals to the walls and into the interior, especially the women's quarters. Here one finds painted and plastered ships, fish, scorpions, birds, camels, date palms, and flowers; suns, moons, and stars; crocodiles and lions, mosques and prayer carpets. Also airplanes, railroad trains, and automobiles.

Nubians who want to show that they really know the wide world favor still other motifs. Toothbrush and tea kettle, pressure cooker and Lazy Susan, alarm clock and transistor radio, and the girl skipping rope.

Time Runs Out for Nubia

Both times when the old dam was built higher the Nubians had to move, but at least they could remain in the vicinity of their former homes. Now, with the new High Dam expected to raise the water level by 200 feet, their time in the land of their fathers is run-



**Nile Dwellers Build With Adobe,
As Egyptians Did 6,000 Years Ago**

Coptic descendants of the ancient Egyptians inherited their ancestors' technique of making mud brick, and pronounced it "tobey" or "dabey." Moors subsequently transmitted the name to the Spaniards, who ultimately took "adobe" brick-making to the American Southwest. There they found Pueblo Indians erecting apartment houses of plastered mud.

Living in one of the driest lands on earth, Nubians pay little heed to watertight construction. Straw roofs keep out sun, but not rain. A downpour near Abu Simbil in 1962 liquified two dozen houses.

Dinner plates decking flood-doomed homes in Abu Hür village district may attest the owners' long service in Cairo. Steamboats burst into flower on the wall at left.

Young artist paints hens and potted flowers on chicken coop and house near El Sibü. Stylized scorpions by girl's head ward off real scorpions, an ancient belief.

Painted doorway near Qirta creates a blaze of color in a scorched land.



BY EXTENSION / ABOVE / AND FORTHOUGHTS © N.Y.C.



ning out. They will have to resettle far away.

Most unfortunate in this regard are the Nubians south of Ballāna. The border between the U.A.R. and the Sudanese Republic cuts right through their territory. This means that those on the Egyptian side must go far north beyond the High Dam. Those on the Sudanese side—about 50,000 of them—will go south, far beyond the Fourth Cataract, to a resettlement area along the Atbara River close to the Sudanese-Ethiopian border.

As might be expected, I found little enthusiasm in the Republic of the Sudan for the High Dam. Moreover, a good many Sudanese Nubians have their doubts about making the move to the Atbara River. But a Sudanese Government official said that the Nubians will find new houses there in a resettlement area with all the facilities and services of a modern community. He also pointed to a promising future for the Nubians: The Khashm El Girba Dam, a Sudanese irrigation project, is under construction there.

On the Egyptian side there are many problems too. "The U.A.R.'s resettlement law affects 25,328 families, or about 100,000 people, and practically all of them will go north to the Kôm Ombo region," I was told by Mo-

ammed Safwat, Assistant Under Secretary of the Ministry of Social Affairs.

"The Nubians," Mr. Safwat said, "selected the new settlement area themselves, mainly because some of their people had settled there earlier, after the two elevations of the old dam. We try to give as few orders as possible.

"We built a model home in Aswān and invited the Nubians to look it over and suggest improvements," he went on. "We try not to forget the human side. It isn't easy to leave the land where one has been rooted for thousands of years, as unshakably as the temples of the Pharaohs. Any Nubian with questions or problems always finds my door open."

"But won't the Nubians in Kôm Ombo perish?" I asked, thinking that the unique Nubian way of life will surely be lost in the cultural Diaspora of their new surroundings.

"Perish?" echoed the resettlement official. "Isn't that a harsh word? The Nubians will probably intermarry, and change their old ways. That cannot be helped. After all, in Kôm Ombo they will be only 24 hours from the city of Cairo."

I visited the settlement area of Kôm Ombo, an arc of land lying east of the Nile, an hour's drive north of Aswān. Here new villages will



Battered Boat Houses a Smiling Family

Fishermen from lower U.A.R. sail up the Nile to Nubia and spend months fishing from their weathered craft for catfish, perch, and carp. Nubians themselves eat fish but do not live on the water.

Porous jug at the stern of this boat keeps drinking water cool. Dismounted rudder lies on deck. Father works with an adz.

Toy boats, made of tin and ballasted with pebbles, ply the Nile a few miles south of Aswān. Nubian children in flowing *galabiyas* appear spotless, even at play. Their fathers are in demand for domestic service in distant cities because of their cleanliness, honesty, and industry.



bear the names of the 40 old village districts of Egyptian Nubia, in the same north-to-south sequence. But the Nubians who now occupy 400 miles of valley, counting both shore lines, will have to content themselves in the Kôm Ombo area with only 40 miles.

U.A.R. Prepares New Homeland

Near the north end of the new settlement area I saw the construction of the first accommodations in what will someday be called New Dâbûd. The architectural diversity of the present villages of the Dâbûd District, and the spaciousness of its houses and courtyards, will not be found in New Dâbûd. Although the Nubians will be able to color the outside walls and make alterations as they please, the cramped and the standardized and the prefabricated will triumph.

Expense is one reason; initial resettlement expenses are estimated to be more than half the cost of salvaging Abu Simbil. But the overriding factor is time. Sixteen thousand houses must be ready when the major exodus begins this month. Another 9,000 dwellings are planned for those who own houses in Nubia but don't live there continuously. The move is to be completed before the water starts to rise in August, 1964.

In Kôm Ombo, the government hopes, the Nubians will turn to sugar-cane farming and part-time work in factories. Officials predict that the Nubians will improve their lot economically; too, the government expects that this highly individualistic minority will at last be integrated into the nation.

The Nubians vary in their attitudes toward Kôm Ombo. Many women await the move eagerly, lured by the well-stocked market there, with its gossip and news. But the reality of relocation may bring a shock. When the palm shoots of Nubia were collected for replanting in the Kôm Ombo area, women cried over the young trees lined up for shipment as if these had been their dead children.

The men tend to be more reserved. They call the windows in the model house in Aswân too low, and the walls not high enough;

they object to the ventilation ducts in the front wall, and the absence of a roof over the summer living room. They always give the same reason: thieves will climb in. By conjuring up thieves—and they think the area north of the First Cataract swarms with them—Nubians crystallize their fears of the future.

Many Nubians told me that, of course, they are going to Kôm Ombo only temporarily. Certainly they will find a way to return to Nubia. Most of them imparted this intention confidentially, and they were always aston-



Diggers Race to Unearth History Before the Reservoir Inundates It

Workmen excavating ancient graves near 'Ineiba carry off dirt in baskets. Palm trees stand throughout winter with their feet in the water of the old Aswân reservoir. Stone wall surrounding young palm helps keep out drifting sand.

ished when I said that the government, too, was counting on their return. For the shores of the new reservoir are to be colonized.

As the lake creeps south, its ebb and flow will spread fertile Nile mud over the desert, creating much more arable land than it is swallowing. This land-building will not cease when the lake fills up sometime after 1975. Once a century the waters will reach a high of 597 feet above sea level; every 30 years they will sink to 482 feet.

Thus, 300,000 new acres—in addition to

the hundreds of thousands made irrigable by the High Dam—will be ready for settlers in the next ten years or so. By then, say the resettlement officials in Cairo, there will be nothing to prevent the Nubians from returning to their old homeland. They will be welcomed. And in deciding between two equally qualified candidates, preference will be given the Nubian.

But the Nubians who are going to Kôm Ombo today may by then hardly exist any more. They will be Egyptians. THE END

621

PHOTOGRAPH BY DAVID LARSEN © NATIONAL GEOGRAPHIC SOCIETY



FROM TIME IMMEMORIAL the Nile has welled out of the heart of Africa, bearing the silt that nourished the civilization of the Pharaohs. Today its potential for irrigation and hydroelectric power, soon to be harnessed by the new Aswân High Dam, promises to revolutionize the economy of the United Arab Republic.

Atlas Plate 56, *Africa: Countries of the Nile*, forty-first uniform-size map issued by the National Geographic Society since 1958, vividly portrays the sprawling watershed of the world's longest river. The 11-color map, drawn to a scale of 125 miles to the inch, stretches from the Congo and Tanganyika, both of which contribute water to the Nile, north to the Mediterranean.

A blue arrow marks the ultimate source of the Nile, in the newly independent Republic of Rwanda. In its twisting 4,145-mile journey to the sea, this river of many names and many moods runs the gamut of geography.

From its source, the young stream—here called Kagera—flows into the vast expanse of Lake Victoria, second in size only to Su-

Nile. Beyond Juba, it enters the Sudd, a vast swamp in the Republic of the Sudan. Blue marsh symbols dapple the map for 300 miles as the river oozes through a sodden maze of reeds. In this desolate morass—larger in the wet season than all Greece—the stream, now called the White Nile, loses approximately half its water by evaporation and seepage.

South of Malakal, the muddy floodwaters of the Sobat join the stream, doubling its flow. Then, at Khartoum, the river merges with the Blue Nile, flowing from Bahrdar Giyorgis on Lake Tana in the Ethiopian highlands.

From a dam at Sennar, 150 miles from Khartoum on this sister stream, the precise blue line of an irrigation canal cuts into the angle of land between the two branches. Here, in El Gezira, more than a million watered acres produce cotton and millet, chief props of the Sudanese economy.

From Khartoum to the Mediterranean, human habitation and life itself are totally dependent on the Nile. As the map shows, towns and villages hug the riverbanks like drowning men clinging to a lifeline.

Straddling the river near the Sudanese-United Arab Republic border is a cluster of mighty ruins—among them the great temples of Abu Simbil, sentinels of ancient Egypt which have brooded beside the Nile for 32 centuries. On page 587 of this issue, Georg Gerster describes the heartening international teamwork that seeks to preserve these and other ancient monuments from the rising waters of the Aswân High Dam's reservoir.

A black line just below Aswân marks the site of the dam itself, scheduled for completion in 1968. In addition to increasing irrigable land and providing electric power, the dam will finally tame the cycles of high and low water that have plagued Egypt since the dawn of history.

Beyond Aswân, the Nile rolls majestically to the sea along the western arc of the Fertile Crescent, the curve of arable land—sweeping on through Palestine into Iraq—that cradled so many ancient civilizations. Hittites, Egyptians, Assyrians, Babylonians, and Persians trod this stage.

At Cairo, Africa's largest city, with a population of more than three million, the Nile disintegrates into a network of streams that wind lazily through the wide Delta before emptying into the Mediterranean. But even as the river keeps its rendezvous with the sea, the waters are rising in distant Rwanda to give northeastern Africa life for another season, another year.

THE END

The Nile: Problem and Promise

perior among fresh-water lakes. Becoming a river again at Jinja, with the name Victoria Nile, it sluices through the Owen Falls Dam, powering giant turbines that furnish electricity to the new nation of Uganda, and Kenya, due for independence in December.

In its winding progress to Lake Albert, the Victoria Nile descends almost 1,700 feet. Its most spectacular single drop occurs at Murchison Falls; squeezing through a cleft only 19 feet wide, the waters hurtle 130 feet down a sheer rock wall. The map pinpoints the plunge, and a red tint traces the boundaries of 1,100-square-mile game-rich Murchison Falls National Park surrounding it.

At Lake Albert, runoff from the 16,600-foot ramparts of the Ruwenzori range—the legendary Mountains of the Moon—swells the river for its northward journey as the Albert



Cars jam Queensway parking lot in modern, mile-high Nairobi, home to 297,000 Kenyans.

Giraffe roams Nairobi Royal National Park, within 4 miles of the city's center.



Industrious Luo woman balances a fish trap in her native Uganda.



Masai girl of Kenya displays her finery, a wide smile, and persistent flies.

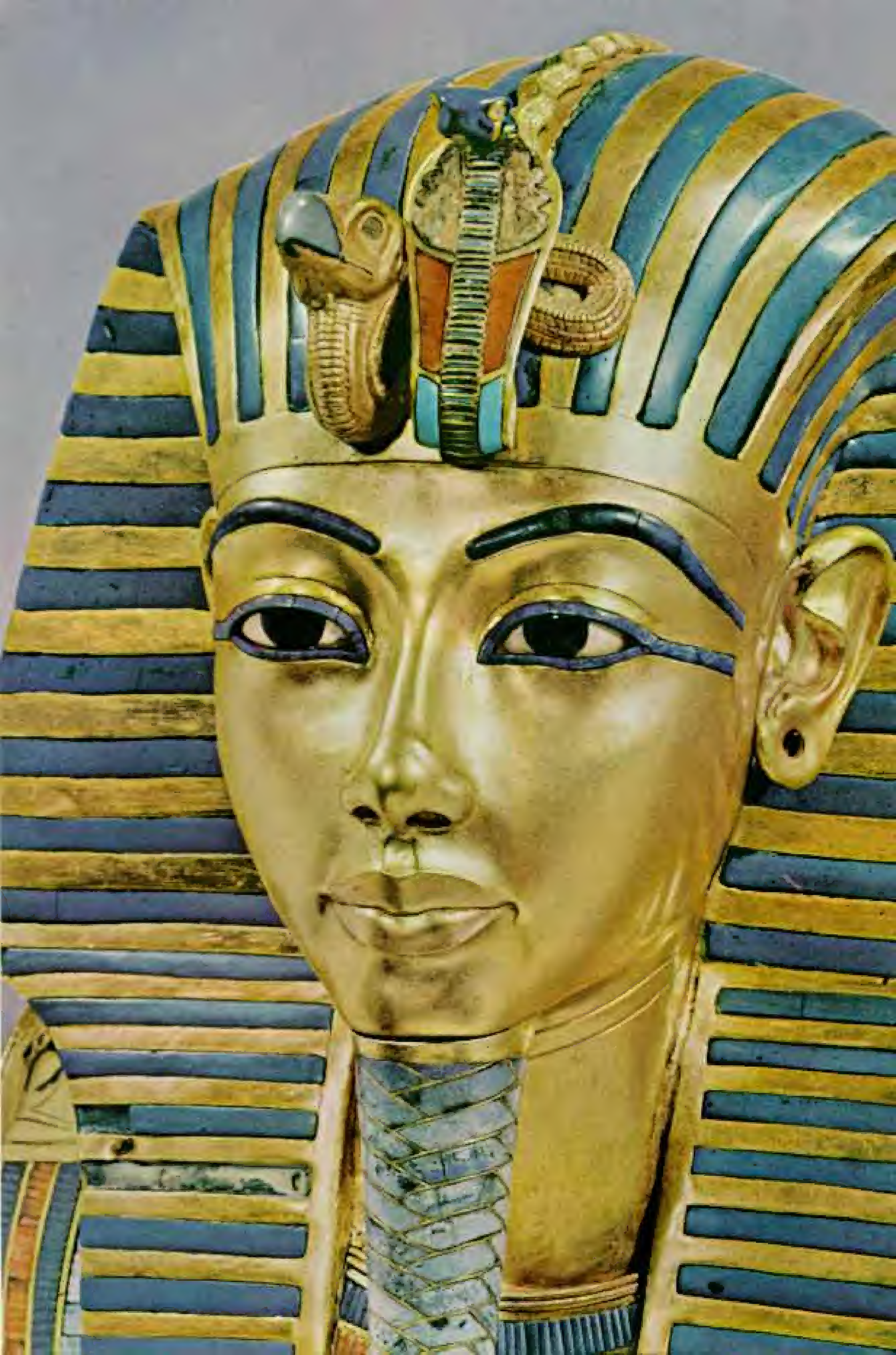



Lighted by hundreds of floodlamps, the pyramids and Sphinx glow during a sound-and-light program at Giza.

Girls in European dress stroll a shopping street in Asmara, Ethiopia



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THE FABULOUS TREASURES revealed when King Tutankhamun's tomb was opened in 1922 are displayed in Cairo's Egyptian Museum. Recently, at the request of English publisher George Rainbird, officials removed the priceless relics from their sealed cases and photographer F. L. Kenett captured their true color and splendor.

His remarkable pictures soon will appear in book form in ten countries, with text by Christiane Desroches Noblecourt. The American edition, to be published by the New York Graphic Society, is the Book-of-the-Month Club's alternate choice for November. Here, NATIONAL GEOGRAPHIC presents a selection of these brilliant new photographs.
—The Editor

Tutankhamun's Golden Trove

By CHRISTIANE DESROCHES NOBLECOURT

Curator of Egyptology, Musée du Louvre, Paris

Photographs by F. L. KENETT

TO SPEAK THE NAME of the dead is to make him live again." To speak the name of the dead restores the "breath of life to him who has vanished." So say the inscriptions of ancient Egypt.

Out of the mists of time that shroud Egypt's golden age, one name lives today as no other—the legacy of a discovery in 1922 that bared the richest tomb of a Pharaoh ever found. The name that lives: Tutankhamun. His reign: about 1350 to 1340 B.C., when the fires of the brilliant XVIII Dynasty were blazing their last.

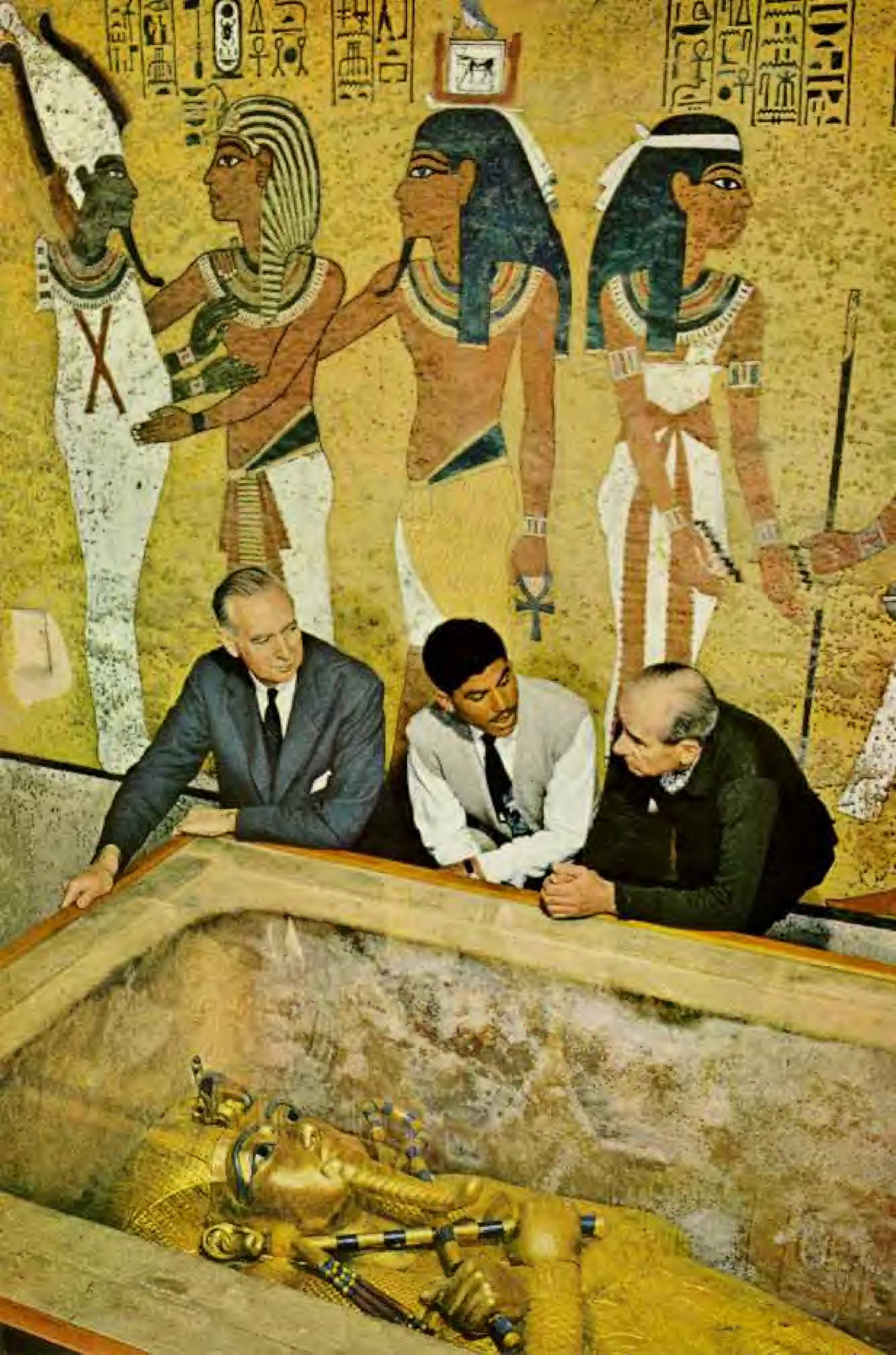
Tutankhamun's tomb yielded undreamed-of treasure: a startlingly lifelike mask (opposite), gold and gilt coffins in the image of the young king, a glittering throne adorned with a palace scene, effigies of gods and goddesses protecting the dead, a chest depicting vivid battles, and jeweled daggers, earrings, necklaces, and other riches.

Everything in the tomb spelled out the hope that the dead king would be reborn in an afterlife and enjoy the luxuries of his existence on earth. Everything bespoke the all-prevailing dream of antiquity's Egyptian: that life indeed could be eternal.

But while the tomb revealed the glorious trappings of a faith and a culture, it told little of the lifetime events and personality of its mummified inhabitant.

Who was King Tutankhamun? What did he do in the short span allotted him? After decades of detective work, scholars have pieced

Out of Egypt's golden age: Funerary mask of beaten gold reveals the features of young King Tutankhamun, who ruled the Two Kingdoms 1,350 years before Christ. Vulture and cobra symbolize Upper and Lower Egypt; beard identifies the king as one with Osiris, god of the dead.



Gilded Effigy of the King Encases His Mummy

Believing in life after death, the rulers of ancient Egypt created for themselves hidden tombs with stores of fabulous riches. But the crypts rimming the Nile Valley failed to keep their secrets. Throughout millenniums, grave robbers plundered the eternal homes of the Pharaohs.

Did any funerary vault escape the sharp eye of the ghouls? Early in the 1900's, British archeologist Howard Carter and his patron, Lord Carnarvon, joined forces to find out. Luck worked with them. In November, 1922, Carter stumbled on one of the most extraordinary treasures in history; the nearly intact tomb of King Tutankhamun. Together with the mummy in a nest of three coffins, Carter found all the equipment the king might need to ensure his enjoyment of everlasting life.

Here, in the burial chamber, Dr. Leonard Carmichael (left), Chairman of the National Geographic Society's Committee for Research and Exploration; Mr. Ramadan M. Saad, Inspector of Antiquities, West Bank of Thebes, and Dr. Thomas W. McKnew, Vice Chairman of the Society's Board of Trustees, inspect the king's outermost coffin. Wall paintings depict the "Lord of the Two Lands," in striped headdress, being received as a fellow god by Osiris, in mummy wrappings. The king's *ka*, or soul, introduces them. Nut, goddess of the sky, stands at right.

APPROXIMATE BY NANCY S. PUGH
ARTIST'S CONCEPTION © 1963 N.G.S.

Foreign correspondent, NATIONAL GEOGRAPHIC's Maynard Owen Williams, climbs from the tomb following its official opening in February, 1923. He was among the first members of the press to get a private showing of the tomb's burial chamber and the king's unopened sarcophagus. But many pieces of the burial furniture had already been removed for safe-keeping.

A writer and photographer, Dr. Williams served the magazine for 34 years, more than 20 of them as Chief of the Foreign Staff. He died in Turkey June 26, 1963, at 74.

together fragments of evidence and formulated likely theories. From these, it is possible to construct a plausible version of King Tutankhamun's life.

During some 200 years before the birth of Tutankhamun, his royal ancestors had led the Two Kingdoms of Egypt from one success to another. Victorious wars had garnered an empire, including Palestine and Syria to the north and the Sudan to the south.

Power and prosperity went hand in hand. Arts flourished and Egypt's traditional simplicity gave way to grandeur. Luxurious palaces and splendid temples rose along the life-giving Nile. Such was the setting when Amenhotep III mounted the throne.

Tutankhamun called Amenhotep III his father, and a golden statuette from the tomb shows that august ruler crouching in the attitude of a child (page 644), as if to express his oneness with the dead son who would be reborn. From the tomb, too, came a lock of hair from Amenhotep's Great Royal Spouse, Queen Tiye, an indication that she might indeed have been Tutankhamun's mother.

If such were his parents, the child was born of love, near



the end of a long and happy marriage. He was also born of rebellion, for Amenhotep defied both religion and tradition when he married the commoner Tiye and made her the honored mother of future kings.

Powerful priests of Amun—mighty god of Thebes and protector of the dynasty—regarded the marriage as an attack upon themselves and their divine lord. No longer could they say that the god had replaced the sovereign on his wedding day and impregnated an unquestionably royal daughter, herself descended from the god. Amenhotep tried to placate the priests, but the winds of discontent between crown and clergy were stirred, and some 45 years later, as a lad of 9 or 10, Tutankhamun would mount the throne and inherit the devastation of a whirlwind.

The whirlwind that shook the very foundations of Egyptian society was created by Tutankhamun's elder brother and predecessor, Amenhotep IV, or Akhenaten, as he came to be known. He dreamed of a single god to replace Egypt's pantheon and promoted worship of the sun as Aten, or Solar Globe.*

The ideas of Akhenaten's grand design were far-reaching: to simplify a theology inaccessible to the masses; to reconcile the people and their god by showing the latter as the orb shining impartially upon all; to proclaim that men were born equal and that only their "wickedness separated them."

Palaces Spring From the Desert

When Akhenaten became king, his father Amenhotep III was still alive and may have served with his son as co-regent, although historians differ on this point. In any event, the younger king set off with family and friends to establish a new city on virgin soil where his revolutionary reforms might take root.

He selected a site on the eastern bank of the Nile near Deir Mawās, and in a few years turned a wasteland into a dream city of palaces and homes surrounded by superb gardens. He named it Akhetaten, or "the horizon of the Aten." Moderns call its ruins Tell el 'Amārna. (See the Atlas Map, **Countries of the Nile**, distributed with this issue.)

About this time Tutankhamun was born, probably at the family's vast, rambling palace at Malkata, near Thebes. When he was three years old, he no doubt accompanied

his aging parents and elder sister, Baketaten, on a visit to their Tell el 'Amārna relatives, an occasion depicted in relief on the walls of a tomb there.

The guests arrived by barge, sailing past the new city's commercial district, where grain silos loomed over the dazzling white parapets of the docks. On land, the little prince mounted a chariot for a royal parade through the city. He undoubtedly enjoyed the spectacle as the procession stopped before two great temple pylons with ten accompanying masts from which long ribbons fluttered, symbolizing the breath of life. And he may have watched from afar as his parents and their royal hosts crossed the immense roofless halls to consecrate flowers and food to the sun on open-air altars.

State Rears Sons of Conquered Kings

The triumphal procession re-formed and wound its way through the streets. There, guards on raised and shaded traffic boxes held back the delirious crowds, which revered their sovereigns as the living emanations of the sun.

Students on holiday followed the parade, and some crossed into the palace courtyard where the royal party appeared before the court on a balcony. From there, Akhenaten tossed down precious goblets, plates, and jewels to favored nobles.

Back home at Malkata, the excitement of his visit to Tell el 'Amārna must have faded as young Tutankhamun settled down to the rigors of school work, for Egyptians learned to read at four years of age. His classmates were the sons of nobility, and state wards who were the sons of conquered kings. Treated with great consideration, the foreign princes lived in the palace and shared the education of the Pharaoh's own children. Later, imbued with the culture of Egypt, they would return home and use their experience in the government of their native lands.

In the mornings the youngsters worked to recognize and pronounce the several hundred hieroglyphs representing everything alive and real. Grammar followed, then arithmetic, and finally writing. Equipped with a writing kit of reeds, a cylinder to hold them, and a palette for solid inks (page 640), the little prince began copying hieroglyphic phrases on papyrus, a material too expensive for any except the well-to-do. His teacher corrected his work with red ink, just as some instructors do today.

*Tutankhamun was first named Tutankhaten, in deference to the religion his brother created. With his restoration of the earlier religion, he became Tutankhamun.



METROPOLITAN MUSEUM OF ART (LOWER) - FRANK RHOADES (UPPER) © GEORGE HARRIS/STILL

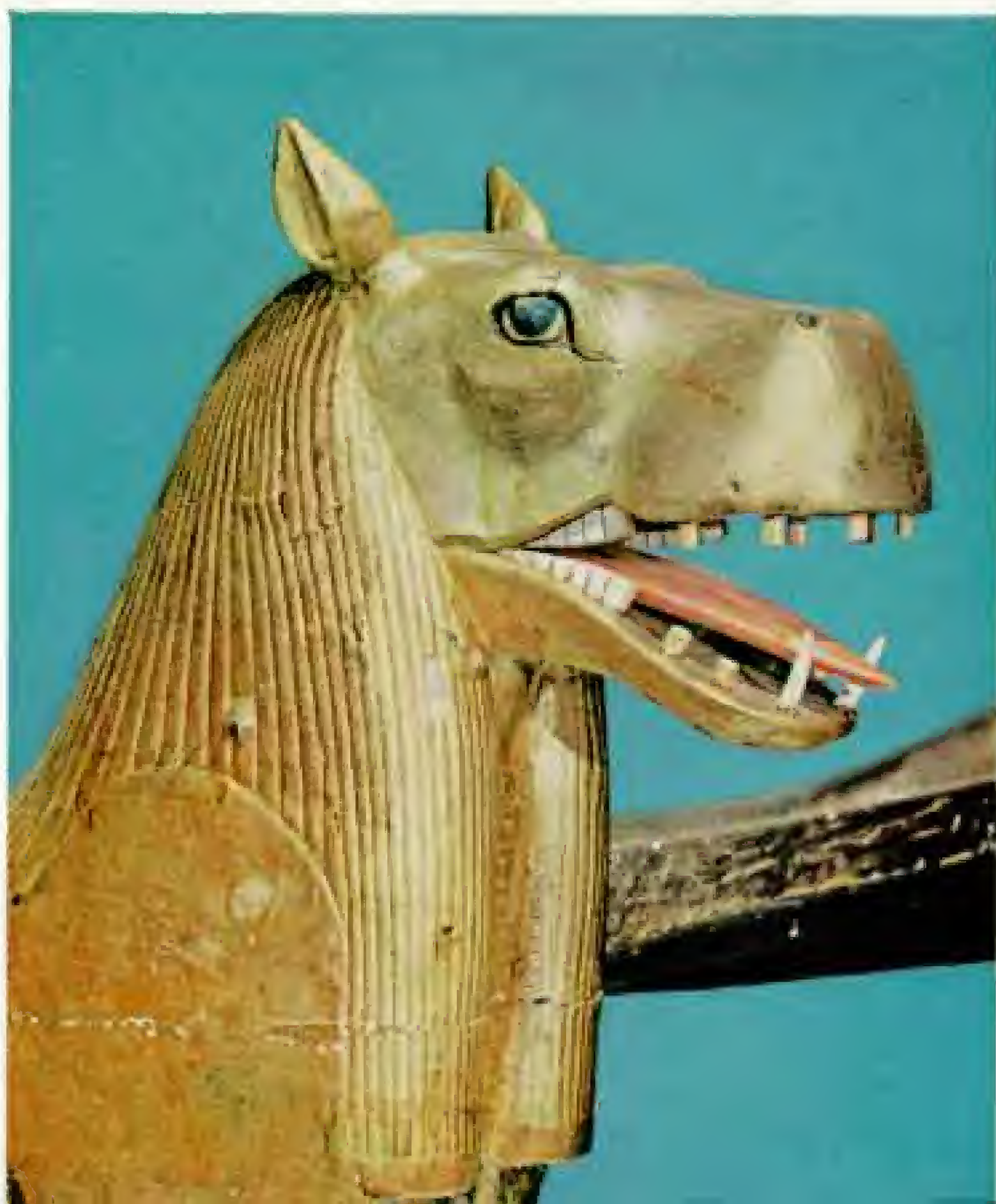
Furniture for the Dead Fills a Tomb Chamber

Holding a flashlight to a hole in the still-blocked doorway, discoverer Howard Carter incredulously surveyed this thirty-three-hundred-year-old scene. Three gilt funerary beds with animal-like sides seemed to Carter "Uncanny beasts... almost terrifying."

Bedstead at center, with a head that is half hippopotamus and half lion, represents the goddess Thoutetis, patron of birth. Chest of linen clothes rests on the bed; a throne (pages 632-3) stands beneath it. Four dismantled chariots appear at left.

Thieves had ransacked the room but took little besides ointments and small objects.

Red tongue lolling between ivory teeth, Thoutetis promised rebirth to the king. Such beds may have held his body while it was being mummified.





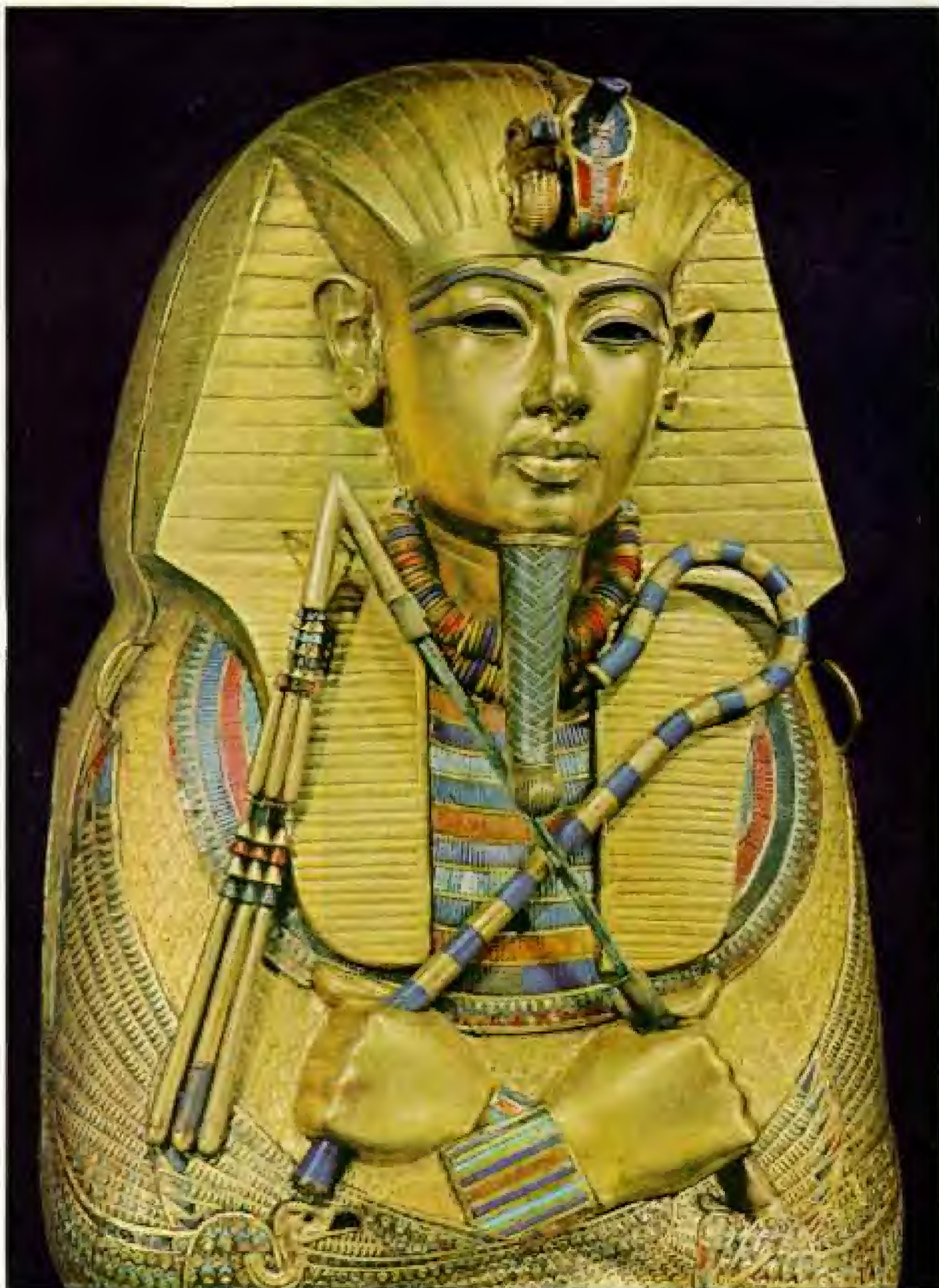


ILLUSTRATION BY LINDA BAIRD/STC

Black-and-gilt guardian, a life-size statue of King Tutankhamun himself carrying the mace of rule and rod of majesty, stood at the door of the burial chamber. With skin of resin black, color of rebirth, the image identifies the monarch with Osiris, whose body often appears thus. Thin gold leaf covers the headdress, collar, kilt, bracelets, and sandals. The figure, originally covered with a linen shroud, bears on the kilt the inscription, "The Good God of whom one [can] be proud . . ."

Interlaced wings of goddesses enfold the king's image on his solid-gold innermost coffin. Goddesses of Upper and Lower Egypt, Nekhbet and Wadjet, assume the forms of vulture and cobra, which stand guard on his forehead, the latter to spit fire at royal enemies. Crook and flail symbolize the king's power. With the opening of this coffin, the swaddled body and golden mask were revealed (page 624). Tucked among the yards of wrappings were 143 amulets and pieces of jewelry.



Seat of empire, Tutankhamun's wooden throne blazes with a covering of sheet gold, silver, gems, and glass. Winged cobras, wearing the double crown of Upper and Lower Egypt, ornament the arms. Lion heads symbolize morning and evening. Egyptians believed the sun rose in the jaws of the lion of the East and set in the jaws of the lion of the West.

Tutankhamun and his friends devoted their afternoons to physical exercise: swimming or wrestling. In spite of his apparently delicate health, the prince may have learned to hunt hare, gazelle, ibex, and antelope, as painted scenes in his tomb suggest.

As he grew older, the royal scholar began to study composition, mindful of the admonition of a wise teacher: "What you gain in one day at school is for eternity—the work done there is as lasting as mountains. — Plunge into a book as one plunges into water."

Tutankhamun's peaceful days in the schoolroom ended when storm clouds gathered over Egypt. His health gone, the old king and co-regent, Amenhotep III, paid little attention to foreign affairs, and his allies pleaded in vain for help against the empire's enemies. Akhenaten at Tell el 'Amarna cared for little but his religious reform. Revolt threatened when he sent teams of workmen across the land to disfigure the statues of deities, hammer out their names, and erase every mention of the word "god" in the plural.

Some time after Amenhotep III died, Akhenaten ceased living with his famous queen, Nefertiti, and proclaimed his son-in-law Smenkhkare co-regent.

Then, suddenly, Akhenaten and Smenkhkare perished, no one knows how, and the city—symbol of the faith that they believed would endure "until the swan grows black and the raven becomes white, until the mountains rise up to walk and the waters flow uphill"—was soon abandoned to ruin.

The boy Tutankhamun ascended the throne of his ancestors, and set out to rule a land on the brink of revolution.

How could a child restore the nation? His advisers counseled him to bring back the old-time religion, with its veneration of many gods and goddesses. And Tutankhamun did so, according to the major inscription that describes the events of his reign:

"Now when his majesty appeared as king, the temples of the gods and goddesses from Elephantine to the Delta marshes . . . had fallen into neglect: their shrines had gone to ruin, having become tracts overgrown with thorns, their chapels were as if they had never been, and their temples had become trodden roads.

"The land was topsy-turvy, and as for the gods, they had turned their backs to this land. If troops were sent to Djahi [Syria] to extend the boundaries of Egypt, their efforts came to naught. If one besought a god with a request for anything, he did not come at all.



REPRODUCTION © BRITISH MUSEUM

Queen Ankhesenamun Anoints Tutankhamun With Perfume: a Scene Decorating the Throne
Hand-tipped rays of Aton, the sun god, illuminate the palace. The queen wears the crown of Hathor, goddess of love; the powerful *atef*, with cobras balancing solar disks, surmounts the king's head.



Carried by a laborer in 1923, a bust of Tutankhamun seems to walk from the tomb. The effigy possibly served as a dummy on which tailors fitted the king's robes. Forty years later, it appears in color (opposite).

if one petitioned any goddess likewise, she would not come either—for their hearts were angry in their bodies. . . . But now when some days had passed after these things, his majesty appeared on the throne of his father and ruled the regions of Horus; Egypt and the foreign desert lands were under his control and every land bowed to his might. . . . his majesty administered the affairs of this land and the daily needs of the Two Regions. . . .

"His majesty took counsel with his heart, searching out every proper means and seeking what would be beneficial to his father Amun. . . . His majesty made monuments for all the gods, fashioning their statues of genuine *djam* [fine]-gold, restoring their sanctuaries as monuments enduring forever, providing them with perpetual endowments, invest-

ing them with divine offerings for the daily service, and supplying their provisions on earth." *

At some point, the young Tutankhamun was married to Ankhesenamun, the daughter of his brother Akhenaten. The queen was some two years older than her husband and had already been married to her own father—as was often the practice of Egyptian royalty—to whom she had borne a daughter. But she was of royal lineage and therefore suitable. She was also solicitous of her new lord, if a panel on his throne is evidence (page 633).

Caught up in the ponderous affairs of state at so young an age, Tutankhamun undoubtedly found delight in one royal duty: the annual voyage with the god Amun and his divine family to the Feast of Opet at Luxor. Reliefs at Luxor record the journey, allowing historians to reconstruct it in detail.

A kind of New Year's celebration, the feast featured the "divine emergence" of the Theban gods. On the Nile a full flotilla, including the king's boat, prepared to escort the sacred barges, while in the divinities' Karnak temple Tutankhamun himself performed the first rites of the ceremony, sprinkling a libation over flowers and other offerings, and blessing them.

Then the priests lifted the small sacred boats containing the shrines of the gods and bore them to the barges in a solemn procession that marched to military music. Walking to his own vessel, the king gave the signal for departure, and sailors on the towpath

towed the whole fleet upstream. Pennants flew as musicians and singers urged on the toilers. Admiring and applauding crowds lined the banks and a holiday spirit prevailed. The king probably enjoyed the songs of the riverside throngs; one that has survived goes:

*There is a welcoming inn,
Its awning facing south;
There is a welcoming inn,
Its awning facing north;
Drink, sailors of the Pharaoh,
Beloved of Amun,
Praised of the gods.*

From time to time during the voyage, the king symbolically seized an oar to show that

*From *When Egypt Ruled the East*, by George Steindorff and Keith C. Seele. The University of Chicago Press. Copyright 1957 by The University of Chicago.

Illusion of life clings to a painted wood image of the king, who came to the throne when he was 9 or 10 and ruled no more than 10 years. A successor to Akhenaten, who fostered the worship of the single god Aten, the youth led a restoration in which the nation returned to the veneration of its many old gods. Wed to Akhenaten's daughter Ankhesenamun, he "spent his life making images of the gods," as an inscription reveals.

Beyond this, little is known of Tutankhamun, the last legitimate ruler in the dynasty that took ancient Egypt to a pinnacle of power. Despite the immense treasure buried with him, nothing bespeaks his personality; no clues remain to tell of his hopes, his dreams. Yet one thing emerges: The king must have loved life, for he fervently desired to live forever, as everything in the tomb proclaims.



ESTABLISHED BY KERRY WINTERHILL

he was assuming full responsibility for his journey on his divine father's behalf.

Soon Amun's barge tied up at Luxor, and the gods' small barks moved in solemn procession to the temple. Priests struggled to force a passage between tables of offerings overflowing with food and the vendors' stalls set up around the temple.

During a pause the king stopped to watch female acrobats as they danced to the rhythm of castanet, drum, and tinkling sistrum; then the procession disappeared into the temple, and the real holiday for the people began.

An ancient writer, describing such a festival, caught its spirit in these words: "The gods of heaven shout for joy, shout for joy. . . . The inhabitants are drunk with wine, chaplets of flowers are on their heads. The sailor-

folk walk joyously about, anointed with the finest unguent. All the children rejoice. . . from the rising to the setting of the sun."

But the youthful ruler's days of laughter and rejoicing soon drew to a close. Shortly after the annual festival, in January, 1343 B.C., Tutankhamun died, the causes unknown.

As the court mourned—and as Tutankhamun's widow tried unsuccessfully to negotiate marriage with a Hittite prince—the young king's body went to the priests for the mummification that would prepare his "divine flesh" for its "voyage of eternity." For 70 days priests and technicians treated the king's remains. A "reader" priest recited magical formulas under the calm gaze of the "Embalmer of Anubis"—a wooden figure of a black god in the shape of a dog or jackal (page 642).



Miniature coffin, 15.3 inches long, held the king's liver. Save for the heart, his organs were removed and preserved in four such containers that fitted into compartments in the canopic chest at right. Inscription on this one carries a prayer by Isis, goddess of fertility and guardian of the liver: "My arms enclose what is within you. . ."

Alabaster head, an idealistic portrait of the king, sealed a well in the chest.

Outstretched arms of the goddesses Isis, Nephthys, Neith, and Selkit embrace the funerary box; their prayers adorn its sides.



BRITISH MUSEUM, LONDON, ENGLAND, U.K.





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Loving Concern for the Fate of Tutankhamun Shows on the Face of the Scorpion Goddess

Guarding the king's viscera, Selkit stands beside a shrine of gilded wood that encased the canopic chest (opposite). Scorpion atop her head suggests her ability to immunize victims against its sting.



— петербургский музей египетских древностей —



Riding a war chariot, Tutankhamun fights the Nubians in one of the paintings on his clothes chest (opposite, above). Inscription proclaims: "The Good God, son of Amun, valiant and without his peer, a lord of might trampling down hundreds of thousands and laying them prostrate."

The king's hips anchor the reins, leaving hands free to shoot arrows at his enemies; his dogs finish off the wounded. Vulture goddesses fly overhead.

King's clothes chest stands at the feet of the tomb's black guardian at the time of discovery.

The box held sandals worked in gold, a royal robe decorated with beads and sequins, and a headrest.

Funeral bouquets lean against the wall

Victory over Asians provides the theme for another painting on the chest. Frail young Tutankhamun probably never saw battle, but the painting, representing him as a conqueror, proclaims the triumph of good over evil. The artistry of these scenes, Howard Carter wrote, "far surpasses anything . . . that Egypt has yet produced."



Walters Art Museum, Baltimore, Md.

After withdrawing most of the brain through the nostrils, officiants dissolved what was left in the skull with aromatic lotions. The viscera were then removed through a cut in the body's side. After being washed out with palm wine, the abdomen was filled with crushed myrrh and cassia.

Now freed of everything corruptible, and entirely shaven, the body went to soak in a bath of dry natron—a natural form of sodium carbonate—which absorbed all its remaining moisture. Thereafter, it was washed and laid to dry on an animal-headed funerary bed; the bed's tall legs permitted the embalmers to

work on the body without bending over. Perhaps the golden beds (page 629) found in the tomb were used for this purpose.

Finally came the bandaging, when hundreds of yards of fine linen totally enveloped the body in protective layers. During the winding, prayers were recited and formulas pronounced while liquids were poured on the bandages to make them stick together. The 70-day preservative treatment actually left little but skin and bones.

The day before the funeral, the body, now fully adorned and encased in the gold coffin,

(Continued on page 644)



Portrayed as a child, Tutankhamun's head springs from a lotus, as did the sun on the first day of creation. Thus the Egyptians expressed the faith that their god-king would be reborn.



Taseled earring of gold, semiprecious stones, and colored glass required a large perforation of the ear lobe, as in the image at left.

Writing case still holds equipment: seven reeds and two cakes of red and blue-black ink, used as water colors are today. Pen box of gilded wood accompanies it.

Treasures from the tomb



Vanity in afterlife: mirror case for the "Lord of the Two Lands" is in the shape of the ankh, Egyptian symbol of life. Reflector of polished metal once fitted into the oval's reverse side.

Drinking cup of alabaster, sculptured as a half-open lotus with buds as handles, proclaims this wish for the king: "Mayst thou spend millions of years . . . sitting with thy face to the north wind, and thine eyes beholding felicity."



Blue glass headrest asserts that Tutankhamun, the "Good God," is "endowed with life" like Re, the sun. By lifting the head, such stands served in the king's rebirth by implementing the Book of the Dead formula: "Awaken, O sick man who slept; your head is raised to the horizon."

Dazzling daggers await the grip of the reborn king, ensuring his protection in the next world. Blade at right is of gold; ibexes, lions, calves, and hounds prance on its golden sheath. Enlarged detail shows its haft, decorated with semi-precious stones.

Iron blade of weapon at left was still clean and shining when discovered. Lilies adorn its sheath.





Golden collar about his neck, Anubis maintains vigil over the dead king whom he must lead into the other world. "Lord of the necropolis" in the body of a wild dog or jackal, the black god presided over the ruler's mummification.

Nude Maiden Rides an IbeX-headed Boat

Stylized lotus blossoms adorn the alabaster craft, which sits atop an island in a vaselike receptacle. A canopied box resembling a sarcophagus rides amidship. The boat may have been intended to carry the heaven-bound king along the celestial Nile.

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Hereditary enemies of Egypt, an Asian (left) and African adorn two royal walking sticks. Skin of ivory gives the Syrian a lifelike look; ebony does the same for the Nubian, whose arms are bound behind his back. Both ceremonial canes are made of light wood overlaid with gold.







Presumed father of Tutankhamun, King Amenhotep III appears as a golden child on the pendant of a necklace. He wears the Blue Crown.

was returned to the palace to lie in state.

Court goldsmiths gave the king's features on the two outer coffins a weary and tragic air, for he had to pass through difficult stages. But the third coffin, of solid gold, suggested triumph over death and human suffering. The gold mask, representing the sovereign returning to life, wore the glow of eternal youth that he had just lost but would recover, greatly enhanced, in the company of the gods.

On that April day of the funeral, Tutankhamun's young widow recited at the mummy's feet the formulas evoking rebirth. Then she joined the procession that moved to the temple for four days of ritual.

Courtiers followed, carrying the burial furniture for the "eternal dwelling." Chanted dirges of the professional mourners rose above the laments of people gathered on both banks of the Nile.

Inside the sanctuary, Tutankhamun's most trusted councilor, Ay, who would briefly succeed him as Pharaoh, performed the sacred duty that would have fallen to the king's son, had he had one. Clasp ing an adz, Ay made the magic gestures, touching the mouth and eyes to open them to eternal life.

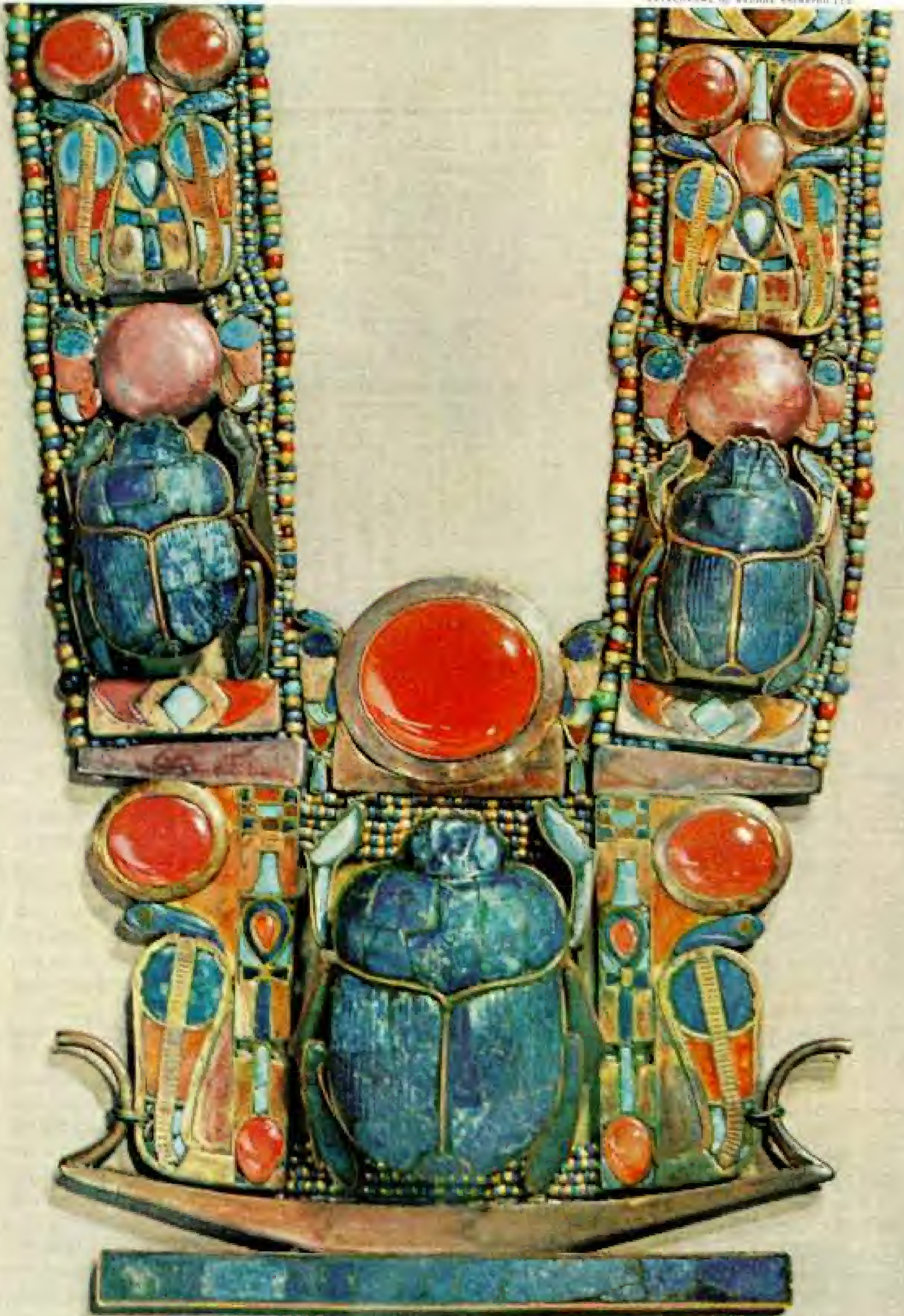
On the following dawn, the funeral procession again set forth, this time for the necropolis. Mourners again wept aloud and the men carried long stalks of papyrus, symbolic of the goddess Hathor's domain, where Tutankhamun was bound.

While priests set the burial furniture in the tomb, the mummy was raised to a standing position at its entrance. A libation of water, recalling the purification of the gods, was



All-seeing eye of Horus, god of the sky, stares from one of the finest jewels found in the tomb. A translucent quartz scarab, or beetle, substitutes for the body of a bird, its wings and tail outstretched. Darkened moon at the top of the pendant holds the deified image of Tutankhamun (center); Thoth and Horus guide him. Lotus buds dangle from the ornament's base.

Sacred scarab, embodiment of life to come, is predominant feature on a necklace of gold, lapis lazuli, carnelian, turquoise, and feldspar.





© METROPOLITAN MUSEUM OF ARTS

Symbol of the renewal of life, a gosling breaks free from an egg, just as the king would burst from the shell of death. Carved from wood and painted, the bird sits in an alabaster nest atop the cover of an unguent jar. Wings flutter above four eggs.

poured over the mask and the shroud. The body was presented with the "crown of justification," and Ay confirmed the opening of the mouth by a sacred gesture.

Then Tutankhamun was put to rest.

Outside the sepulcher, night had fallen, and torches lit up the immense tent erected for the funeral banquet. The mourning period was now over and the cries of the mourners hushed. The sound and rhythm of songs and dances, performed during the banquet, evoked the act of creation. Unguents, like those which had been poured over the king's body, dripped from scented cones on top of the guests' wigs.

When the meal was over, everything used in the funeral banquet was buried outside the tomb—the final service to help the young king, alone in the darkness of the crypt, find his path toward immortality.

But all the magic of Egypt could not protect the memory of Tutankhamun from the vengeance of his enemies. Ay held the throne only briefly before Horemheb, a military strongman, seized power. With unrelenting

fury, Horemheb set out to erase the name of Tutankhamun from the temples, the monuments, the archives of the land.

"To speak the name of the dead is to make him live again," as the funerary inscription goes, but Horemheb willed that Tutankhamun should die a second and final death, though he dared not touch the king's richly laden tomb.

And so Egypt forgot its young Pharaoh, and through long ages no man spoke his name. Yet where the sorcery of the ancients failed, the luck of the moderns succeeded.

With the discovery of his tomb in 1922 by Britain's Lord Carnarvon and Howard Carter, the name of Tutankhamun flashed around the globe. When death claimed the wealthy patron and several members of the expedition shortly thereafter, a story arose that the "curse of Tutankhamun" was responsible, and the fable increased the Pharaoh's fame.

Who was Tutankhamun? The most we will ever really know is that he wanted to live forever. Perhaps in the rebirth of his name he has succeeded.



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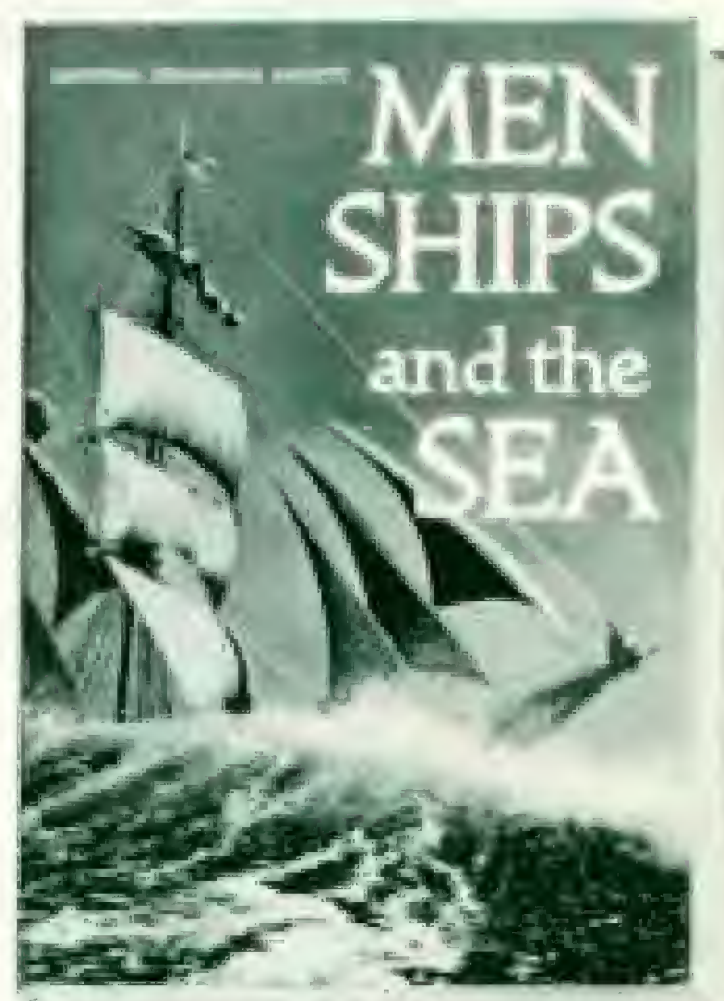


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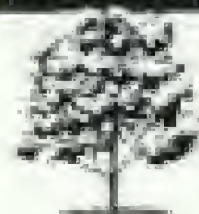
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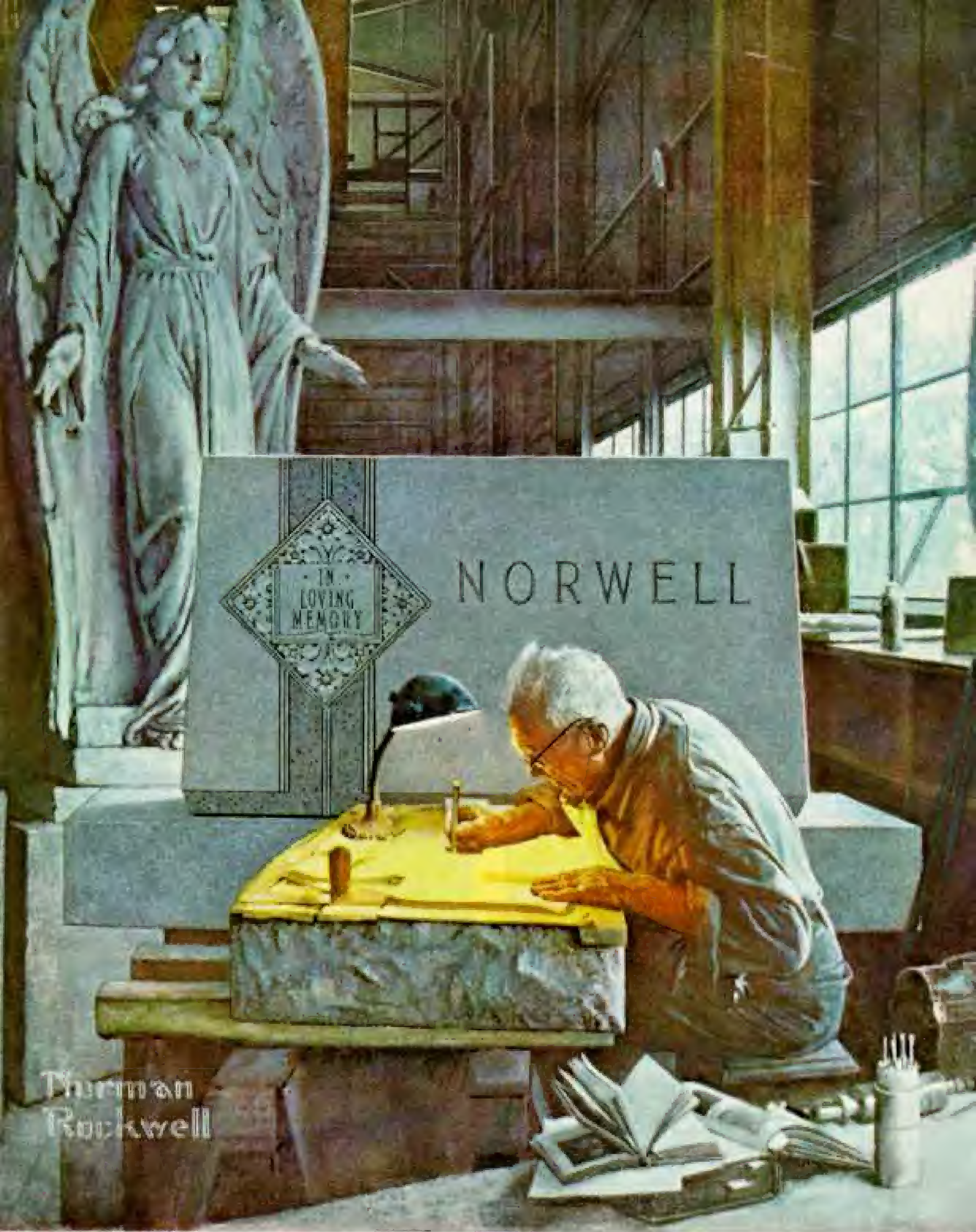
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At a sidewalk café in downtown Buenos Aires

Why you'll fall in love with Buenos Aires as you once did with Paris

A love affair with a city is all too rare a thing. You shared one once with Paris. You will share one with B.A.

In Paris, though, you never fell in love to the strumming of gaucho guitars. You never saw *pato*, a kind of basketball played on horseback. Or cruised along canals in your own private launch. You can only do those things in B.A.

You can be doing them the very first day of your vacation if you fly with Panagra's overnight *El Interamericano* DC-8 Jets. Round-trip Jet Economy fare from Miami to Buenos Aires is only \$578. Or, enjoy a 3-week tour of six countries for as little as \$973 including fare.

B.A.—or, to use her full name, La Ciudad y Puerto de Santa María de los Buenos Aires—is a very big town. The longest street in the world is here. So is the widest street. And the biggest opera stage.

And little delights

But, for all its bigness, B.A. remains a town full of little delights. Like the little hats her horses wear in the summer. (It's the law.)

Like the little outdoor theater in the waterfront quarter called La Boca. It's on a street fenced off at one end. People lean out of win-

dows, gather on balconies, laugh, shout, ad lib.

After the show, go along with the crowd to "The Little Fish"—a delightful seafood spot. Or grab a cab to *La Cabaña*. Here, Chateaubriand King Edward VII, the fanciest steak in the house, will set you back about \$1.50.

A day on the pampas

Set aside a day for the gaucho cookout called an *asado*. You'll find it just outside B.A. There's wine, and folk dancing. And a cool breeze called the *pampero* ruffles your hair.

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Billy shows Chuck the Superslides taken during a Cub Scout hike, Mother entertains friends with her 35mm flower pictures, and Dad creates a vacation trip slide show all the relatives will enjoy from his collection of 2¼ x 2¼ reflex slides. Three different cameras, three different slide sizes, but one projector—the new Honeywell 650—shows them all with clarity and brilliance. The 650 is completely automatic, with full remote control. It's easy for everyone in the family to use, and has the kind of convenience features which make slide shows more fun than ever, yet the Honeywell 650, complete with case and all accessories, costs only \$189.50.

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The Special K Breakfast that fits so many modern diets

*built around the low-fat, protein cereal
that tastes good, too*

The newer knowledge of food (and of food's effect on the body) is carefully reflected in the Special K Breakfast, built around a unique cereal food—Kellogg's Special K.

Those concerned about the amount and type of fat in their diets can enjoy it without a qualm. A serving of Special K (1½ cups) with 4 ounces of skim milk contains only 0.24 grams of fat.

Weight-conscious folks will appreciate the fact that the Special K Menu totals no more than 240 calories. Yet,

it provides the complete high-quality protein (and other nutrients) needed in the early morning to get going.

And finally, the modern dieter knows that breakfast foods chosen must be appetizing. To the taste, to the eye, in the mouth.

Special K is, indeed, a delicious cereal. Crisp and light, enjoyable week after week, month after month.

Doesn't the Special K Breakfast fit into your diet—or someone's in your family?

"The best to you each morning!"
Kellogg's SPECIAL K

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THE SPECIAL K BREAKFAST

4 ounces of orange or
tomato juice—or half a
medium size grapefruit

1 ounce (1½ cups)
Special K with
1 teaspoon sugar

4 ounces skim milk

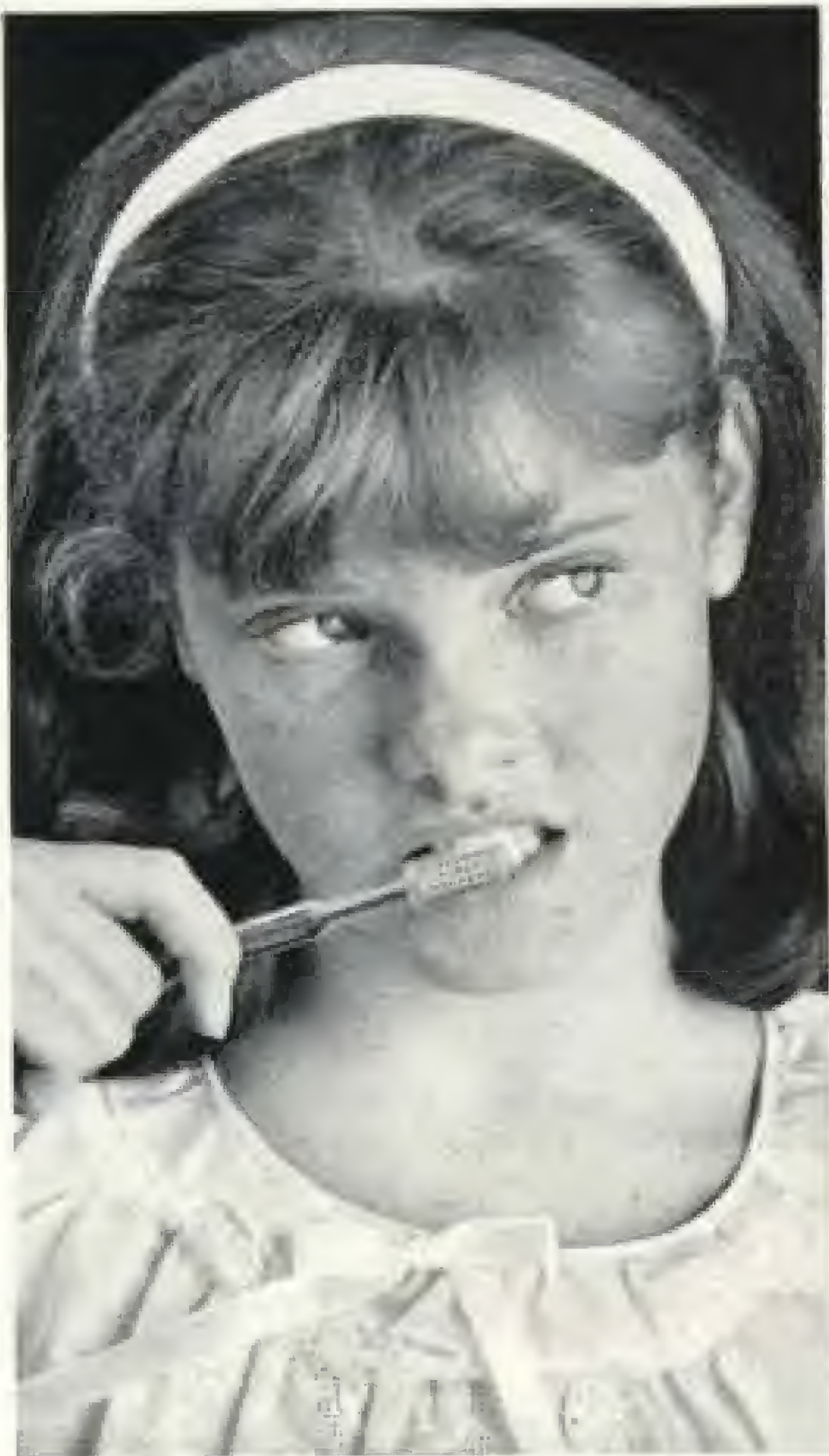
Black coffee or tea
(Only 240 calories)

The Nutrition Story of Kellogg's Special K

One serving of Special K (1½ cups with ¼ cup skim milk) supplies 34% of the recommended daily protein allowance for an adult man, and approximately these percentages of his minimum daily requirements as established by the Food & Drug Administration:

Thiamine (B ₁)	44%
Riboflavin (B ₂)	60%
Niacin	51%
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Vitamin B ₆	50%
Calcium	22%
Phosphorus	22%
Iron	36%





Is your daughter a "hit-or-miss" type of toothbrusher?

Whatever her type... she'll brush her teeth better with the up-and-down full-power action of Broxodent from Squibb

Does she always plan to let her nighttime brushing hit the teeth she may miss in the morning?

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