SPECIAL SUPPLEMENT: A TRAVELER'S MAP OF ITALY (page 790)

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WHEN IN ROME....

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WINFIELD PARKS

DINNER BEGAN LATE, in Roman style, and afterward the conversation, as zestful as the food and wine, ran on and on. It was well after midnight when I left my friends' house in the quarter called Trastevere—across the Tiber—and set out in search of a taxi.

I walked under a fat moon that bathed the city in mellow light. Rome slept, gathering strength to face yet another day in the 2,722nd year of its existence. Skulking in the shadows, yowling paeans to spring and moonlight, were the real owners of night-time Rome—the legions of lean, battle-scarred cats enjoying *la dolce vita* in their own raffish way.

Luxury Lurks in a Onetime Slum

The moon's rays dealt kindly with the shuttered buildings I passed in the chariot-width streets. Outlines were softened and blemishes painted over, as if a makeup expert sought to show that the beloved actress called Bella Roma, for all her years of triumph and tragedy, of glory and despair, was still in reasonably good shape.

Still, the neighborhood I wandered through resembled nothing more than a slum. Many years ago, in fact, this had been a notorious thieves' quarter. The street where I had dined, Vicolo del Cinque—Little Street of the Five—had taken its name, my hosts had told me, from the fingers so important to a thief.

The thieves had moved elsewhere, and many of the shabby façades now hid handsomely restored residences with such amenities as elevators and air conditioning.

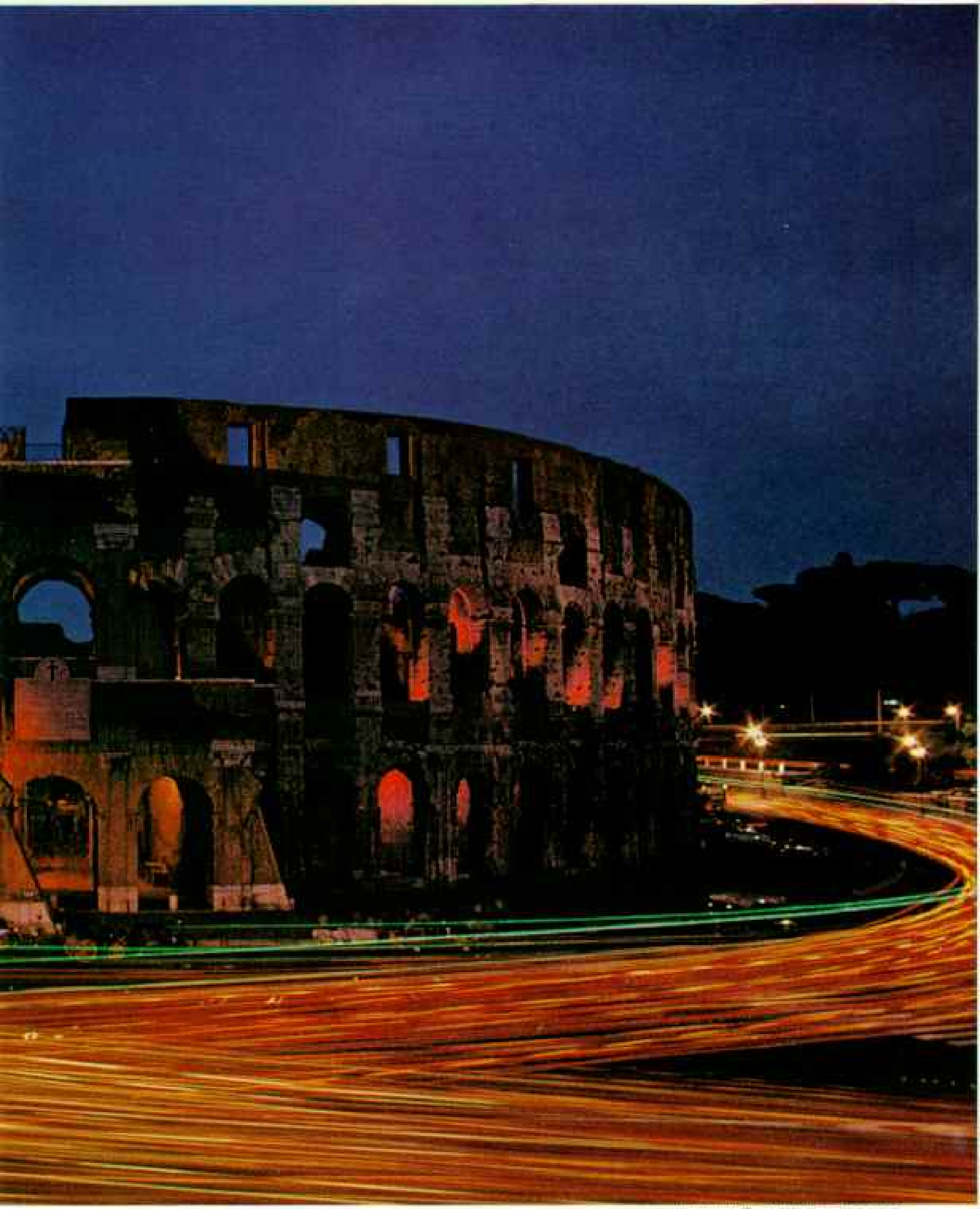
My chances of finding a taxi were slim. With gasoline costing about 75 cents a gallon, Rome's cabbies seldom cruise in search of fares. But on this spring night the prospect of a long hike back to my hotel didn't bother me.

Pausing on the Ponte Sisto to look down on the sluggish Tiber, I reflected upon the perfection of after-dark Rome as a place for the wool-gathering wanderer. To transport himself back and forth over the centuries, one needed only imagination; the scenery, props, and atmosphere were already there. (See map, pages 750-51, and the Rome inset on **A Traveler's Map of Italy**, with this issue.)

In my mind's eye I could see the remarkable Etruscan kings draining Rome's marshy site and building the Cloaca Maxima, the Great Sewer, still discharging the city's waste a few hundred yards downstream. Next came thoughts of the Roman Empire: I heard the screams of Christians as they were hurled

(Continued on page 746)

Memory-haunted arena of the ancients, Rome's 1,900-year-old Colosseum saw bloody gladiatorial duels, battles with wild beasts, and mock naval engagements on its flooded floor. Christians banned the spectacles, and in later centuries presented church dramas here. Time, earthquakes, and stone scavengers took their toll. Still, the treasured monument survived and again serves Rome—as a traffic circle. Cars



AUTOCHROME © NATIONAL GEOGRAPHIC SOCIETY

at evening rush hour create streaks of light in this time exposure, which also captures horse-drawn carriages waiting at curbside for tourists. The city itself—a composite of the ages—greets visitors with a maelstrom of old and new, sacred and profane, a blend that provoked the English poet Percy Bysshe Shelley to implore, "Go thou to Rome—at once the Paradise, the grave, the city, and the wilderness."

To see and be seen, visitors and Romans pause for an *aperitivo* or an *espresso* at a crowded sidewalk cafe on Via Vittorio Veneto. Though plush hotels, shops, and fashionable cafes still line the avenue, it has changed character. A decade ago, Federico Fellini's film *La Dolce Vita* used it as a setting for wild escapades, and the street became the haunt of the unconventional. Now many former habitués choose to sip their coffee elsewhere.

In Rome, men always look—especially if the view includes feminine charms. The few who whistle or call out seductive phrases are disdained as *pappagalli*—parrots. Knee-length skirt identifies a girl of Rome, most of whom shun mini-skirts as undignified.

"Imbecille! . . . Idiota!" Furious screams and hand-to-hair combat erupt after a collision between auto and bus. White-gloved policeman separates the combatants while a passer-by takes over traffic control. Then, like a spent match, emotions expire, the drivers exchange names of insurers, and life goes on.

To outsiders, such encounters look like comic opera, but Romans take driving seriously. Facing impossible traffic snarls and a scarcity of parking lots, they adjust in their own individualistic way. Drivers often double-park illegally on side streets, leaving their keys with self-appointed attendants who rearrange and guard the vehicles day and night.

from an earlier bridge that Emperor Caracalla had built across the Tiber at this very spot. Then the Renaissance came to mind, and I leaped forward to a day of pomp and ceremony in 1475 when Sixtus IV, a great builder among the Popes who once ruled Rome, inaugurated the bridge where I stood.

Across the bridge, I plunged into a warren of dimly lighted streets. What happened next was a quantum jump into the 20th century.

Hearing a vehicle behind me, I stepped aside to let it pass. It was a dusty jeep bearing two men in uniform. On it I could barely read the letters "AAF." Strange, I thought. AAF stood for Army Air Forces, which no longer existed. For years there had been a separate United States Air Force—USAF.

Next came another mystery: Approaching the Piazza Farnese, I came upon a tall wooden standard bearing signs with directional arrows. The signs said "34 Sta Hosp U. S.," "Post Exchange U. S.," "Polish Liaison Officer," "Petrol Point," "YWCA," and "British Church C. of E."

The signs were familiar enough, but what were they doing here in 1969? The question was answered when I entered the piazza, blazing with light within its wall of venerable buildings. Around the rim of the square stood dozens of olive-drab trucks and jeeps and huge vans with throbbing generators.

It was just another movie unit at work, a commonplace in Rome these days and nights. This one was filming a story of World War II airmen who came to Rome for riotous rest-and-recreation visits.

Many Recall Days of World War II

The incident served to carry me back to a day in June 1944, when I too, riding in an AAF jeep, arrived in Rome for the first time. With others I had come from Allied Force Headquarters, near Naples, in the footsteps of ground troops who had driven the Germans from Rome and were pursuing them northward.

Having served earlier in combat intelligence with a bomber group, I had been reassigned as a press officer, one of many whose job was to help Allied war correspondents cover the Italian campaign. Almost a year later, when the war in Europe ended, I went home to civilian life. Now, after 25 years, I was back for a new look at Rome.

It was almost as if I had never been away. When I checked into the Hotel de la Ville, where I had been billeted with the rest of the wartime press corps, the hall porter greeted me by name and said of course he remembered me. During the next few weeks there were reunions with other Romans who remembered—a barber down the street, a masseur at the Hotel Excelsior, a cobbler who used to repair my shoes, and a woman, now stout and gray, who had laundered my shirts and was prepared to do so again.

Postwar Capital Retains Its Charms

For centuries before the war Rome's matchless antiquities, works of art, benign climate, and generally agreeable ambience had made it a shining star among European capitals. Famous men of many eras sang the praises of a city that was at once laughing and sad, bustling and unhurried, living with verve and dignity among its memories of 27 centuries of history.*

"I have not spent a single wholly happy day," wrote the German poet Goethe in his old age, "since I crossed Ponte Molle on my way home." Lord Byron exclaimed in *Childe Harold*, "O Rome! my country! city of the soul!" And Henry James, the American novelist, said of his arrival in Rome, "At last—for the first time—I live!"

Rome retained all its charms when I first knew it, even as it and all Italy bound up the wounds of military defeat and set about redressing the disastrous error of following the "Sawdust Caesar," Benito Mussolini, and his crony Adolf Hitler.†

By the 1960's a miracle had occurred. A lively new spirit was rampant, and so was Italian prosperity—save, as usual, in the underdeveloped south, and even there great plans were afoot.‡ And the capital had become a "swinging" city.

Resurgent industry, helped by a billion and a half Marshall Plan dollars, accounted for the new affluence. The role of sweaty toiler was played more by the northern cities, such as Milan and Turin, than by Rome, center of political power and wellspring of ideas and taste. The capital won renown for its youthful charm and gaiety, its high-

*See "Rome: Eternal City With a Modern Air," by Harnett T. Kane, NATIONAL GEOGRAPHIC, April 1957.

†Brig. Gen. Edgar Erskine Hume described postwar Rome in "Italy Smiles Again," GEOGRAPHIC, June 1949.

‡See "United Italy Marks Its 100th Year," by Nathaniel T. Kenney, GEOGRAPHIC, November 1961.

fashion artistry threatening the supremacy of Paris (pages 752-3), its film industry ranking second only to Hollywood's.

Paradoxically, as Rome moved into the 1970's it was as near total collapse as any of the world's troubled cities. Somehow, the art of government had lagged behind, so that Rome was saddled with outmoded laws and a massive, tradition-bound bureaucracy.

Shortly after Mayor Clelio Darida took office last summer, he called the press to his chambers in the Palazzo Senatorio, crowning glory of the Michelangelo-designed Piazza del Campidoglio atop the Capitoline Hill (pages 770-71). Reporters found the mayor at a window, gazing moodily at the ruins of the Roman Forum (pages 760-61).

"The people who ruled Rome in those days had it easy," he said. Then he echoed New York's Mayor John V. Lindsay: "The city today is ungovernable."

City Beset by Urban Woes

Most of Darida's problems were the familiar headaches of modern cities: severe shortages of housing, schools, hospitals, parks; too little water for future needs; too much trash to be destroyed somehow; too many strikes; too few policemen. The problem most visible to visitors was also a grievous and familiar one: too many automobiles (more about that later). There were additional dilemmas that were peculiarly Roman.

In terms of sheer magnitude, perhaps the most spectacular of Rome's difficulties was its financial plight. As it neared its 100th anniversary as capital of a united Italy, the city was bankrupt. By late 1969 the municipal debt had passed two billion dollars. With annual revenues of only $200,000,000, the city had to pay out $144,000,000 in interest and other charges on its debt.

To meet its current needs—and add to the debt—Rome issues bonds guaranteed by the national government. Investors would not buy the bonds without such underwriting.

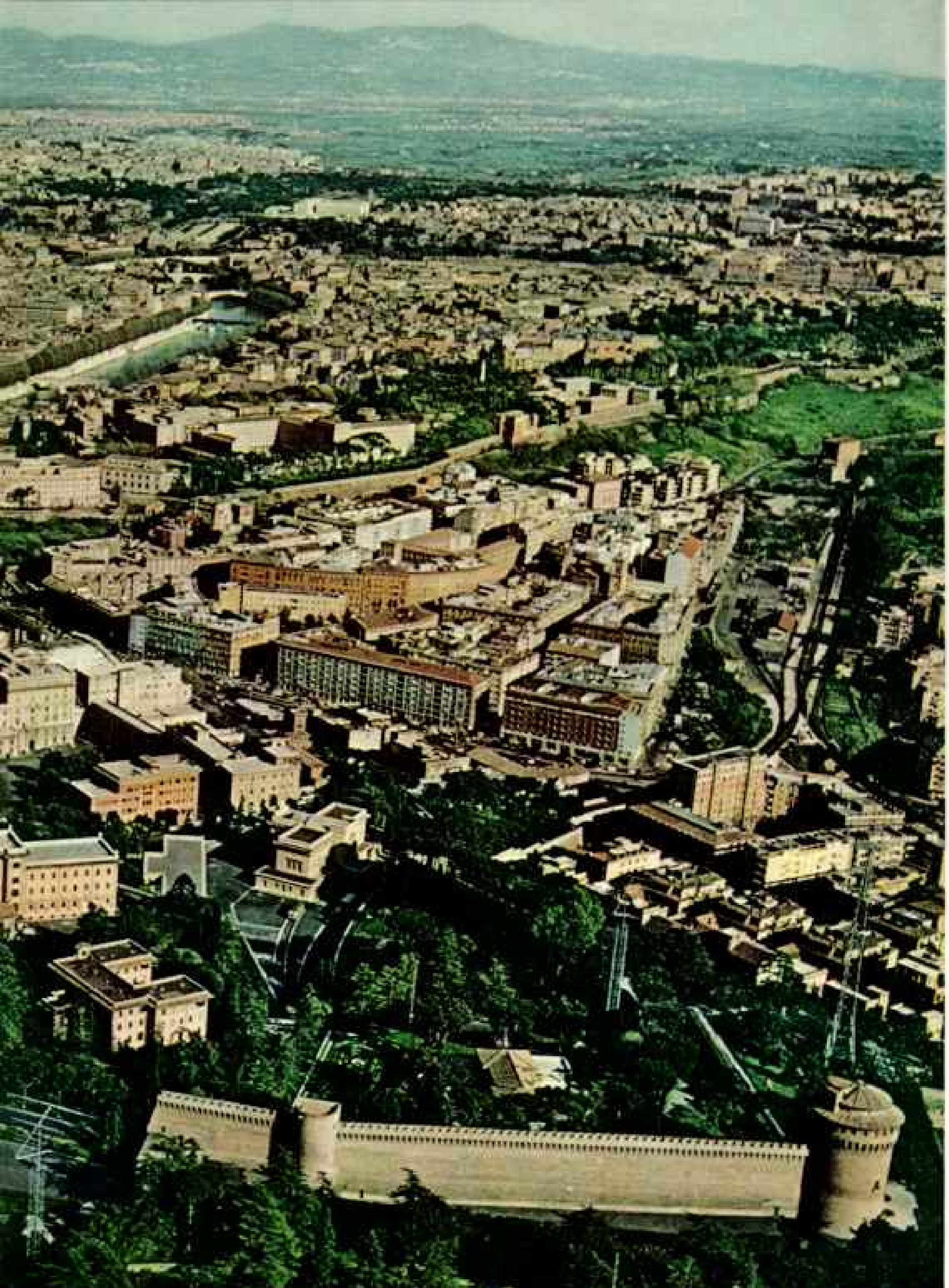
In a sense, purely local Roman politics mirror national politics. (Italy has seen more than two dozen cabinets topple since the end of World War II.) As in the national government, no one local political party commands sufficient strength to govern on its own. The largest party, the middle-of-the-road, Vatican-supported Christian Democratic, must wheel and deal among some 10 other parties to form a majority coalition.

Rome is governed by an elected council, a council-appointed mayor, and a *giunta*, an executive committee or cabinet. Mayors and giuntas come and go regularly, leaving matters in the hands of largely powerless caretaker administrations. Darida himself headed a new 18-member giunta after the city had lived in such a vacuum for three months.

KODACHROME © N.G.S.

Songs of love and laughter: A strolling accordionist at Piazza di San Giovanni in Laterano entertains during the June Feast of St. John, when Romans traditionally dine here at outdoor tables on suckling pig and snails.

Mantle of mellow hues—*il rosso di Roma*—envelops a city whose builders, past and present, have used brick, painted stucco, ocher-tinted tufa, and travertine from the hills of Tivoli in the distance. Only the monument to Vittorio Emanuele II, upper center, glistens pristinely in a cloak of white Botticino marble. Walled state within the city, the Vatican, foreground, with its domed St. Peter's Basilica, covers 109 acres. All Rome was under papal rule from the sixth century A.D. until the city became Italy's capital in 1870. But not until

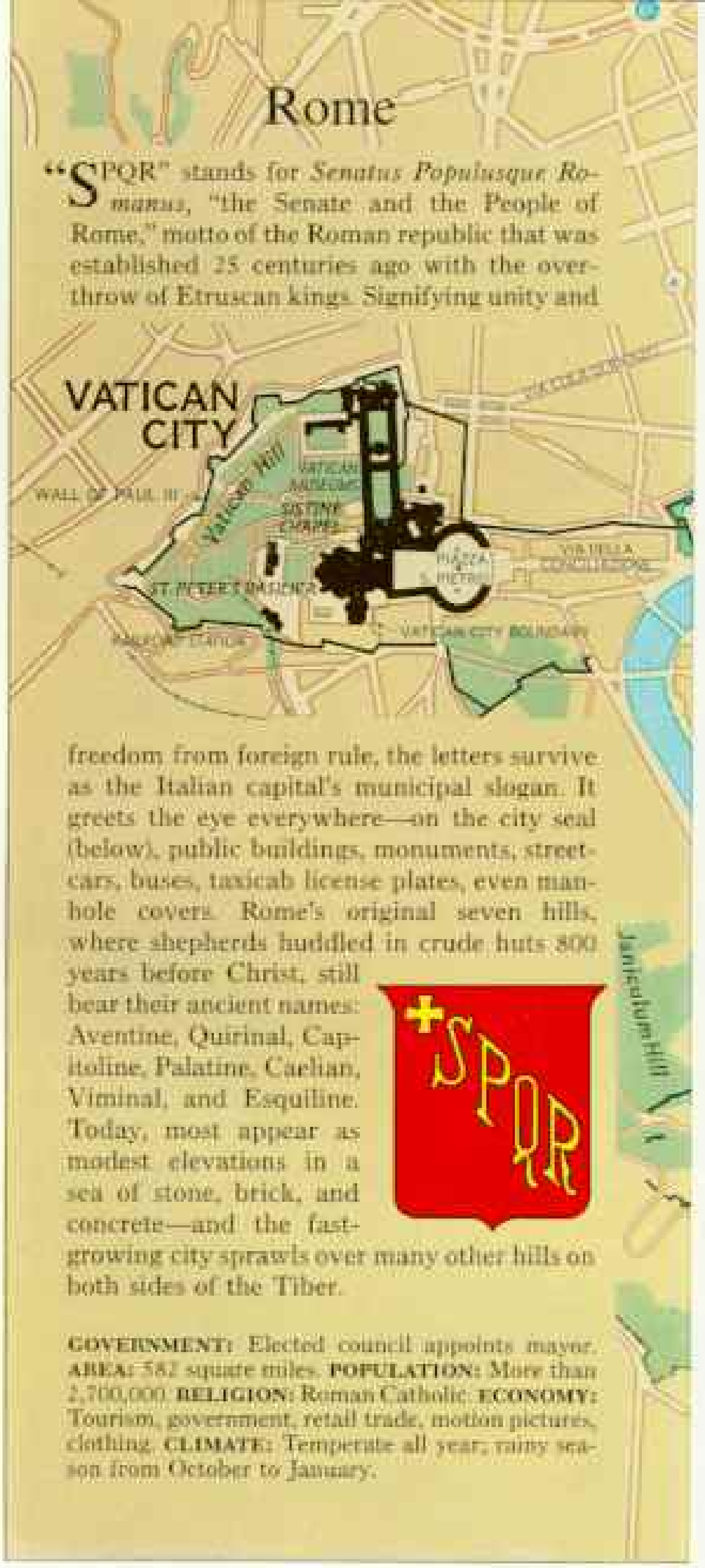


COLORCHROME BY WORTHLEY PRESS © N.G.S.

1929, in a conciliation with Mussolini, did the Papacy renounce its claims to all other Italian territories and win recognition of its sovereignty over Vatican City. Residence of a thousand citizens, the enclave has its own railroad station, post office, radio station, newspaper, mosaic studio, palaces, gardens, library, and museums. The round Castel Sant' Angelo, beside the Tiber at upper left, was built as Emperor Hadrian's tomb. It became a palace, prison, and fortress for Popes and rival nobles; now it houses military and art museums.

KODACHROME © N.G.S.

Emperor in fragments: Constantine the Great embraced Christianity early in the fourth century, and the once-persecuted faith blossomed across an empire that stretched from Britain to Syria. These remnants of the ruler's colossal seated figure rest in a courtyard of the Palazzo dei Conservatori. Raised finger seems to signal for attention, just as today's volatile Romans rely on animated gesture in conversation.

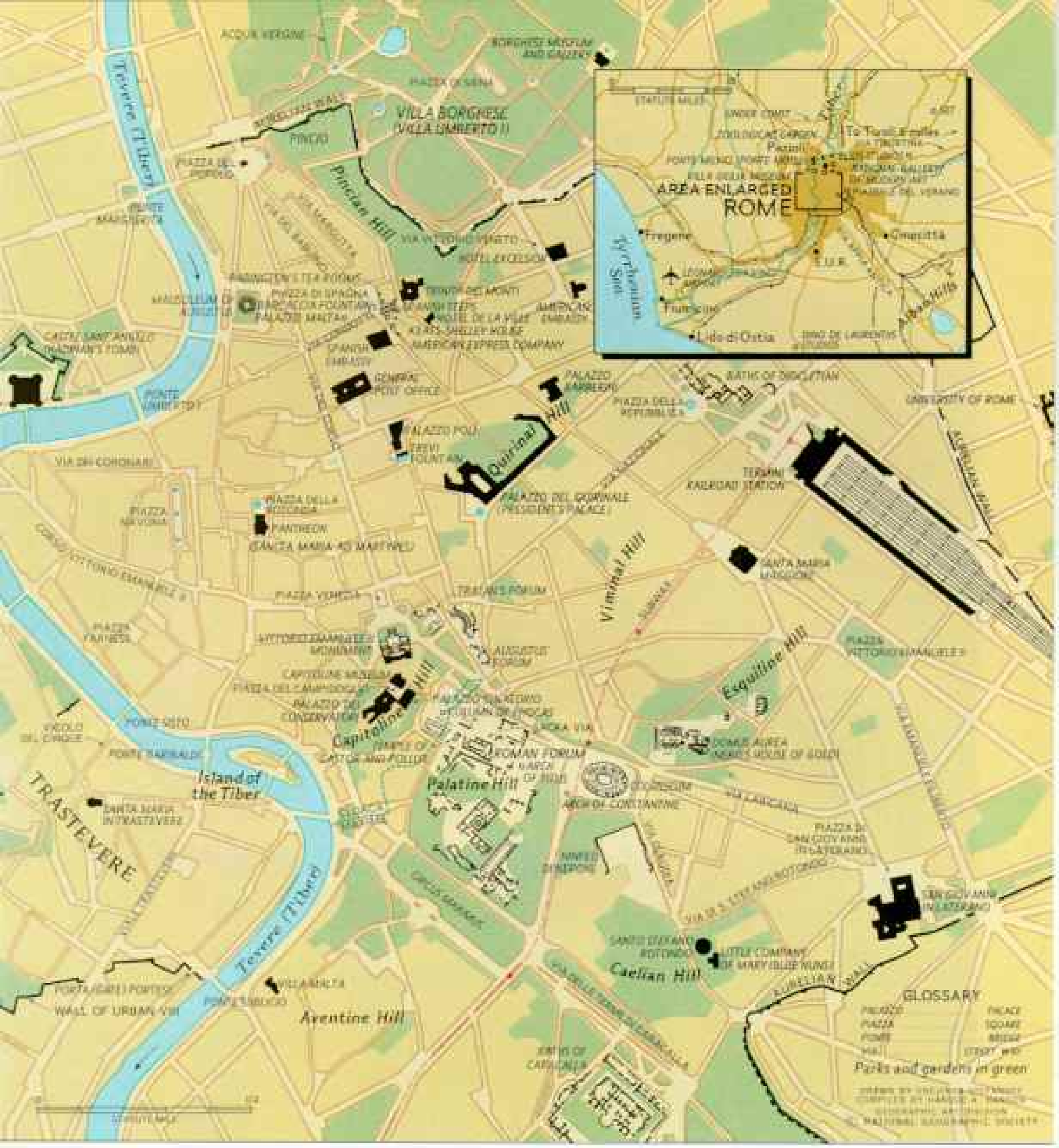


The previous administration of Christian Democrat Mayor Rinaldo Santini did not collapse with a bang or even a whimper; it just faded away. One cabinet member died and several others quit, forcing Santini to resign. The giunta simply disappeared in the fog enveloping the problem of governing Rome.

Meanwhile, to a tom-tom beat of rubber stamps, the average Roman hacks his way despairingly through a jungle of statutes, rules, and regulations, some of them antiquated. One businessman told me that if he paid all the taxes the laws said he should, he would hand over 110 percent of his income.

More housing was among the city's most pressing needs—but first there had to be a new zoning law. Before 1962 the only zoning was that established under Fascism in 1931. At war's end, and especially from 1952 onward, came an outbreak of helter-skelter building outside the 1931 city limits, where permits were either bypassed or not required.

At the same time, a good deal of illegal construction was done elsewhere. Some 300,000 illicit housing units were thrown up with no city authorization and no zoning—



and with inadequate schools, sewers, paved roads, playgrounds, and parks.

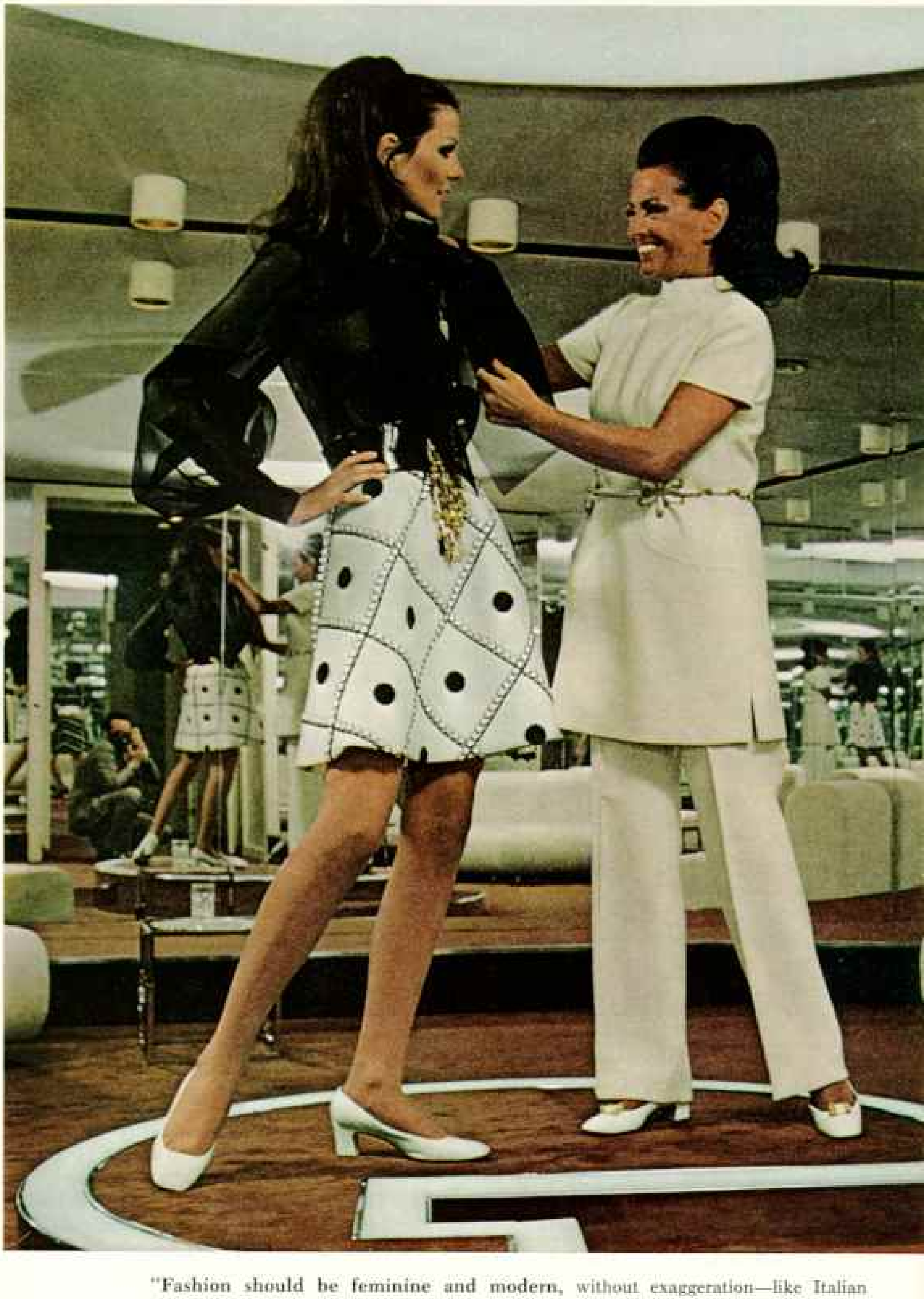
Unable to afford or find room in the low-income housing areas, thousands of the homeless have built shantytowns tucked against crumbling aqueducts and modern railway viaducts. All told, an estimated 65,000 dwell in such tin-roofed hovels rimming the city.

Job-seekers Flood Italy's Capital

Many of the impoverished, hearing that jobs were to be had in Rome, migrated from the agrarian and chronically depressed south of Italy. What they found was not a manufacturing city, but one that lived on tourism, government jobs, and shopkeeping. Even if Rome had large-scale industry capable of absorbing migrants, most would be found lacking in education and basic skills.

The steady influx has made an accurate estimate of Rome's population difficult. The official figure is 2,700,000. As many as 300,000 more are believed to have become residents, but neglected to register as such.

Along with the rest of Italy, Rome suffered from a succession of strikes, some marked by



"Fashion should be feminine and modern, without exaggeration—like Italian women," says Princess Irene Galitzine, center. In her Via Veneto showroom the designer adjusts silk organdy dinner dresses before a 1969 spring showing. Rome's pace-setting

fashions for men and women have helped boost Italian clothing and textiles to a two-billion-dollar-a-year export industry, second only to machinery.

noisy demonstrations and minor violence. Shortly after I arrived in the spring of 1969, filling stations shut down for about a week, their operators demanding a larger share in the proceeds from sale of gasoline.

With gasoline not readily available, it seemed reasonable to assume traffic would decrease. On the contrary, streets were as jammed as ever. I asked a cab driver why.

He smiled cryptically. "This is Rome," he said. "There are ways."

Airport Strikers Work Harder Than Ever

All through 1969 and into 1970, hardly a day passed without a walkout by some group of workers, sometimes two or three strikes ran concurrently. Most were for the usual reasons—workmen wanted higher pay, shorter hours, more liberal medical and retirement benefits. At the height of the 1969 summer tourist season, customs inspectors at Leonardo da Vinci Airport at Fiumicino introduced a novel version of the slowdown—the "zeal strike."

For years, passing through customs at Rome's airport had been a swift, relaxed, even genial business. Bags were seldom opened for inspection; in the case of arriving Americans, almost never.

Now, with grievances that called for action, the customs inspectors resorted to thoroughgoing zeal in performing their duties. They worked by the book, opening every bag, carefully reading and applying the fine-print rules of every form. The result of this carnival of red tape was chaos at Leonardo da Vinci.

A few days later, postal workers adopted the zeal strike, going about their work with scrupulous adherence to a resurrected postal law dating back to 1905. Result: a colossal pileup of letters and parcels.

When post offices could hold no more, officials desperately loaded tons of mail aboard freight cars and sent it wandering about the national railway system. Off and on for weeks, very little mail left or was received in Rome. To get bills and other correspondence to their customers, many business firms set up their own messenger systems.

But enough of Rome's problems, and back to its pleasures. Observing the gaiety in hotels, restaurants, bars, theaters, and shops, one would never suspect that the city had a quandary to its name.

On a sunny April morning I walked down the 137 worn travertine treads of the Spanish Steps (pages 762-3). I followed a zigzag course,

picking my way between the relaxed bodies of *i capelloni*, "the long-haired ones," the wandering youths of many nations who have made the staircase a favorite meeting place.

Up and down the great cascade of stone the foot-loose members of the under-30 generation strummed guitars and thumped bongo drums, sold costume jewelry they made from silver wire, or just cultivated hair and indolence. Occasionally they visited their consulates or American Express, to see if dad's remittance had arrived. Some spent their nights in inexpensive hostels or *pensioni;* others unrolled sleeping bags in rent-free caves under the Pincian Hill or in leafy nooks in the gardens of the Villa Borghese.

On this day the youngsters competed for space with hundreds of big jardinieres holding azalea plants, brought in by city workmen during the night. In a few weeks the azaleas would explode in a gorgeous springtime show of red, pink, and white blossoms.

Paparazzi Stalk Passing Celebrities

At the foot of the stairs, in the Piazza di Spagna, I passed the time of day with an acquaintance, the "King of the Spanish Steps." He was the leader of the *paparazzi*, the picturesque free-lancers who live by photographing celebrities, preferably in unguarded moments. Formerly the paparazzi prowled the Via Vittorio Veneto (pages 744-5), but lately they have found the Piazza di Spagna neighborhood a better hunting ground.

The king and his confederates were on the alert, having been tipped that a movie actress was about to appear. When she tripped down the stairs, there was no fuss about photographing her; in fact, her press agent assisted in arranging poses.

The paparazzi went about their work with an air of boredom, barking commands like "Smile!" and "Look happy!" The actress meekly obeyed.

"It is more sporting with people who don't want to be photographed," the king told me. "Then it becomes an exciting game."

I had an *espresso* with the king, and climbed to the third floor of No. 26 Piazza di Spagna, a narrow four-story house of weathered saffron stucco. The windows of one wall overlook the Spanish Steps.

Here I entered a world that was light-years removed in spirit from the noisy, supercharged Rome of today. I came to revisit the rooms where poet John Keats died and to renew an acquaintance with Vera Cacciatore, curator of the Keats-Shelley House.

The apartment's aroma of furniture polish, old leather bindings, and musty papers was the same after 25 years, and the curator as sprightly as ever. Signora Cacciatore, who holds a doctor's degree in English literature from the University of Rome, has tended the pathetic relics of Keats since 1933. Over the years she has served as consultant to dozens of scholars and researchers and to many others who simply come to pay tribute to the poet's memory.

Once again I visited the small room where the 25-year-old Keats died of tuberculosis on February 23, 1821. The walls held sketches, photocopies of original poems, and a tiny portrait of the poet's sweetheart, Fanny Brawne. In the display cases were letters, fragments of manuscripts, a lock of Keats's light-brown hair, and a death mask.

"It is quiet here," said Signora Cacciatore, "not like the uproar outside. I think of this apartment as a poem in itself."

Shrine Unscathed by Time and War

Sitting on a little terrace, we were screened by a trellised vine from passers-by on the Spanish Steps. Of all the people who had come to the little museum during her years as curator, she said, none had been more welcome than a visitor who arrived at dawn on June 5, 1944, the day after the Allies liberated Rome from the Germans.

Since midnight Signora Cacciatore had been peering from a window in her flat above the Keats quarters, watching the defeated in retreat and their conquerors arriving.

About 5 a.m. of that unforgettable day, a jeep halted at the curb before No. 26. A man alighted and knocked at the door.

"When I opened the door," said the curator, "he introduced himself as A. C. Sedgwick, Fifth Army correspondent of the *New York*

Restful as a country home, this penthouse *terrazza* five stories above a busy main street offers quiet repose along with a view of distant St. Peter's. In a city with only two square yards of park space per person—one of the lowest ratios of any European capital—tenement dwellers and *palazzo* residents alike tend bits of greenery on balconies and window sills.

Times. He said he had lived in Rome before the war, and now he was just stopping by to see how the house had come through the nine-month German occupation of Rome.

"I was able to tell him, 'Everything is all right—now.'"

Returning to the Piazza di Spagna, I found a seat on the low curb surrounding the boat-shaped fountain and watched water spout from ports fore and aft, slop over the gunwales, and bubble from a jet amidships.

The Barcaccia, my favorite among Rome's beautiful fountains, was built by order of Pope Urban VIII, some say to honor a vessel that saved many lives in a disastrous Tiber flood in 1598. Receding waters supposedly left the boat stranded here.

The Barcaccia was designed by Pietro Bernini, whose more famous son, Giovanni Lorenzo Bernini, created many of Rome's baroque treasures.

Cooks Rely on a Flavorful Fountain

With few interruptions the elder Bernini's travertine galley, permanently becalmed in its little oval sea, has been bubbling, gushing, and leaking since 1627. Romans of the neighborhood will tell you that its water has unusual qualities. "Its taste is superior," they say. "Artichokes and zucchini cooked in it have special *brio*."

That is why householders, bearing jars and buckets, still troop to the fountain from the Via del Babuino (Street of the Baboon), the Via Margutta, where painters and sculptors live, and other nearby quarters. Scoffers say they could draw equally good water—possibly the same water—from their own faucets. For years it was believed at Babington's Tea Rooms, a little bit of England a scone's throw from the fountain, that the Barcaccia dispensed the only water in Italy fit for tea.

To reach its admirers, the water courses eight miles through one of three ancient conduits still serving Rome, an aqueduct originally built by the Roman general Marcus Vipsanius Agrippa in 19 B.C. After giving of its treasure to the Barcaccia and other outlets, the modernized Acqua Vergine terminates at

From toddler to elder, entire families enjoy Sunday strolls in the Pincio, a popular hilltop park. A crowd clusters in front of Teatrino di Pulcinella, a puppet show named for its Neapolitan hero. Nearby gardens of the Villa Borghese hold one of Europe's finest zoos.

Sidewalk spectators read neighborhood news in a widow's tear, a schoolboy's smile.

"*Pr-r-rosciutto,*" cries Edmondo Sibilia, rolling his *r*'s as he sells ham in the Piazza Vittorio Emanuele II, Rome's largest market. Stall keepers hawk a heady variety of foods—from squid, mussels, and live ducks and quail to artichokes, garlic, and zucchini.

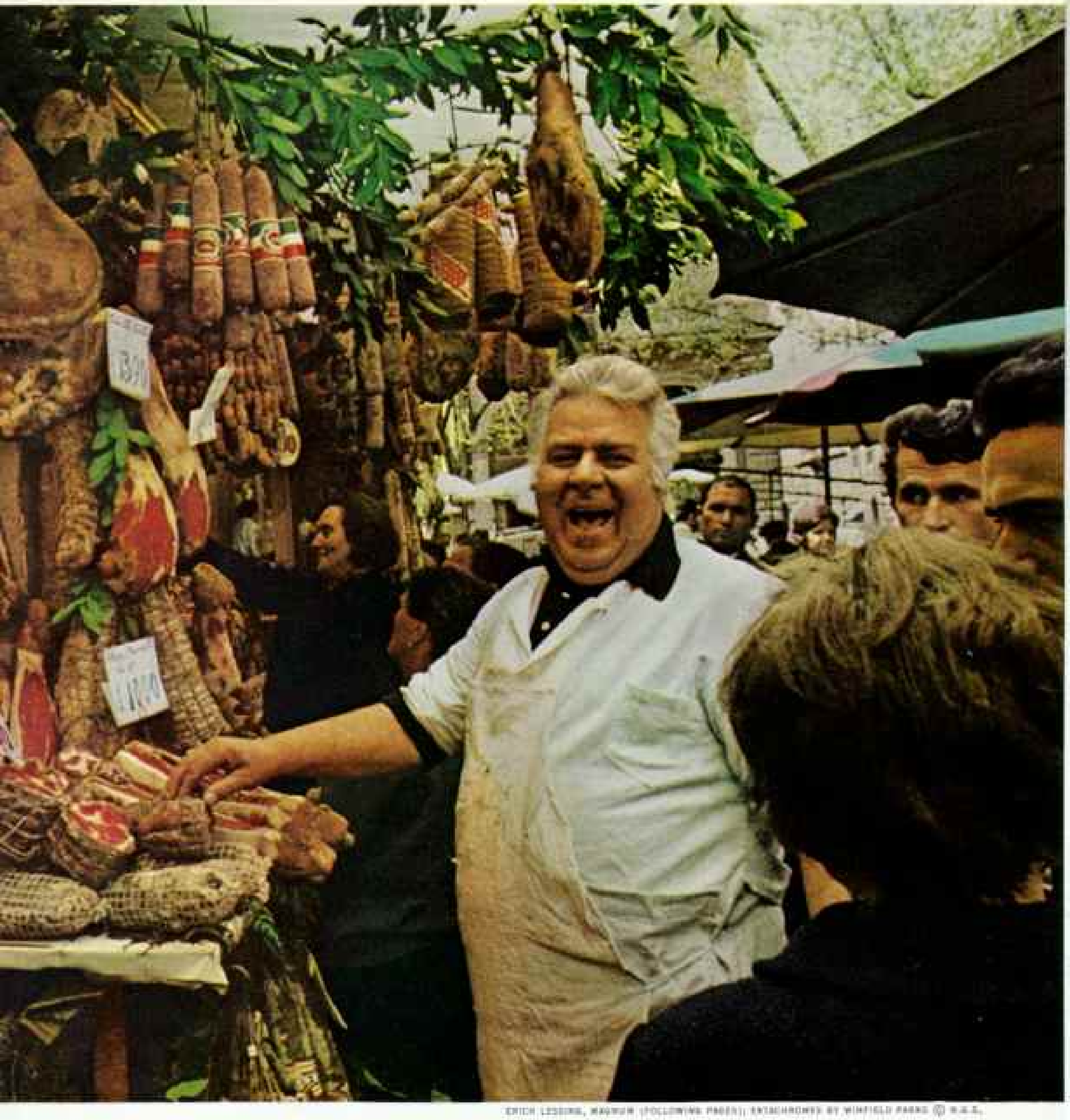
that queen of baroque waterworks, Niccolò Salvi's Trevi Fountain (page 766).

A fountain of another sort often attracts strollers after they leave the Piazza di Spagna and head westward along the Via Condotti, Rome's most elegant shopping street. Glancing into the shadowy courtyard of No. 68, they see a small mossy basin. The wall behind the fountain bears a Maltese cross—white, eight-pointed, on a red background.

Passers-by who enter for a closer look read a sign just inside the gate and learn to their surprise that they have stepped across a frontier and are no longer in Italy.

In the courtyard they find parked automobiles bearing another state's license plates, marked "S. M. O. M." In the tiny post office at the rear of the building they can buy the state's own postage stamps. If they had proper credentials they could obtain S. M. O. M. passports.

Palazzo Malta, the Via Condotti building, is the seat of Christendom's oldest surviving order of chivalry. The organization bears

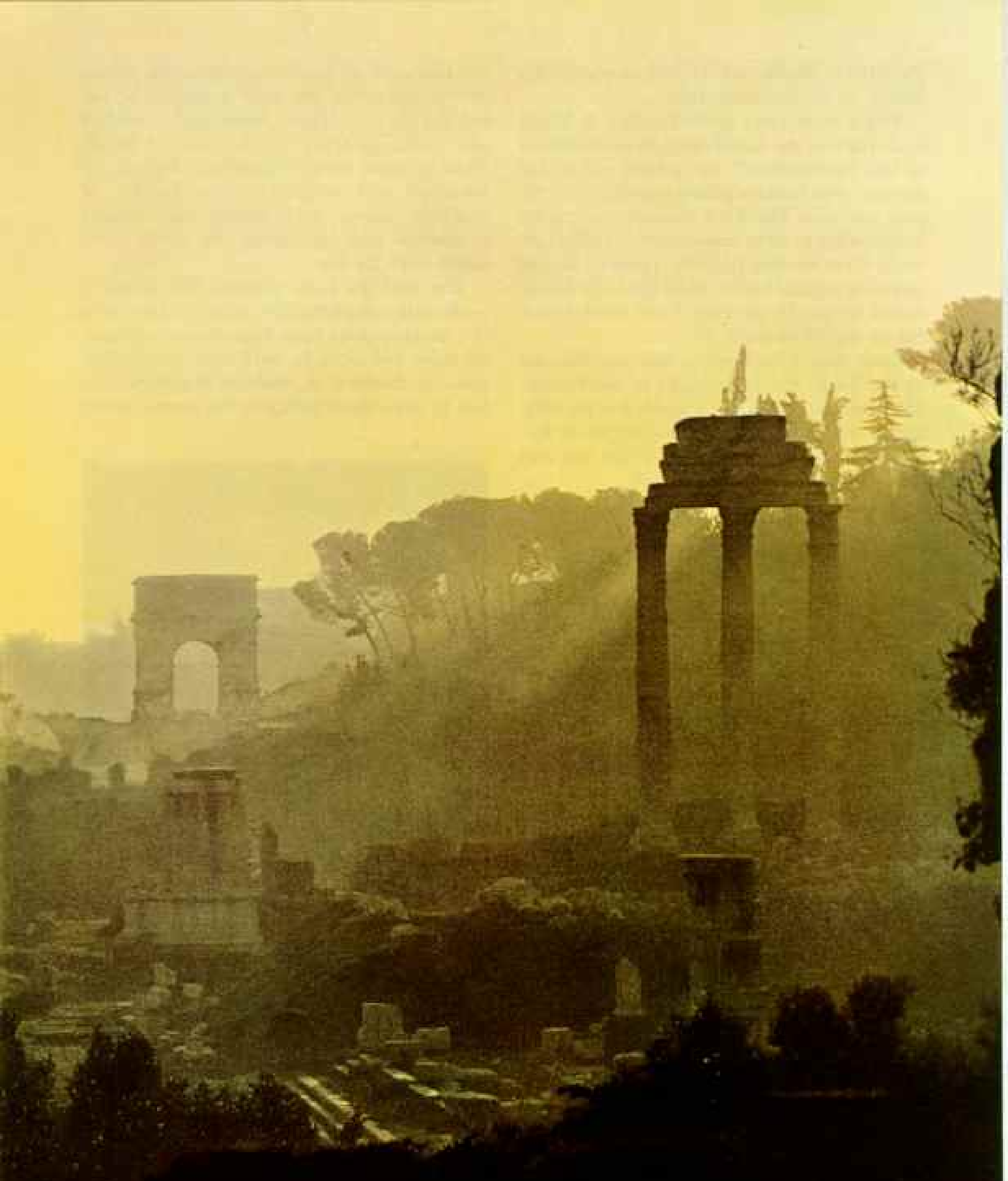


ERICH LESSING, MAGNUM (FOLLOWING PAGES); ENTACHROMES BY WINFIELD PARKS © N.G.S.

the resounding name Sovereign Military Hospitaller Order of St. John of Jerusalem, of Rhodes and of Malta. For short, it is called the Sovereign Military Order of Malta or, handier still, the Knights of Malta. Thirty-four countries recognize the Roman Catholic order's sovereignty and maintain full diplomatic relations with it (page 767).

Most people think of Vatican City, which covers 109 acres, as the world's smallest state. Territory of the Knights of Malta totals only about three acres, consisting of

Paths of glory led but to ruin (following pages). Hill dwellers originally created the Roman Forum as a marketplace. On stones of the Sacra Via, left, patricians and plebeians bargained, elected officials, heard speeches, and paid homage to pagan gods. Columns at right commemorate Castor and Pollux, patrons of officers of the legions that bound much of the known world into one empire. Distant arch celebrates Titus's victory over Jerusalem in A.D. 70. Column at left honors Phocas, a seventh-century Byzantine emperor.



the Palazzo Malta and the 13th-century Villa Malta, on the Aventine Hill.

Today more than 8,000 Knights of Malta in all parts of the world carry on the tradition of the "hospitallers," the archaic name for persons who band together to give aid to the poor and sick. The First Crusaders, arriving in Jerusalem in 1099, found the hospitallers already there tending pilgrims. Granted formal status by a papal bull in 1113, the order maintained its seat in the Holy Land until driven out by the Moslems in 1291.

Since then it has been ousted from Rhodes by the Turks and from Malta by the French. After leaving Malta, the knights had no territory to rule, save for the two parcels of Roman real estate acquired 500 years ago and used as headquarters since 1834.

Humanitarian Work Goes On

Through all their centuries of rising and declining fortunes, the knights have continued their widespread good works. For example, the Maltese cross appears on the uniforms of medical and welfare teams serving in Viet Nam and in emerging countries of Africa. An outpatient clinic in the Palazzo Malta cares for the indigent of Rome.

One day I presented my card at the palazzo gate and asked to see the man in charge. Soon I was ushered through quiet, richly furnished corridors to the spacious office of the second ranking Knight of Malta. Grand Chancellor Quintin Jermy Gwyn, a Canadian, and Mrs. Gwyn live in the palazzo, as does his superior officer, the Prince and Grand Master Angelo de Mojana, an Italian.

"My duties are mainly administrative," Mr. Gwyn told me. "I supervise the order's humanitarian work and also try to take some of the ceremonial load off the shoulders of the prince and grand master. As we are involved directly with the affairs of the order in some 50 countries, this amounts to something more than a full-time job."

After we had talked for a time, Mr. Gwyn looked at his watch and excused himself. "I must be off to see the Argentine Ambassador."

In the courtyard a chauffeur was dusting a car that flew a Maltese cross flag. In a moment the grand chancellor would cross the frontier, a stone curb separating the sovereign territory from the Via Condotti sidewalk. I wished him well, for I knew he faced untold perils. He would be leaving his tranquil realm for a ride across Rome.

Every day the narrow, tangled streets of the Eternal City become the arena for a form of warfare unlike any ever witnessed by the old Knights of Malta. Some call it *traffico alla Romana*—traffic in the style of Rome. Driving their many-cylindered chariots, or helmeted and goggled in the saddles of snarling Vespas and Lambrettas, today's centurions and legionaries ride forth to do battle with the foe.

The foe? To each motorist the enemy is every other motorist, the representative of a sly, unscrupulous force that menaces him on all sides and must be outwitted, humiliated, possibly disabled or rendered immobile. Unless he does these things to the enemy, every

EXTACHROME (ABOVE) AND KODACHROME BY WINFIELD PARKS @ N.G.S.

Gift of France, namesake of Spain, and haunt of English Romantics, the Spanish Steps rise azalea-draped on a morning in spring. The French donated the elaborate stairway in 1725 to pave the muddy slope from Piazza di Spagna (Spanish Square) to the French convent and church, Trinità dei Monti. Poet John Keats died in the house at lower right; Lord Byron lived nearby.

Extachrome © N.G.S.

Aristocrats of Italian law, mounted Carabinieri perform a precision drill in the finale of the Concorso Ippico, Rome's spring horse show in the Piazza di Siena. Colors swirl in a kaleidoscope of motion.

Both the corps and its dress uniform (above) were patterned after Napoleon's mounted carbine-bearers. Aiding in the unification of Italy, the Carabinieri won such prestige that the Italian parliament in 1864 commended them as *La Benemerita Arma*, the best of the armed services. The reputation endures.

driver seems to believe, these things will be done to him.

Keen, alert, his hand ever ready at the horn button, the driver rushes headlong toward his objective—usually a parking space. En route, he strives to best his competitors at every intersection, to be first off the mark when traffic signals flash green, thus scaring pedestrians out of their wits. In victory he hopes to expose rivals as hopeless incompetents, suited to driving oxcarts, perhaps, but ludicrously unequal to the demands of traffico.

Rome Chokes on Its Own Traffic

Some observers regard traffico as a kind of art form, rather than warfare or sport. "Every Italian driver is an artist," these people say, adding, "but, like so many artists today, he is an abstractionist."

In the daily traffic competition, these theorists say, motorists find new outlets for the famous Italian creative spirit. I asked a University of Rome psychologist about that notion. He snorted.

"What are they creating, these automotive anarchists?" he asked. "As I see it, all they have brought into being is possibly the world's worst traffic problem. I have lived through traffic crises in Tokyo, Paris, New York City. I have seen what happens in your Washington, D. C., during a snowstorm. A rush hour in Rome—any one of our four or five daily rush hours—surpasses them all.

"Sometimes," the professor went on, "as I look upon

"Rather a waterfall than a fountain," wrote Shelley in 1819 of Trevi, even then the most celebrated of the city's many aquatic displays. Into its broad basin, water flows amid figures of Neptune and attendant sea gods. Tourists bring a babel of many tongues and perpetuate a legend: Each turns his back to the basin and flings a coin over his shoulder to ensure a return to Rome.

Her flowers are her pride. A *fioraia* readies a day's offering of roses, irises, carnations, and other blooms. Romans regularly buy fresh flowers not only for loved ones and the sick but for favorite saints, honored in street-corner shrines.

the clogged streets, hold my ears to shut out the obscene racket, and gag on exhaust fumes, I am filled with sadness. Here we have a city approaching three million inhabitants. One in every three owns a car. Ten years ago, the ratio was one in eighteen. That means close to a million cars now, compared with 130,000 a decade ago."

Rising from behind his desk, the professor gazed from a window upon a chaotic street.

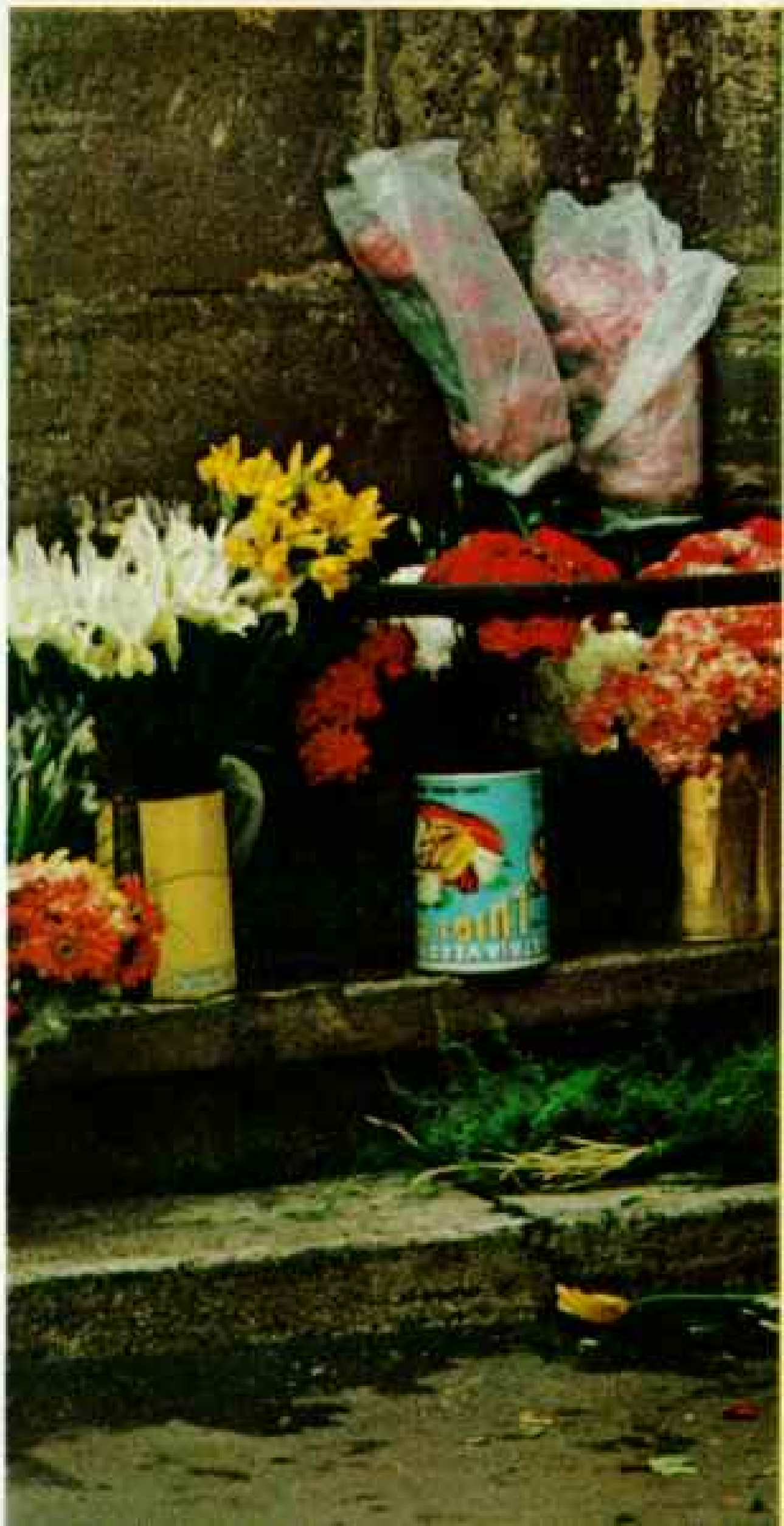
"Our beautiful city!" he exclaimed, almost sobbing. "What is to become of it? People and cars continue to proliferate. Perhaps the ultimate solution will be to wait for a truly monumental traffic jam, then bury the whole mess in wet concrete and let it harden. Then Rome could start all over again."

Life Goes On in the Piazza del Popolo

As might be expected, Rome has hundreds of traffic accidents daily. Most do little harm and are forgotten after brief, fierce arguments and the exchange of epithets such as *"Cretino!"* or *"Stupido!"* I witnessed several mishaps that caused only slight damage but created street scenes that were pure theater of the absurd (page 745).

Photographer Winfield Parks and I, seated one day in a sidewalk cafe in the Piazza del Popolo, heard a crunch and looked up to see that a small sedan had collided with a bus. At the same instant we saw a large object flying toward the cafe. It was the bus's front bumper, torn off in the crash.

As we watched, the bumper landed on an unoccupied table, a few feet from a plump *monsignore* who had been quietly drinking a



Crusaders for charity, red-jacketed Knights of Malta celebrate the Feast of St. John, their patron, at Villa Malta. Grand Commander Frà Vittorio Marullo di Condojanni, center, talks with Don Antonio Rodriguez, a diplomatic representative of Chile, one of 34 nations that recognize the knights' three-acre Rome headquarters as a sovereign state. The 900-year-old order of chivalry, founded in Jerusalem before the Crusades, performs good works worldwide through hospitals, ambulance corps, and relief for refugees.

Campari and reading *Osservatore Romano*.

A crowd gathered instantly, the two drivers faced one another grimly, and a large, white-helmeted policeman approached gravely, his notebook at the ready. After interviewing the principals, the officer turned to the spectators, seeking names of witnesses. The crowd quickly melted away; nobody wants to be involved in an Italian lawsuit.

Twenty minutes after the crash, the sedan's owner straightened a fender where it chafed against a wheel and drove off. The bus driver threw the bumper into his vehicle and did likewise. The policeman filed his notes in his helmet and strode into the cafe for an espresso. The monsignore who had barely escaped disaster ordered another Campari and resumed reading his newspaper. Life in the Piazza del Popolo went on as before.

Market Folk Enjoy a Quarrel

On another day, after shopping in the vast outdoor market of the Piazza Vittorio Emanuele II, I saw a small three-wheeled delivery van ram a tramcar amidships. Keepers of the market stalls promptly suspended the sale of salami, ham, tripe, pasta, cheese, artichokes, live hares, and secondhand clothing (pages 758-9). They expected a show, and they were not disappointed.

The van's driver, unhurt, sorrowfully examined his crumpled vehicle and then, to the surprise of everyone, suddenly began climbing the side of the tram toward an open window. As he climbed, he exchanged heated remarks with a passenger in the crowded car.

My Italian companion explained: "The man on the tram has insulted the deliveryman. The deliveryman wants to climb aboard and destroy him. Now look! Two of his friends have come to help him. See, they lift him! But the tram's sides are too slippery, and there are bars over the windows."

At this moment the tram motorman, impatient at the delay, applied power and the car moved off. The deliveryman ran alongside, shouting and gesticulating at his tormentor, who replied in kind from inside.

"The man on the tram," my friend said, "has said that he could not get off here because he was blocked by the crowd. But he says he will meet the deliveryman at the next stop, and there settle the affair."

The man least amused by such incidents sits in a municipal office juggling three telephones and puzzling over street maps and traffic-flow charts. He is Traffic Commissioner Carlo Rosato, who has the job of curbing Rome's rampaging cars.

Commissioner Rosato's long-term strategy calls for the eventual elimination of motor vehicles, save for those performing essential services, from the inner city, the area once enclosed by the wall built by Emperor Aurelian in the third century A.D. Already traffic-free oases have been created around the Trevi Fountain, at the beautiful Piazza Navona, and along the colorful street of antique shops, Via dei Coronari.

The city has also launched a decentralization campaign, which would limit building and redevelopment in the old city and send offices, shops, and apartment houses to satellite communities now rising around Rome.

Romans Stoutly Resist Regimentation

But the aims of Rosato and his colleagues collide head on with the desires, the dreams, the sturdy individualism of Roman motorists.

"For years," they argue, "we have wanted automobiles, and now we can afford them. It is our right to drive them where we please."

Furthermore, while some Romans gladly move to spanking-new suburbs, others reject the idea. They are city people, they say; they prefer to live in gossipy intimacy in dark, noisy little streets, where all the latest news may be learned by opening a window or going to a cafe a few steps away. When they feel a need to visit the country, they will go in their own cars.

Fully aware of this attitude, Rome's traffic planners plead for more policemen and heavier penalties for offenders. For years the maximum fine for illegal parking has been 1,000 *lire*, or $1.60—a modest price, say affluent Romans, for such a convenience.

Apartment dwellers in Trastevere, Rome's old quarter "across the Tiber," make narrow streets into parlors and playing fields. Washing hung and lunch eaten, matrons meet to gossip while children play during *pennichella*, the three-hour siesta time when businesses and schools close. The aromas of roast lamb, a specialty of *trattorie*—neighborhood restaurants—and of fresh pastry from small bakeries drift through the passageways.

At last count Rome had about 2,800 policemen, or one for each 1,000 citizens. In comparison, the District of Columbia plus its Maryland and Virginia suburbs—with a population roughly equal to Rome's—was policed by about 5,500 lawmen, or one for each 545 citizens. Nobody could say where Rome would get the money to hire more *poliziotti*.

Everyone agrees that an efficient subway system would go far toward solving Rome's traffic problem. For half a century city officials have been discussing the question of where to put it without endangering ancient monuments and archeological treasures. During that time the city has completed barely six miles of subway.

The line now existing was ordered by Mussolini to connect the central railway station with outlying E.U.R., a community that grew out of Il Duce's scheme for a world's fair, Esposizione Universale di Roma.

World War II killed the exposition plan, E.U.R. became an attractive suburb—and the line passes so close to the Colosseum that experts fear damage from vibrations.

Ancient Baths Force a Subway Station to Move

Work on an expanded subway beneath the old city began in February 1969. Much was expected of new techniques that would sink the tracks 75 feet below ground. No sooner had preliminary digging for a station at the Piazza della Repubblica begun than workmen struck an important group of ancient buildings, part of the Baths of Diocletian.

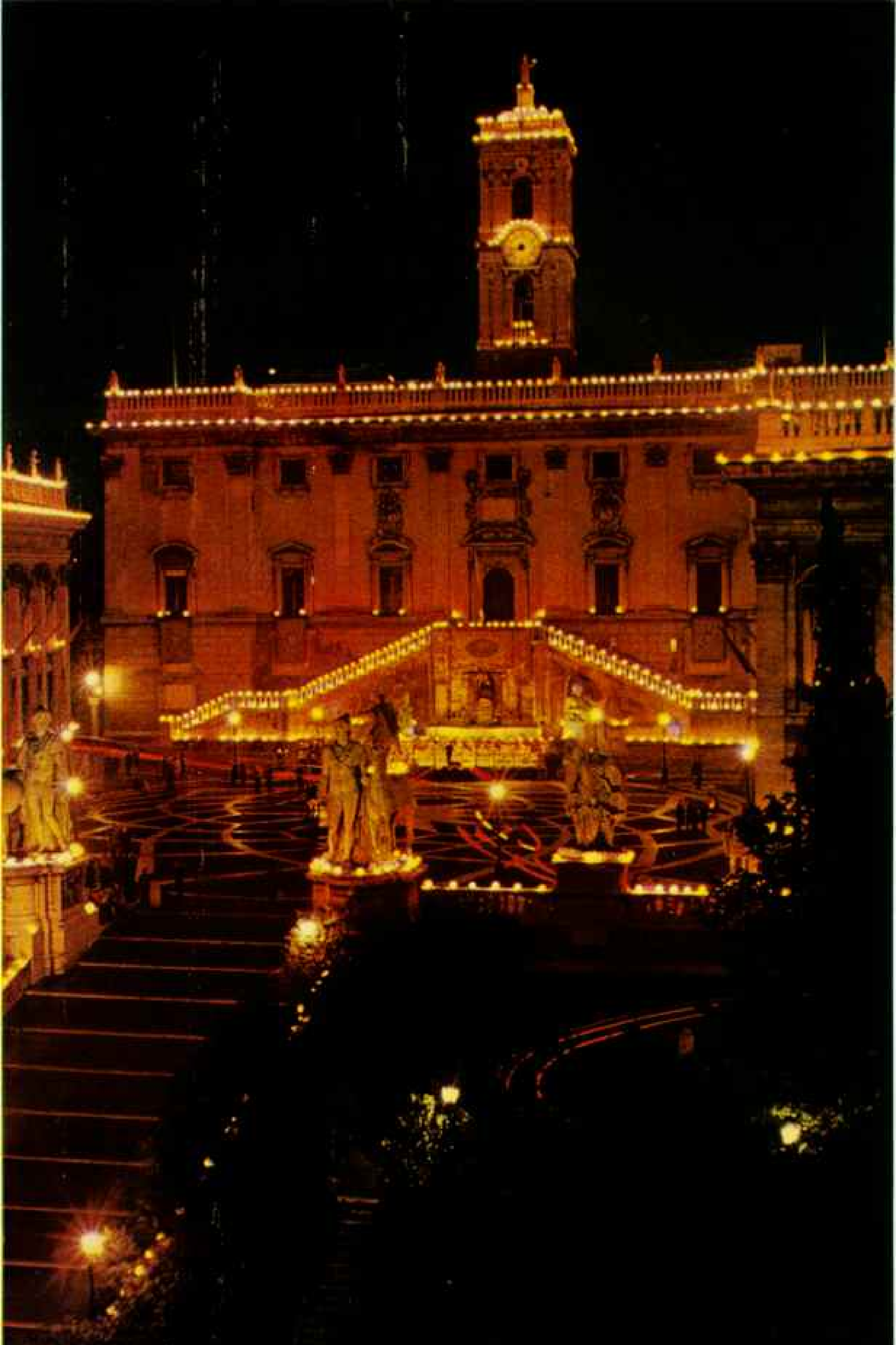
The national fine arts commission stepped in and said "Stop!" Now the subway station must be shifted 90 feet. Some Romans grumble that their city already has perhaps the world's largest supply of antiquities and could afford to pass up additions in the interest of rapid transit.

For years others have been saying, "Men will walk on the moon before Rome gets a subway system." Last summer men did walk on the moon, and completion of a subway seemed as far in the future as footprints on Mars.

Whenever getting round Rome by taxi or on foot became too much of a strain, I retreated to a haven that, besides being peaceful and reasonably comfortable, bore me to almost any destination I chose. My refuge was a streetcar named ED. The abbreviation, appearing over the motorman's cab, stands for *Esterna Destra*. The full name is *Circolare Esterna Destra*, because the streetcar makes an "external circle to the right," a complete circuit of the old city as roughly defined by remaining segments of the Aurelian Wall (map, pages 750-51).

The city also operates a *Circolare Esterna Sinistra* (to the left). This line, following a less interesting route, uses

Birthday bright, Capitoline Hill—Il Campidoglio—sparkles for the *Natale di Roma*. Tradition fixes the city's founding as April 21, 753 B.C.—and recent excavations prove habitation by that time. Magnificent Renaissance design, conceived by Michelangelo in the 1540's, unifies stairs, piazza, Palazzo Senatorio (center)—the seat of city government—and the flanking palaces of the Capitoline Museums.




VIA MARGUTTA
CARNABY ST.
a
VIA MARGUTTA

buses that lurch, pitch, sway, belch noxious fumes, and generally lack ED's appeal.

ED is a lean, narrow vehicle, long in the trolley and often flat in the wheel. Built in two sections, hinged in the middle, the contraption bends like a strand of *fettuccine* as it rounds curves and corners. Watching ED creep up a hill toward my stop, I thought it wore a faintly sullen look, as if it resented being unable to escape its familiar track and go clanging through new streets and piazzas.

From Flea Market to Nymph's Garden

Few of ED's passengers even glance at the sights on the route, for they are predominantly Romans on humdrum errands. Every day they pass—and ignore—romantic ruins, historic and religious shrines, and architectural gems that thrill tourists by the millions.

ED has no guides, no upholstery, no air conditioning. Still, more and more tourists are learning about ED, and eagerly they climb aboard. The fare: 50 lire, or eight cents, which places ED among the world's truly great travel bargains.

Sunday morning is the time to ride ED to within walking distance of the *mercato delle pulci*, Rome's weekly "flea market" at Porta Portese. Here, stretching for blocks along the Tiber, canvas-awninged stalls offer every ware imaginable. Knowing bargain hunters hurry past displays of used clothing, plastic junk, caged birds, and nut-laden taffy and head straight for a section where antique furniture, paintings, sculpture, books, ornamental metalwork, rugs, and the like are spread over stalls and pavement.

Another day I alighted at the Colosseum stop, halfway round ED's route, to wander about a neighborhood I once knew well, where crumbling ruins recall much of the glory and tragedy of Imperial Rome.

Climbing the steep Caelian Hill along the Via Claudia, I passed the walled garden known as Ninfeo di Nerone, Nero's Sanctuary of the Nymphs. Nearby survive ruins of Nero's Domus Aurea, House of Gold, conceived by the emperor as a residence worthy of his greatness, but later recognized as a shrine to his megalomania. The Domus Aurea was a group of buildings decorated with gold, ivory, and mother-of-pearl, connected by long colonnades and surrounded by a vast expanse of gardens, parks, ponds, and forests stocked with animals brought from far corners of the empire.

"At last," said Nero when he took up residence in the Domus Aurea, "I can begin to live like a man!" Here he held his notorious orgies, and here he decreed the slaughter of luckless Christians—among them, tradition says, the Apostles Peter and Paul.

Nero's House of Gold stood for 36 years after his suicide. Then, in A.D. 104, it was swept by fire. Succeeding emperors completed the demolition, building public baths and

Mod look of giant sunglasses stands out in usually conservative Rome. This Italian girl shops on Via Margutta, a three-block side street famous for its artists' studios. The sign advertises an Italian clothing chain named for London's street of young fashions.

Everything comes, everything goes, say Romans, who have watched the arrival of invaders for millenniums. Now summer tourists, such as this motorcycling pair, arrive in record numbers—three million last year. Romans merely shrug, reclaiming their city each fall from the hordes of foreign admirers.

Patrician splendor for a star: Gina Lollobrigida fills her villa on the Via Appia Antica with art treasures collected during a 20-year career as an actress, including roles in more than 50 films. "The Magdalene" by Bernardino Luini hangs over the mantel; a Rodin bronze graces a table. Here sorting photographs, Miss Lollobrigida pursues another hobby. "I find it even more enjoyable to work behind a camera," she says, "than in front of one."

temples on the site. The largest of Nero's ponds, "like a sea," was filled in, and there Emperor Vespasian built an immense stadium. A huge statue of Nero was hauled by 24 elephants from the House of Gold to the amphitheater, where it long stood. The arena later acquired the name Colosseum.

Climbing the hill, I found the Via di San Stefano Rotondo and turned in at a gate. It opened onto the grounds of a convent-hospital. To explain my visit there I must return

again to the closing days of World War II.

In late May of 1944, when Rome's fall was imminent, a couple of correspondents sought me out in the press section at Allied headquarters in Caserta. They were going into Rome with the liberators, and they wanted to look up a distinguished American writer who was living there. The writer was George Santayana, Spanish-born philosopher, poet, novelist, and onetime professor at Harvard.

The correspondents needed Santayana's address. I radioed Washington, asking that the Pentagon get the information from Santayana's publisher. Back came a mystifying reply: "SANTAYANA BLUE NUNS."

We puzzled over this, and finally an Italian-American sergeant in my section provided a clue. Among Rome's many religious orders, said the sergeant, was the Piccola Compagnia di Maria, Little Company of Mary. Because of the color of their flowing veils, its sisters were known as the Blue Nuns.

A Roman Catholic order's mother house seemed an unlikely refuge for a finely tuned intellectual whose views smacked of atheism, but that was where we found Santayana. He was 80, in frail health, delighted to see his visitors, eager for a ride in their jeep, and willing to be interviewed until the sisters protested that he was becoming tired.

Santayana had been living in Rome for years. After Italy entered the war, his funds were blocked and he found himself near destitution. The Blue Nuns took him in. He stayed with them until his death in 1952.

Sister Kevin Promises a Prayer

During the year I was based in Rome, I returned to the hospital frequently, sometimes seeing Santayana but more often enjoying the relaxing, other-world company of the sisters. Most were Irish. There was always a cup of tea, with much good talk, to go with the small gifts I brought from the PX. The fact that I was not a Catholic disappointed the nuns, but they made the best of it.

At the reception desk in 1969, I was greeted by Sister Agnes Matson, a blue-eyed young woman from County Kerry. Of the nuns of the wartime days, she said, many had died and the rest were serving at other branches of the Little Company.

"But wait," she said. "There's Sister Kevin. I believe she was here then. I'll go fetch her."

Sister Kevin O'Donnell sailed into the room like a small blue galleon. She was elderly but lively as a cricket, with a Tipperary twinkle in her eye. She said she had been at the convent in Santayana's time but had not known him personally. She recalled him as a rather lonely man who kept much to his room, occasionally sunning himself in the garden.

"We prayed for him constantly," said Sister Kevin, "but I'm afraid he died an unbeliever."

She peered at me sharply from under her starched coif. "You are not an atheist, are you, my son?" she asked. I said I wasn't, but I'm not sure Sister Kevin believed me.

"In any case," she said as I left, "you are going back into a cynical city, and I shall say a prayer for you."

If cynical modern Rome can be said to have a hero, he is probably a tall, gentle bear of a movie director named Federico Fellini. The man himself would scoff at that label and others, such as "poet of the cinema" and "authentic genius."

"I am just a storyteller," says Fellini, "and the cinema happens to be my medium."

Hero or not, Fellini's appearances in public become minor problems in crowd control; his progress through the streets of Rome turns into a small parade.

Some say that Italians cluster about Fellini not because of simple adoration, but because every Italian is an actor, usually with a strong flavor of *prosciutto*. He believes that Fellini, in his incomparable wisdom, will pick him out of a crowd for a movie role, for that is the way *il Maestro* does much of his casting.

Industry Relies on "Spaghetti Westerns"

Headquarters of Italy's film industry is Cinecittà, the 150-acre complex of sound stages, laboratories, projection theaters, and other facilities at the foot of the Alban Hills, southeast of Rome (inset map, page 751). Cinecittà, a government project, was inaugurated in 1937, damaged by bombardment and neglect in World War II, rebuilt and enlarged in 1950. Among its activities is a school where aspiring young directors learn the skills developed by such masters as Fellini, Roberto Rossellini, Vittorio De Sica, Franco Zeffirelli, and Michelangelo Antonioni.

By early 1970 Italian film-making had become a chancy business, with many producers using the word "crisis" and blaming sudden withdrawal of American financing. Dino De Laurentiis, whose own huge studios had been empty for months, announced he was giving up production of films, and from other quarters came word of abandoned or sharply curtailed schedules.

Meanwhile, smaller establishments kept busy turning out low-budget films—especially the action-packed "spaghetti Westerns."

Italians began making spaghetti Westerns in 1962, but not until 1964 did they strike gold. That was when they released *Per un Pugno di Dollari (For a Fistful of Dollars)* with an all-Italian cast and production crew except for the star, a young American named Clint Eastwood. Phenomenal box-office success quickly converted a fistful of lire into a mountain of dollars.

At Elios Studios, eight miles out of Rome on the ancient Via Tiburtina, stands a permanent "Western" village, complete with raw wooden bank, saloon, church, blacksmith shop, water tower, and the like, all subject to quick modification to meet story demands.

On the day of my visit to Elios, Director Gianfranco Parolini was shooting *Sabata*, starring an American, Lee Van Cleef, as a "devil-may-care efficient killer" with a "wide range of tricky guns and armory." For the purposes of such films, aimed at English-speaking audiences, Director Parolini had changed his name to Frank Kramer. Except for Van Cleef and another American in a supporting role, all involved were Italian. The extras, mounted and booted and spurred like 19th-century American cowboys, refreshed themselves between scenes with swigs from straw-covered *fiascos* of Chianti.

Prop Warehouses Could Outfit an Army

Watching this and other spaghetti Westerns in production, I marveled at the authenticity of costumes and especially of props—rifles, muskets, swords, saddles, furniture, and other accessories. Costumes and horses, I learned, were provided by several Roman concerns, but props were the virtual monopoly of the firm known as SET.

When I visited SET's spread of immense warehouses near Elios Studios, Managing Director Alberto Mancini invited me to sit down and indicated a large throne.

"You find it comfortable?" he asked. "It was used by the Pope—Anthony Quinn—in *Shoes of the Fisherman.*"

(Continued on page 784)

Route to empire, pathway of Christianity, the Via Appia Antica won acclaim as "Queen of Roads" soon after Appius Claudius constructed it in 312 B.C. The Apostles Peter and Paul perhaps walked on these very slabs on their way to martyrdom in Rome. Chariots of legions en route to southern conquests left ruts visible yet. Amid the umbrella pines and cypresses, Romans built villas and tombs; Christians met in the catacombs. The well-to-do still live in estates along the picturesque roadway.

"Viva il Papa!"

"LONG LIVE THE POPE," rings from 100,000 throats in St. Peter's Square on Easter Sunday. The cry expresses appreciation to Pope Paul VI after his blessing, *Urbi et Orbi*—"To the city and to the world"—from the flag-draped loggia high on the basilica. Above the throng, some 140 travertine

OPPOSITE PAGE FOLDS OUT

KODACHROME BY WINFIELD PARKS; EKTACHROME (FOLLOWING PAGES) BY VICTOR R. BOSWELL, JR., © N.G.S.

statues represent saints and martyrs, including this 10½-foot-tall Roman soldier.

Recent excavations here support the 1,900-year-old tradition that at Nero's Circus on Vatican Hill the Apostle Peter was crucified, and that he was buried not far away. When archeologists, beginning in 1939, opened a street containing first-century tombs under the great Basilica of St. Peter, they found one grave enclosed as a shrine directly beneath the Papal Altar (page 785). Here, indeed, Peter may have been buried. Constantine had filled in the sloping necropolis to create a base for the first basilica and placed the altar above the enshrined grave.

When the church was completely rebuilt in the 16th and 17th centuries, Renaissance architects adhered to Constantine's plan in positioning the altar. Above it rose the soaring dome, based on a design by Michelangelo. Giovanni Bernini added the colonnades that reach out like arms to embrace the faithful. As Romans say, "St. Peter's is never finished." An army of artisans constantly cleans, refurbishes, and embellishes this largest church in Christendom.

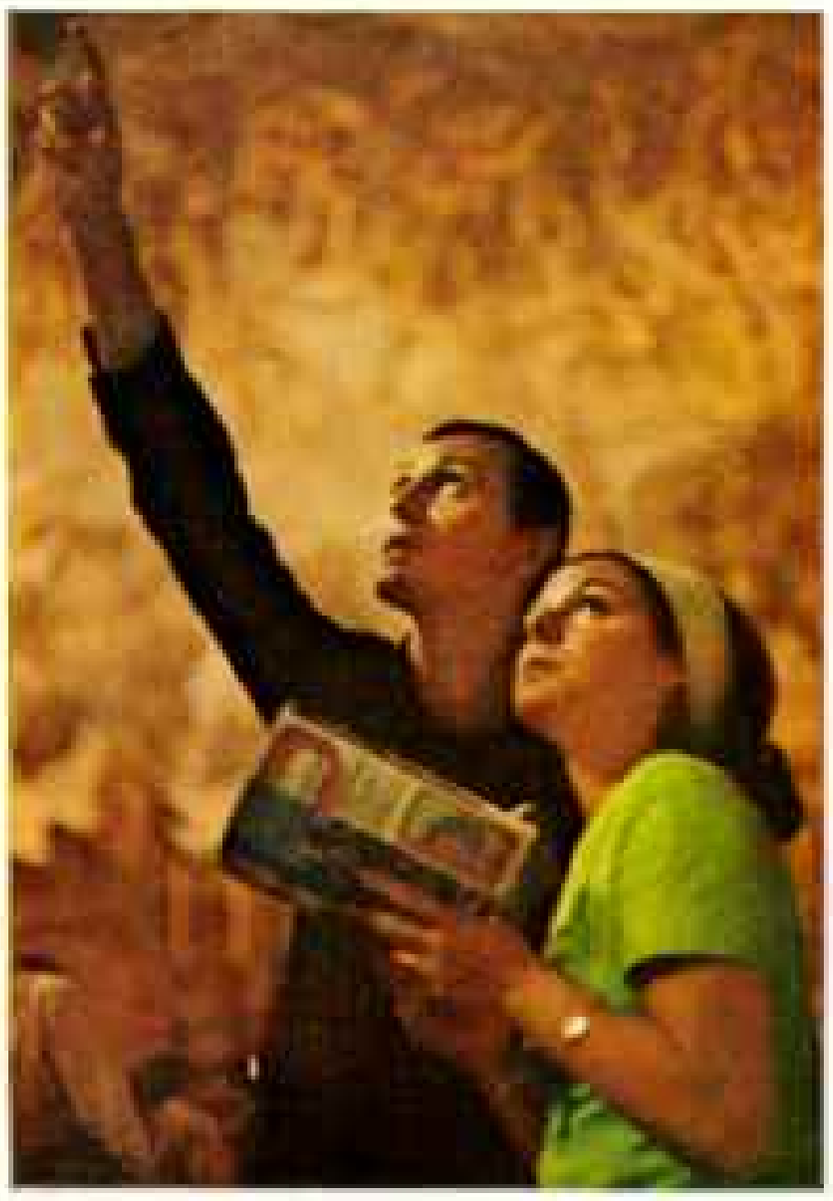
The miracle wrought by Michelangelo

THE FRESCOED VAULT and altar wall of the Vatican's Sistine Chapel (right) astonish viewers today, as they did when created in the 16th century.

Botticelli, Perugino, and other Renaissance artists filled the lower walls with scenes from the lives of Moses and Christ. Then, in 1506, Julius II commissioned a young Florentine sculptor to paint the 85-foot-high ceiling. Michelangelo Buonarroti, who had never painted on moist plaster, executed a sweeping design of the story of creation. He drew pilasters and niches as frames for titanic figures, exalting the human body as a reflection of the divine. Lying on scaffolding, with "my head turned back over my spine," he labored for four years. Classical statues, unearthed in his youth, inspired him. His own earlier dissections of human bodies gave him a sure knowledge of anatomy.

Five of Michelangelo's nine central panels appear in the center of the fold-out at left. From bottom to top: God separating sky and sea; touching Adam with life; then creating Eve; the temptations of the humans and their expulsion from Eden after the first sin; and, in the top panel, Noah sacrificing rams. Prophets, sibyls, and nudes

EXTRACTIONS AND PERSPECTIVE (ABOVE) BY JOE EPSTEIN, ARTHUR ROSENSTEIN © N.G.S.



adorn the flanking panels and pilasters.

In 1534 Michelangelo was summoned again. Sorrowed by the times—Martin Luther had challenged papal authority and foreign troops had brutally sacked Rome—he portrayed the Last Judgment on the altar wall (above) as a horrendous day of wrath. The elect rise on Christ's right; the damned fall to Hades on His left. When Michelangelo died, his countrymen acclaimed him "the greatest painter, sculptor, and architect that ever lived."

The Vatican has long used the private chapel for a meeting place when the College of Cardinals elects a new Pope. But it still permits visitors, like this couple, to come and stand in awe of the artist's genius. And like the Renaissance artist-biographer Giorgio Vasari, many conclude, "Fortunate is he, and happy his memories, who has seen this wonder."

Later, Mancini led me through long corridors hung with helmets, halberds, crossbows, swords, spears, and firearms—evidence supporting the managing director's claim, "We could equip an army of 9,000 men representing 17 periods of history."

Sometimes props cannot be supplied out of stock; then SET's artists go to work with plastics, papier-mâché, research, and imagination. A real challenge came when John Huston, directing *The Bible*, needed trees and other scenery for the Garden of Eden.

"Who really knows what the Garden of Eden looked like?" asked Mr. Mancini. "But we did it, and Mr. Huston said, 'Ah, this is Paradise enow.'"

And by way of contrast, he said, just that morning SET had filled an order from the *Sabata* producers: three quill pens, an inkwell, a roulette wheel, and a framed crayon portrait of President James K. Polk.

Muscular Archbishop Guards the Pope

As I drove back to the city from the world of movie folk, I realized with a shock that I was nearing the end of my stay in Rome. Topping a hill, I caught a glimpse of St. Peter's dome in the distance, that solid, magnificent reality brooding over the glitter and make-believe of modern Rome.

Weeks earlier, Win Parks and I had applied to the Vatican press office for a good position from which to photograph and observe the Easter Sunday Mass, with Pope Paul VI as celebrant, in the great piazza spreading out before the Basilica of St. Peter.

During Holy Week, at events in St. Peter's and other churches, we realized that the violent temper of the times, plus the fact that Paul VI travels more than any other Pope in history, had caused a tightening of security precautions. Wherever the Holy Father appeared in public, plain-clothes officers of the Vatican *gendarmeria* were stationed unobtrusively near him and in the crowds. They were young and muscular, looking remarkably like the Secret Service agents who protect the President of the United States.

On journeys abroad the Pope enjoys additional protection in the person of Bishop Paul Marcinkus, a powerfully built six-foot-three native of Cicero, Illinois.

"A lesson was learned on the first trip abroad, to the Holy Land in 1964," the bishop told me. "There was no hostility; it was simply a case of too much enthusiasm, too many people trying to get close to the Holy Father. I wasn't along on that trip, but since then I have accompanied him to the United States, Portugal, Turkey, Switzerland, South America, and Africa.

"It just happens," the bishop continued, "that this Green Bay Packer conformation of mine is useful in plowing a path through crowds."

As one of the Pope's closest aides, Bishop Marcinkus devotes himself mainly to the Vatican's far-flung financial affairs, which have included interests in such enterprises as Rome's Cavalieri Hilton Hotel and the Watergate apartment complex in Washington, D. C.

As we concluded our talk, he glanced from his office window and remarked upon the beautiful weather.

"With luck," he said, "I will be out at Acqua Santa tomorrow."

"Acqua Santa?"

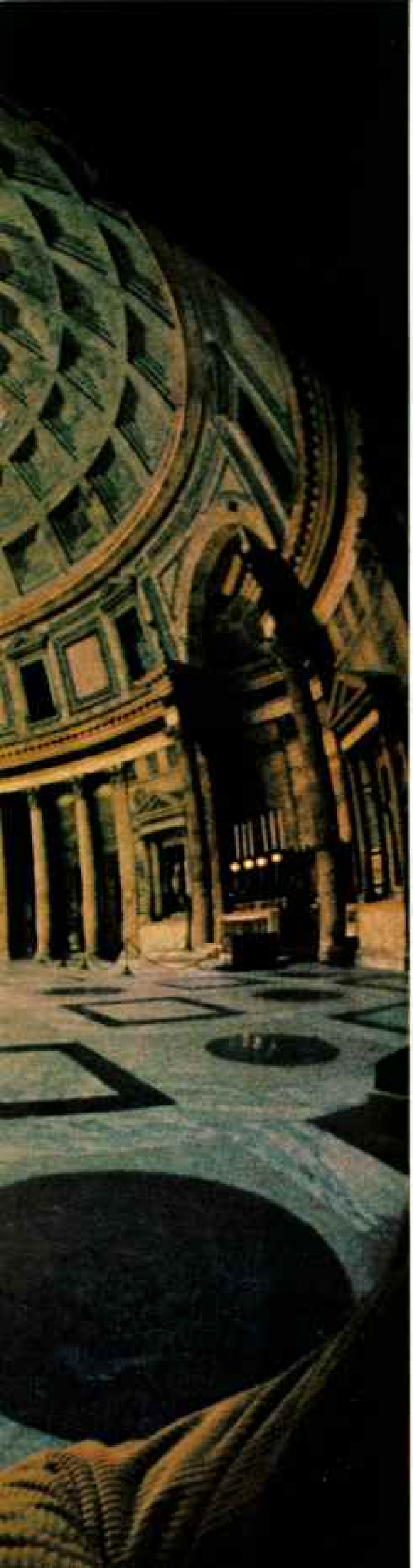
"'Holy Water,'" he translated. "It's the club where I play golf."

When Win Parks and I reported back to St. Peter's on Easter Sunday morning, a plain-clothes officer led us up dark spiral stairs to the top of a colonnade. It was a superb position, commanding the entire piazza, giving us an unobstructed view of the crowd, the temporary outdoor altar where Mass would be said, and the balcony where Paul VI would reappear to pronounce his Easter blessing upon the world (foldout, pages 778-80).

We gazed down upon 100,000 people, almost filling the vast piazza. Radiant children and nuns clutched the strings of rabbit-shaped balloons. An airplane flew over, towing a streamer advertising a brand of coffee. Vendors of ice cream, souvenirs, and Appia Cola did a brisk business.

Vicar of Christ, Pope Paul VI acknowledges the homage of thousands after a public audience in St. Peter's. *Sediari*, laymen in scarlet damask, carry his throne past the 95-foot baldachin, or canopy, that covers the Papal Altar. Beyond shines the gilded bronze of the throne; both works by Bernini exemplify the church's ornate baroque décor. The Papacy, only Western institution in continuous existence since the Roman Empire, commands the allegiance of 580,000,000 people—one-sixth of mankind—the largest congregation in the world.


NC VNA FIDES



CATACHROME (LEFT) AND RUBACHROME BY WINFIELD PARKS © N.G.S.

"An angelic and not a human design," exclaimed Michelangelo of the Pantheon, marvel of Roman engineering genius. Agrippa dedicated the shrine to the gods in 27 B.C.; Hadrian reconstructed it 150 years later, capping it with an unprecedented brick-and-concrete vault (left), here encompassed by the camera's Fisheye lens.

Suggestive of the sphere of heaven, the dome lies open to the sky through a 30-foot round window. Rain water drains off through slits in the marble floor. The rotunda's height equals its diameter, 142½ feet. Seven niches that once sheltered deities now enclose altars and tombs of artists and two kings of Italy. The temple's bronze fittings were melted down to cast the baldachin of St. Peter's (page 785). Since the early seventh century the Pantheon has served as a church—Sancta Maria ad Martyres.

Lovers meet on the Janiculum Hill. Beyond looms St. Peter's, surmounting a city

It was a happy, festive occasion, brought to a close with many-throated roars of "*Viva il Papa!*" after the Holy Father, having reentered the basilica and emerged on the balcony, delivered his blessing and prayer for world peace.

Before I left Rome, I made one last trip to St. Peter's. An elevator took me to a narrow railed ledge high up in the rotunda where I looked down upon the Papal Altar with its massive Bernini-designed baldachin, or canopy, supported by twisted columns of bronze. Descending, I stood for a while before Michelangelo's exquisite "Pietà."

Walking away along the broad Via della Conciliazione, I stopped for a long look at the great dome crowning the world's largest church, and marveled again at its beauty, its solid strength and dignity, as both symbol and physical presence.

that dwells in the afterglow of the ages.

Near the Tiber I recognized an old friend approaching: the streetcar named ED. I climbed aboard and settled into a seat to ponder the glory that was Rome, the charm of its present, the puzzle of its future.

Looking down upon the turgid river from a bridge, I remembered seeing it as a clean, sparkling stream chuckling through the hills of central Italy. In Rome the Tiber becomes a gigantic sewer. After picking up industrial waste in outlying towns, it receives thousands of gallons a day of untreated sewage as it winds through the city on its way to the sea.

Still, oarsmen from riverside boat clubs race their fragile shells on the Tiber—and apparently suffer no ill effects from accidental dips in the unappetizing broth. From dawn to dusk fishermen stand patiently on the banks. I never saw one catch anything, but was told that they frequently do and that Tiber eels enjoy high esteem among eel-fanciers.

Soon we circled the Piazza del Popolo, wound through a congeries of densely packed streets, then headed up the long hill of the Viale delle Belle Arti. We passed the Villa Giulia Museum, containing Etruscan artifacts, and the National Gallery of Modern Art, where I had been baffled by an abstract sculpture in stainless steel, whose hidden sensors set off a hysterical electronic shriek when warm human bodies drew near.

Passing by the northern edge of the Villa Borghese gardens, Rome's magnificent equivalent of Central Park, I could hear lions roaring in the zoo. To the left lay Parioli, a hilly suburb of sumptuous villas and many-balconied apartment houses favored by members of the diplomatic corps.

"And when Rome falls. . . ."

At the Piazzale del Verano ED rested, muttering in its innards, while the motorman had an espresso and a chat with cronies. Soon after we got under way again, a fellow passenger spoke to me. "You are an American?" he asked. I said I was. He said he had once visited an American brother, a tool-and-diemaker in Bridgeport, Connecticut.

Then he gave me his pungent views on that day's strike, involving garbage collectors, and on one expected the next day, when newspaper pressmen would quit work.

Just then ED slithered round a curve and halted in a snarl of automobiles, trucks, and buses. Suddenly the Colosseum was in view, a battered gray pile outlined sharply against a brilliant Italian sky. Lines from *Childe Harold* came to mind:

> *While stands the Coliseum, Rome shall stand;*
> *When falls the Coliseum, Rome shall fall;*
> *And when Rome falls—the world.*

"A grand sight," I remarked to my chance acquaintance.

He shrugged. "It should be removed," he said dourly. "It blocks traffic." THE END

FROM ETRUSCAN TOMBS to World War II battlefields, from Renaissance art to industrial miracles—wherever your interests lie in this appealing Mediterranean land, you will find rich reward in the National Geographic Society's latest map supplement, **A Traveler's Map of Italy**, distributed to the Society's 6,800,000 member-families with this issue of the magazine.

First of a handsome new series, the 23-by-33-inch map provides 174 informative notes, ranging from the ruins of ancient Greek colonial cities to a jet-age film festival at the Lido near Venice. The map is scaled at 30 miles to the inch. Its decorative border incorporates 22 insets: drawings of historic landmarks and detailed street plans of leading cities, with their coats of arms.

An inset of Vatican City pinpoints the Sistine Chapel, Papal Gardens, museums, and other buildings—all grouped around the Basilica of St. Peter, a church revered by the world's 580 million Roman Catholics.

Artist at Home With Her Subject

Eleven scenic sketches embellishing the border of the map were drawn by staff artist Lisa Biganzoli (page 793). She grew up in the shadow of one of her subjects, the magnificent Gothic Cathedral of Milan.

Invitation to Explore: A New Map of Italy for the Traveler

PHOTOGRAPHS BY WILLIAM ALBERT ALLARD (ABOVE) AND OTIS IMBODEN © N.G.S.

Carnival afloat: Gold-trimmed barge of state brightens Venice's Grand Canal during the Historical Regatta, listed in the calendar of festivals on the Society's new **Traveler's Map of Italy.** The September fete stems from pageantry of the past, when the city celebrated its wedding to the water: "We espouse thee, O Sea, in token of perpetual sovereignty."

Ingenious locating device permits easy pinpointing of the map's 1,855 indexed place names. To find Venice, these members look up the city's key numbers (33-42) in the index on the reverse side and fold the map over to align with number 33 on left and right borders. The figure 42 on the map's lower edge then points to Venice.

Tomb frescoes 2,450 years old at Tarquinia open a window on the Etruscans. The achievements of this mysterious people are summarized on the back of the map.

Nestled in the Alps, Courmayeur draws vacationists all the year round. Nearby, the Mont Blanc Tunnel (map coordinates 27-7) funnels travelers from France.

KODACHROME BY JAN WILDS, BLACK STAR © N.G.S.

EKTACHROME (LOWER LEFT) BY JONATHAN S. BLAIR; KODACHROME (ABOVE) AND EKTACHROME BY WALTER MEAYERS EDWARDS © N.G.S.

Showcase city of the Renaissance, Florence displays Michelangelo's 14-foot "David." Near Carrara, visitors may also see the quarries where the sculptor selected much of his marble.

In medieval court attire, flag-bearers toss banners of city wards in Siena's Palio delle Contrade. Information about such attractions appears in the map's 174 notes and its calendar of festivals.

Brilliant artistry of staff illustrator Lisa Biganzoli, herself a native of Milan, embellishes the new map of Italy. Basing her designs on GEOGRAPHIC photographs, she sketched 11 representative Italian scenes for the border and illustrated the reverse side with 9 drawings. Here she compares a preliminary color proof of the map with her original sketch of the Grand Canal of Venice. The talents of some fifty cartographers, researchers, writers, typesetters, and photomechanical technicians created the meticulously accurate chart.

The map's reverse side presents a capsule history of Italy from the dawn of time to today. Separate sections, with appropriate symbols, highlight the principal eras. An inset map defines the extent of the Roman Empire in A.D. 116. Other sections review the role of Italy as the home and workshop of many of the world's immortals in music, painting, literature, and architecture, and as a founder and custodian of Western culture.

The reverse side also includes a panel that tells when and where special events take place each month. And, to give the traveler an idea of year-round weather from one end of the boot-shaped peninsula to the other, average daily high and low temperatures, along with rainfall statistics, are listed for seven cities selected for geographical variety. The traveler will find information here about currency, necessary documents, inoculations, transportation and hotels, shopping and dining, and national holidays.

New System for Finding Place Names

A distinctive feature is a quick-locating system never before used on a National Geographic map. Alphabetical index and numbered borders enable one to find readily any of the 1,855 Italian place names (page 791).

While showing the country's highway and rail networks in detail, the new map offers much to tempt those seeking the unusual in travel adventure. At the borders with Switzerland and France, for example, motorists may avoid hard drives over high Alpine passes by loading their automobiles—and themselves at no extra charge—aboard railway flatcars. One train shuttles through the Simplon Tunnel, between Iselle, Italy, and Brig, Switzerland; another through the Frejus Tunnel between Bardonecchia, Italy, and Modane, France.

Broken red lines streaking across the Tyrrhenian and Adriatic Seas trace steamer routes connecting peninsular ports with Sicily, Sardinia, and smaller islands, as well as with Yugoslavia. Conventional ferries link Naples and the islands of Ischia and Capri. Hydrofoil craft ply the Strait of Messina, which separates Sicily and the toe of the boot.

A long-established ferry crosses the 10-mile Strait of Bonifacio between Santa Teresa Gallura, Sardinia, and the town of Bonifacio, on the French island of Corsica. This little-known route permits travelers to cross an international frontier by sea, without journeying beyond sight of Italian or French soil.

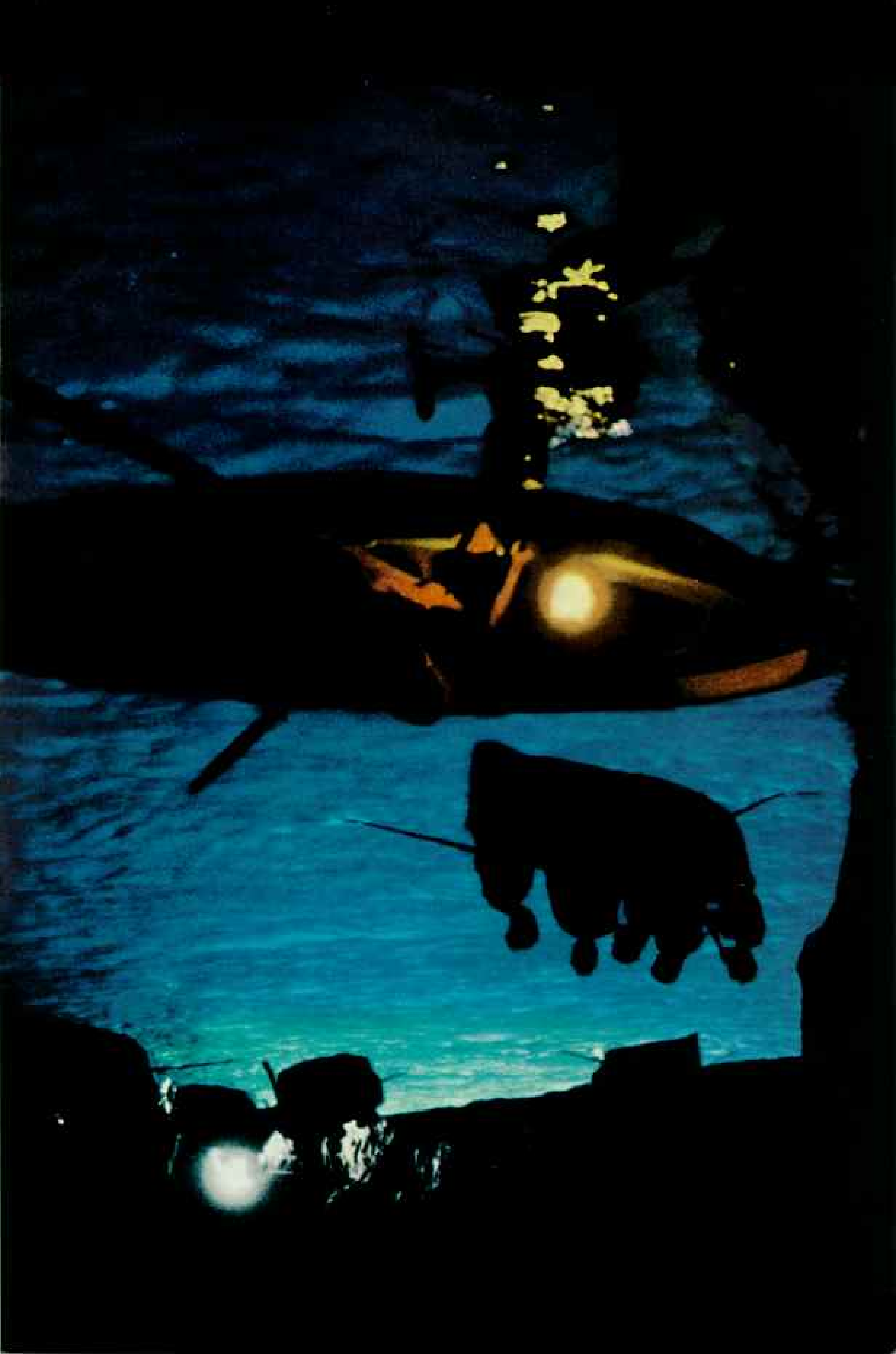
Inviting Variety Awaits the Traveler

For 1970's visitors, Italy's kaleidoscopic image might include throbbing factories in Milan and Turin, seaport bustle in Genoa and Naples, an Italian "Hollywood" in Rome, bikini-clad beauties on the Riviera or at the Lido of Venice.

In Venice, gondolas still glide along the canals as they have for centuries (pages 790-91). But sleek Maseratis and swarms of modest Fiats course the Autostrada del Sole, "Expressway of the Sun," which runs almost the length of the peninsula.

In its sweep from the Alps to Sicily, the Society's new map of Italy reflects the antiquity, modernity, beauty, gaiety, and variety of a land that has made incomparable contributions to civilization. THE END

Additional copies of **A Traveler's Map of Italy**, and other wall maps of the Society, may be ordered by mail from Dept. 61, National Geographic Society, Washington, D. C. 20036. Prices include postage and handling: $2.15 on paper, $3.30 on plastic (unfolded).



EKTACHROME (LEFT) AND KODACHROME © NATIONAL GEOGRAPHIC SOCIETY

Capri

Italy's Enchanted Rock

By CARLETON MITCHELL

Photographs by DAVID F. CUPP

WHEN I LIFTED MY HAND, sapphires seemed to drip from my fingertips. My body, submerged in the water of the grotto, glowed a weird unearthly blue. Diving beneath the surface, I understood the reason. Through a huge natural arch lay the open sea. Some sixty feet below, a bottom of sand and white stone reflected sunlight into the cave. The deep water filtered the rays, absorbing all but the blue portion of the spectrum, bringing to the grotto the same brilliant hue as the Mediterranean outside.

Surfacing again, I could see at the waterline, about ten feet above the arch, the small circular hole through which tourists can enter in boats (left). Astonished fingers pointed in my

Mediterranean gem, the Blue Grotto distills the essence of Capri. Visitors slip inside through a small surface opening. Comely citadel in the Gulf of Naples, the four-square-mile island (above) has been a holiday hideaway since the time of the Caesars.

direction. With only mask and snorkel protruding, body and web-footed flippers outlined in cold-blue fire, I must have looked to those in the boats like one of the demons superstitious people of ages past believed to lurk in Capri's famed Blue Grotto.

Forgotten for centuries, the Grotta Azzurra, as Italians call it, was rediscovered in 1826. But it had been well known to the ancients. Archeologists believe it might have been a *nymphaeum* of the Emperor Tiberius, sacred to the rites of the water nymphs.

In 1964 local skin-divers recovered a pitted and encrusted marble statue of Poseidon, god of the sea, and one of a lesser deity, which had fallen to the grotto floor. In my own diving, my only contact with antiquity came when I swam to the back of the cavern and climbed to the grotto's ledge on steps the Romans had made.

Native Wine Warms a Chilly Diver

Boatman Roberto Lembo was waiting for me in his traditional double-ended Mediterranean *barca*. As I crawled aboard, Roberto handed me a towel and a glass of wine grown on his own patch of mountainside above Marina Piccola, Capri's "little port."

"Va bene, signore?" he asked anxiously, for I had been in the chill water almost an hour.

"Benissimo," I answered, which can best be translated as O.K. in the superlative.

Roberto rowed out of the grotto, through an opening so low we had to duck our heads. Outside, the island rose tier on tier, into the cloudless sky (page 795). When I had first seen it soaring from the sea, some thirty years before, I had lost my heart. Many islands are beautiful, but Capri is thunder caught in stone.

Once part of the mainland, it became an island during an epoch of great upheavals. Later sinkings and emergings allowed the sea to carve the limestone into fanciful grottoes and steep cliffs that culminate in the 1,932-foot elevation of Monte Solaro (map, page 800).

Capri's beauty stems not only from the perpendicular escarpments of raw rock, but from the way nature has contrived to combine them with the green of trees and splashes of color from massed flowers, accented by some of the nobler works of man: castles, religious

Whitewashed waterfall, the town of Capri cascades over gentle slopes beneath island-dividing cliffs. A medieval castle caps the conical hill of il Castiglione.

Visitors in search of Capri's charm—young and old, famous and unknown—come here first after docking at nearby Marina Grande. Buses, taxis, and a funicular carry them from seaside to town. Some stay but a day; those who would really know the island linger, wandering the narrow streets and paths that lead to Capri's still-uncrowded countryside. Some never leave.

"I came for a day and decided to stay forever," says Scotswoman Gloria Magnus (at right, offering grapes to customers of her cafe). She and Pietro Cerrotta, a Caprese, run the Ristorante da Pietro at Marina Piccola.

edifices, and lovely villas (page 796). And as a jewel may become more dazzling because of its setting, so Capri is enhanced by the Gulf of Naples, whose encircling mountains are like cupped hands holding the island on the blue velvet of the sea.

Roberto sensed my feelings. "*Fantastico*, no? For twenty generations my people have lived here, and I cannot think how it would be to live anyplace else."

As we made our way around the four-square-mile island, my thoughts went back to a conversation the previous autumn with my friend Migi Willaumez. She has known Capri since childhood and still returns to her small villa on a mountainside to relax from a busy career as an interior decorator in New York City.

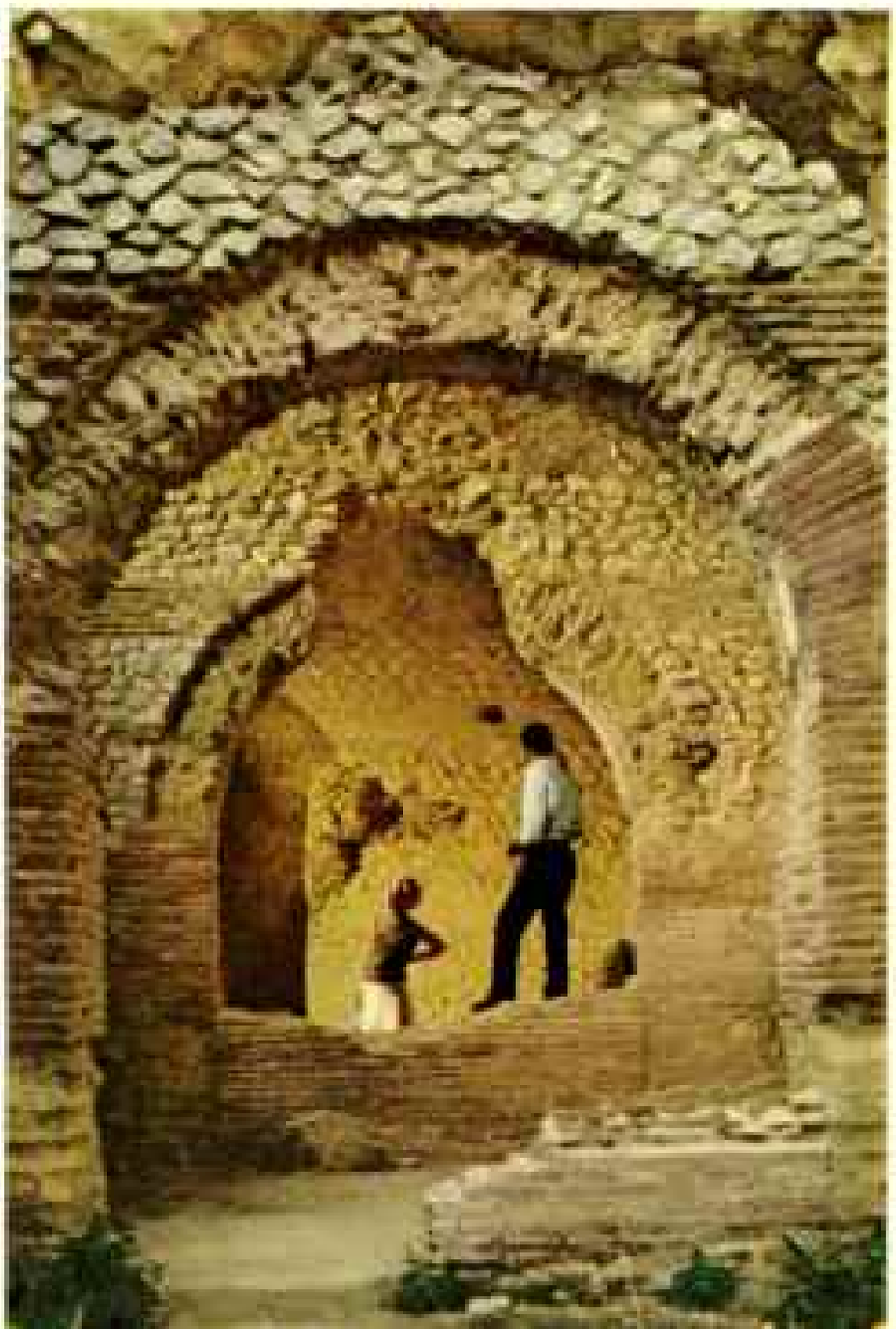
"Capri is spoiled," I had told her regretfully. "On my first visit I loved it. At the cafes in the piazza, you heard only Italian at the other tables. The beaches were deserted. But when I came back after the war, the excursion steamers were pouring people in droves onto the quays of Marina Grande."

Migi shook her head. "Capri is not spoiled for those with a good pair of legs and some imagination," she replied. "Go there again, and discover the byways and the simple people. Your love is still there."

So I had visited Capri in December. During the short winter days I roamed twisting footpaths, map in hand, marveling at architectural

Fresh-air taxi speeds toward Anacapri, a town high on the western plateau. Until a road was built in the 1870's, visitors climbed to Anacapri up a steep staircase carved in the cliff face more than 2,000 years ago.

Eyrie of the Roman eagle: From the breeze-cooled verandas and chambers of Villa Jovis, atop Monte Tiberio, the Emperor Tiberius ruled Rome during the last decade of his life, A.D. 27–37. Here, amid crumbling arches, visitors explore the villa's storage rooms.



EKTACHROME (BELOW) AND KODACHROMES © N.G.S.

Strolling trumpeter and his fellow bandsmen from Naples enliven a fall festival. Christmas will bring other musicians, shepherds from the mainland province of Abruzzi, who serenade with flutes and bagpipe-like *zampogne*.

gems and breathtaking vistas. Migi was right about a good pair of legs being a requirement for knowing Capri. Roads connect only a few centers, but paths lead almost everywhere.

It was cold. In winter north winds sweep down from the Alps to drop the mercury to an average of 56° F., as compared to the balmy summer average of 84°. But the warmth of the people compensated for the low temperature. In honor of the Christmas season a lighted tree stood in Capri's piazza, and there each evening the cheerful bustle of the island's largest town enveloped me.

Mountain Men Bring Music From the Mainland

Over all was the music of the *zampognari*. These shepherds, in skin leggings bound with thongs, wandered from house to house playing a haunting melody on flutes and a primitive instrument having a bellows of goat's hide, resembling a Scottish bagpipe.

Each year the zampognari descend from the wild mountains of Abruzzi, on the opposite coast of Italy, to fan out over most of the southern part of the peninsula in commemoration of the shepherds who accompanied the Three Wise Men to the Nativity. Appreciative listeners invariably reward them with a gift—usually a small amount of money, but sometimes food—and always a glass of wine.

Thus I had again come under the spell of Capri, and now, as

Pocket-size piazza in the heart of Capri town awaits the nightly influx. After a meal of scampi or fish or perhaps a bubbling pizza, many visitors wander into the square to sip their coffee and liqueurs at the tables beneath the clock tower. The ladies window-shop along the way, admiring the sandals, handbags, dresses, and sportswear that make the island a style center for Italian resort fashions.

Roberto rowed, I was seeing it in the golden light of June. We drew abeam of Palazzo a Mare, the Palace by the Sea, once the holiday villa of the Emperor Augustus, who first visited the island in 29 B.C.

"Look," said Roberto, "above the beach oak trees still grow. From the father of my mother I heard that the ship of Augustus was driven here by stormy seas. When he set foot ashore, a withered oak lifted its branches and put forth buds. The emperor took it as an omen that he would bring new life to Rome, and made Capri his own."

"Was he the first tourist?" I asked jokingly.

"No. Before him came all who sailed the sea," Roberto replied seriously. "Regard! Who could pass without stopping?"

Some might answer, Odysseus (known to the Romans as Ulysses), who once had himself bound to the mast of his ship to resist the songs of maidens who lured men to their doom. For the theory has been advanced that Capri was the Island of Sirens described in Homer's *Odyssey*.

There is no doubt that Capri was inhabited in Homeric days. Excavations in its grottoes prove that men lived there during the Stone and Bronze Ages. The Phoenicians may have traded on the island; the Greeks colonized it before the sixth century B.C.

As we skirted the east coast, Roberto suddenly asked, "Would you like a nice octopus for lunch tomorrow?"

From under the thwart he produced a bucket with a glass bottom, a length of line, and a small iron rod with spikes radiating from the end like an open umbrella. He tied a strip of fish to the rod and laid it on the seat beside him.

"I watch until I see the eyes looking out of a cave," Roberto explained. "I let down the bait and make it dance until the octopus comes out to grab it. Then I pull up fast."

He scanned the depths through his crude water glass while we drifted almost at the base of the 978-foot-high Salto di Tiberio, the precipice named for the emperor who succeeded Augustus. I shuddered to recall the persistent legend that the tyrannical ruler forced those who displeased him to jump off.

From Capri, for the 10 years before his death in A.D. 37, Tiberius ruled the whole Roman world without once returning to the Imperial City. His orders were signaled by semaphore to a lookout station on the Sorrento Peninsula, and thence from peak to peak to Rome, almost 125 miles away (see supplement map).

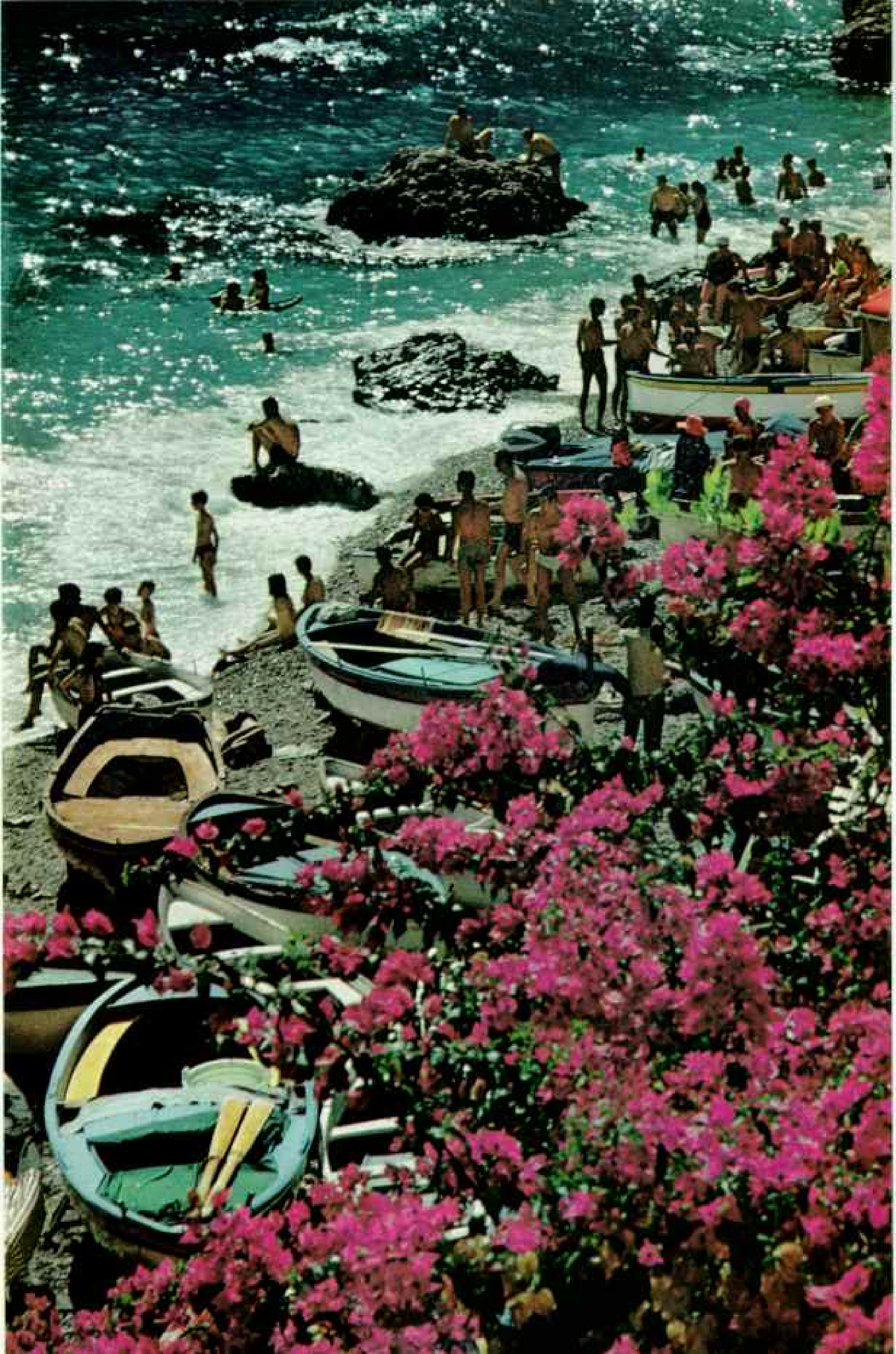
Roberto suddenly cried out and rapidly hauled in his line. On the end was a small octopus. As soon as it was aboard it wrapped itself around his forearm. The suction cups made plopping sounds as Roberto tore loose the tentacles in an effort to bring the octopus to his mouth. Then with a flash of teeth he killed the miniature monster in the immemorial fashion of Mediterranean fishermen—by biting it behind each eye (page 807).

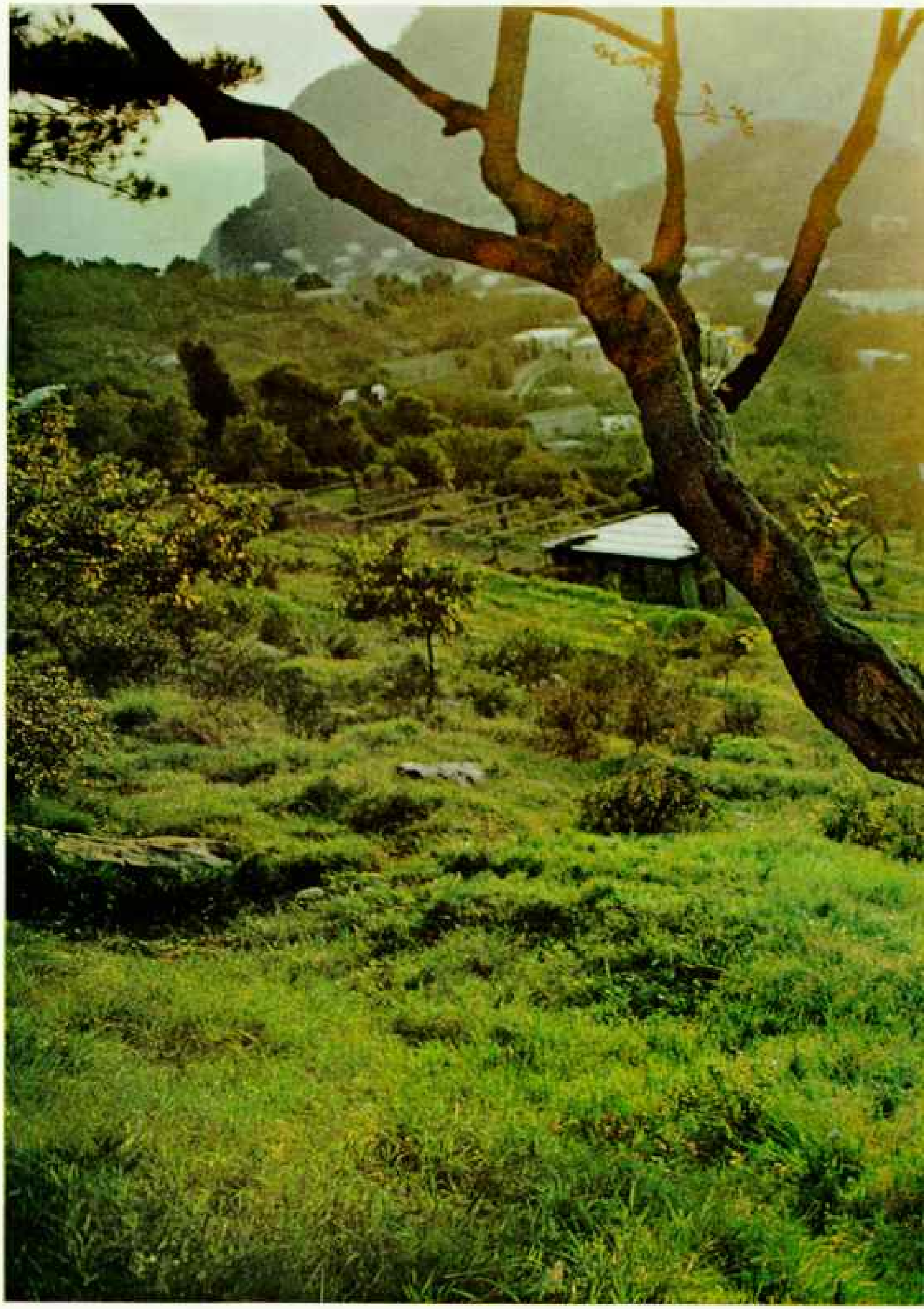
"I have to bite twice because he has two brains," Roberto explained. Although his statement was not accurate zoologically, the octopus moved no more.

We completed our circuit of Capri at Marina Piccola (opposite). Except for boats awaiting their turn to enter the Blue Grotto, we had been virtually alone the entire day. And while most visitors

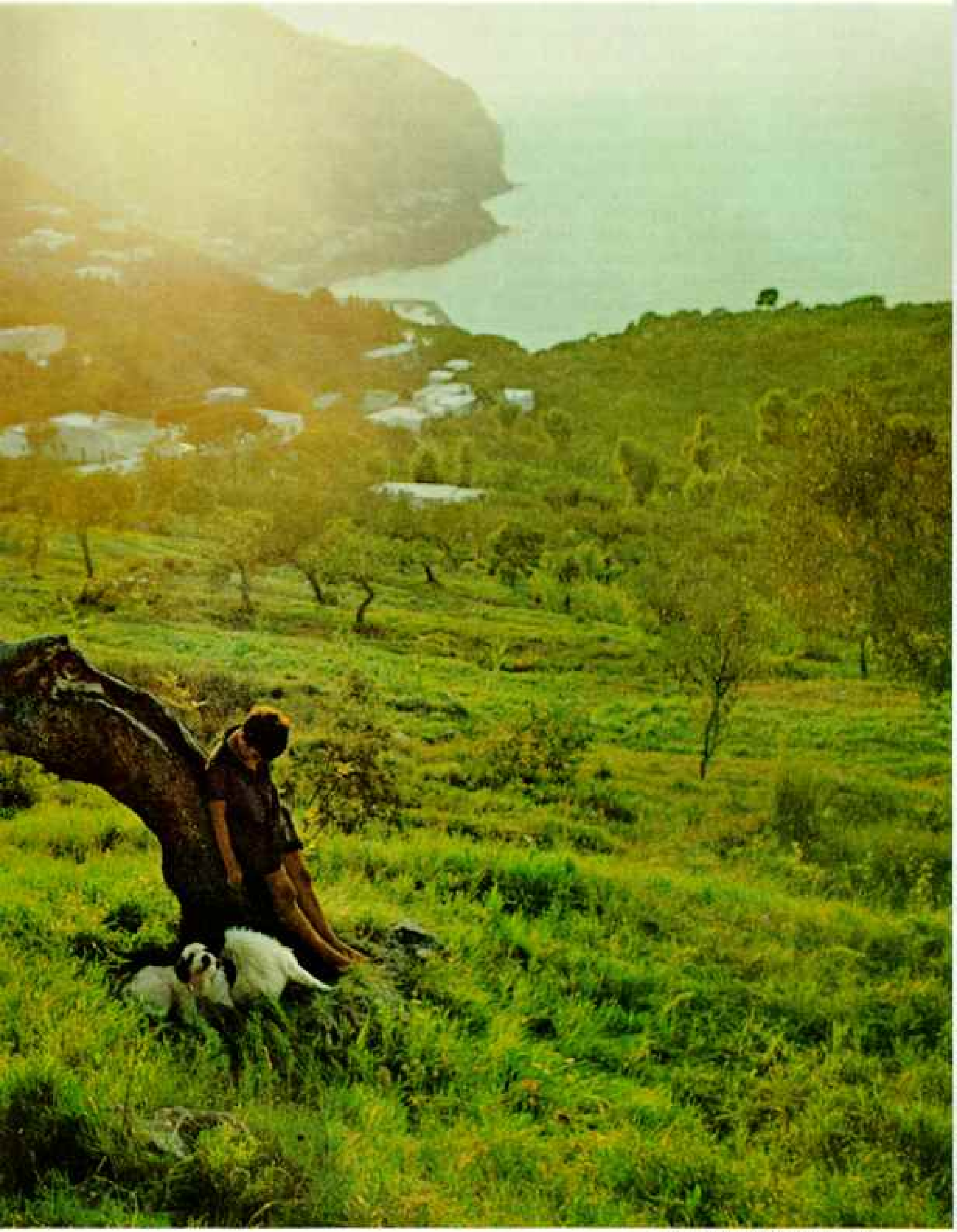
"Hither, come hither . . . here stay thy barque," sang the Sirens to Ulysses. Some say it was from Capri that these sea nymphs called to unwary sailors. Today near a rock called Scoglio delle Sirene, where bougainvillea flaunts its blooms (opposite), bikini-clad beauties lure admirers to the beach at Marina Piccola.

Indeed, all Capri exudes enchantment. Last year 1,900,000 visitors from almost every corner of the world arrived by sea and air. From Naples, the principal port of departure, steamers carry passengers 19 miles to the island in some 1½ hours; the fare is about $2 round trip.





Golden beacon of the setting sun lights a quiet field where a boy and his dogs rest beside a gnarled carob tree. Time has brought little change. Capri "is hid with Vines, Figs,



KODACHROME © NATIONAL GEOGRAPHIC SOCIETY

Oranges, Almonds, Olives, Myrtles, and Fields of Corn," wrote English essayist Joseph Addison early in the 18th century, "... the most delightful little Landskip imaginable."

see only one grotto, we had explored seven, including the Verde, Bianca, and Rossa—the Green, White, and Red.

From Marina Piccola a bus took me to the town of Capri. As we climbed the mountainside, I could see that the island is shaped like a huge saddle. To the east the height known as Monte Tiberio is the pommel. The town rides in the seat, with Marina Grande and Marina Piccola dangling like stirrups on either side. A steep wall of rock runs across the island from north to south to form the back of the saddle, behind which extends the elevated plateau of Anacapri (map, page 800). The population of 11,000 is divided among the two ports and the towns of Capri and Anacapri.

The name Capri (pronounced CAH-pri, not Ca-PREE as in the popular song of the 1930's) probably stems from the Greek *kāpros*, meaning "boar," or the Latin *capra*, "goat." As I panted up trails that only a goat could negotiate in comfort, the latter seemed plausible. But as the island was part of Magna Graecia before it became Roman, and as the prefix *anā* in Greek means "up"—which Anacapri certainly is—it seems more logical to accept a Greek origin.

Island Sacked by a Red-bearded Moslem

In the piazza I met Stefano Vaccaro, a divinity student who had offered to show me the old town. He led me up steps and under an arch into Via Madre Serafina. Overhead the huddled houses had been joined together by rough-hewn beams, and additional rooms built, until the street had become almost a tunnel.

"This is the entrance to Capri's medieval past," Stefano explained. "After the fall of the Roman Empire, the island was exposed to raids from the sea. So the people left the ports and built a town behind fortified walls."

We turned off into a smaller street and found ourselves in a labyrinth. Offshoots might end at a wrought-iron door, or become flights of steps, or branch into other lanes, all so narrow that outstretched arms could brush the walls on both sides.

"Capri was not lucky during the 16th century," continued Stefano as we wandered between shuttered houses, silent behind thick stone walls and massive doors. "In 1535 the fleet of Sultan Suleiman the Magnificent captured and pillaged the island under the command of Khair ed-Din. History remembers him as Barbarossa because of his red beard."

After we found our way out of the maze, it was my turn to introduce Stefano to a part of Capri he did not know. In the back kitchen-dining room of a nearby restaurant, discovered during my Christmas stay, Peppino de Rosa was stoking the fire in an oven similar to those unearthed in Pompeii. With a long-handled paddle, Peppino placed wood chips on glowing embers banked to one side.

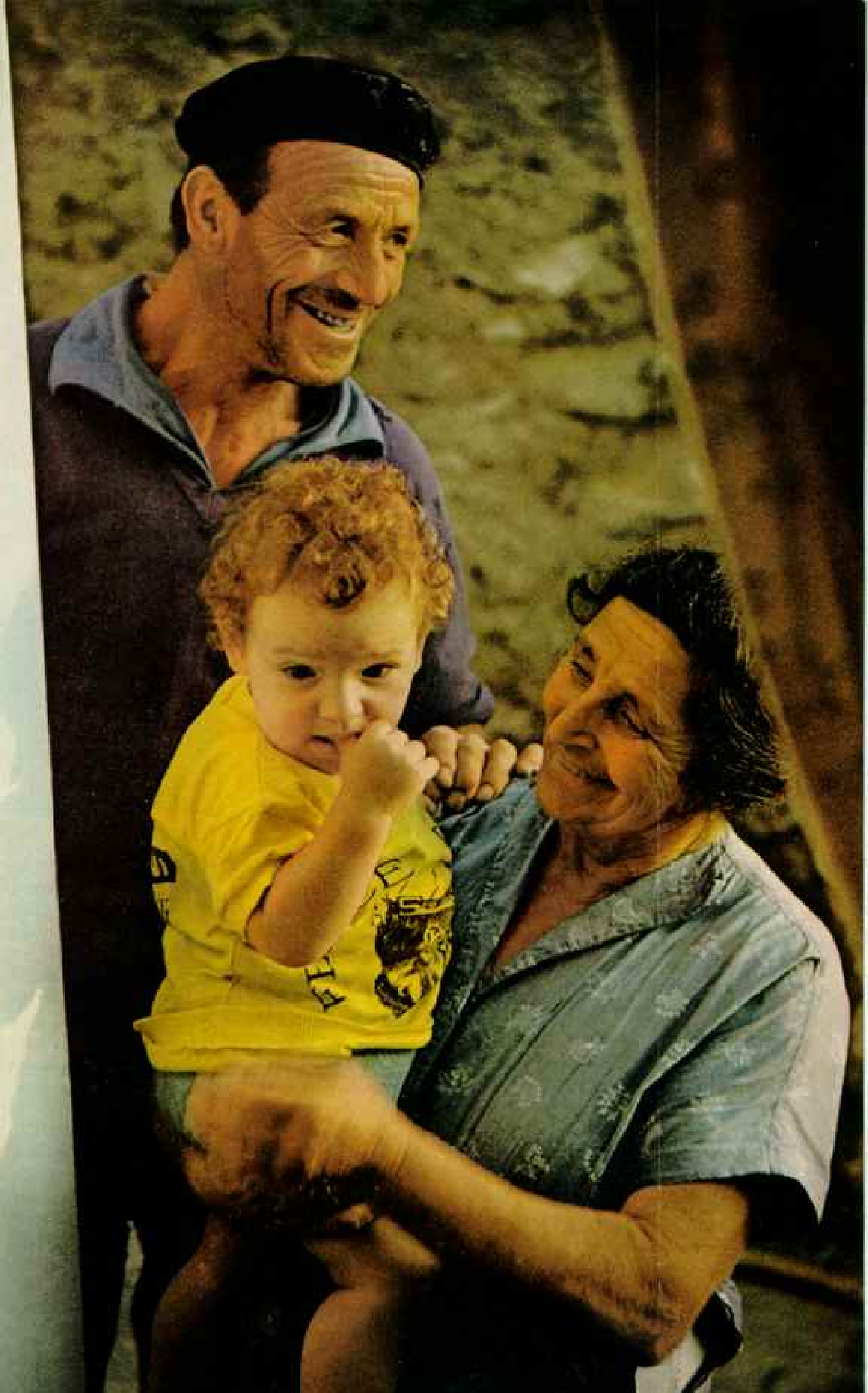
In this most cheerful spot on the island, with mirrored flames from the open oven dancing on copper pans that hung from the walls between garlands of onions and dried peppers, Peppino prepared for us the specialty of the house—pizza. We watched it bubble on the oven's hot stone floor, and brown on top as Peppino added chips to the fire. Shortly, he presented us with a golden puffy disk topped with melted mozzarella cheese, a frothy cloud on which floated oregano, capers, tomato sauce, mushrooms, and anchovies.

As we ate, Peppino explained modestly, "The wood fire makes the difference. Pizza, you cannot cook her with gas."

Each day on Capri was as perfect as that which culminated with Peppino's pizza. Some mornings I walked down a steep path to swim

New twig on a Capri family tree whose roots go back to the time of Christ. Standing in their farmhouse doorway, Luigi Salvia and his wife Teresa beam over a grandson who bears his name. Island tradition tells that the Salvias descend from a Roman official in the service of the Emperor Tiberius.

The family farms three acres on the porous limestone slopes of Monte Tiberio, raising grapes, figs, vegetables, and livestock. The island has little ground water, so Capresi farmers must depend largely on rain for their crops. Cisterns trap rain water for household use; extra supplies come by ship from Naples.



Someone remembers: Anna Vacca comes each day to tend the gardens of Santa Maria Cetrella, near Monte Solaro. The lonely church now opens its doors only during September for Sunday Mass.

from a pebbly beach almost at the base of i Faraglioni, the rock pinnacles thrusting from the sea that have become picture-postcard trademarks of Capri (page 809). Looking out on the Faraglioni, two simple restaurants serve heaping plates of spaghetti and local wine to the thrifty.

If I felt flush, I descended the hairpin curves of Via Krupp around il Castiglione to La Canzone del Mare, where former English music-hall star Gracie Fields has created a luxury restaurant and beach resort, which she describes as "a little Palm Beach." Before elaborate cabanas ringing a swimming pool basked the island's more affluent visitors, while waiters hovered, ready to serve caviar and champagne at the crook of a finger.

Mozzarella for trade! Cheese merchant, left, pays his weekly visit to Giovanni Iaccarino, who will pay with lemons and oranges from his garden. Giovanni also barters for fish, vegetables, butter, and eggs brought by other door-to-door peddlers.

As darkness fell, I usually joined the exodus to the piazza, to become part of the ritual of sipping coffee while watching the passing throng (page 799). Afterward was the time to stroll by the shops. Capri is so renowned for its resort fashions that many style-conscious visitors come primarily to replenish their wardrobes. Nowhere except in Hong Kong have I seen so many make-it-for-you-by-tomorrow tailors. Later, I could follow the jet set into a swinging nightclub.

In contrast to such idyllic idleness were the warm and rewarding visits with local friends like Luigi Salvia (preceding page), who raises

KODACHROMES © NATIONAL GEOGRAPHIC SOCIETY

grapes, vegetables, and livestock on the slopes of Monte Tiberio.

Luigi came barefoot from his vineyard to welcome me. "*Lavoro sempre*, I work always," he said in apology for his working clothes. "But we have time for a glass of wine."

In his cellar, barrels stood on trestles. Putting one end of a rubber tube into a wicker-covered demijohn, Luigi sucked on the other until ruby liquid gushed into glasses he had placed on the floor.

"*Salute!*" Luigi toasted. "I drink to summer rains, for fattening the grapes. We have here a saying: '*Acqua di agosto, olio e mosto*'—'Water in August, [makes] oil and wine.' "

Outside, we were surrounded by vines and olive trees. Beginning at the ruins of Tiberius's Villa Jovis (page 798), stone terraces ran down the mountainside like flights of giant steps.

"They are as old as the world, signore," Luigi said with a smile.

For Luigi, as it was for his forefathers, the soil of Capri is the island's most important asset. When we walked in the vineyard, he scooped up a handful. "Look!" he exclaimed. "It is earth mixed with particles of stone, light and porous so the sun and rain penetrate to the roots, sending their essence to the fruit."

Like Luigi's terraces, the Scala Fenicia, or Phoenician Staircase, follows a precipitous course. Hewn from solid rock, it has linked

With a bite on either side of its head, fisherman Roberto Lembo dispatches an octopus for the pot.

ALL IS BEAUTY *from the heights of Monte Solaro, where a statue, believed to be of Brutus, raises an arm as if in salute. The Sorrento Peninsula on the Italian mainland lies three miles away, across the Gulf of Naples. Capri's familiar symbols, the tall rocks called i Faraglioni, cleave the azure waters at right.*

Capri and Anacapri since Greek and Roman times, but it did little to bring them together then or later. Separated by cliffs, the villages have always been jealous rivals. Even today they maintain separate identities.

Moody Castello Attracts More Birds Than People

The most famous feature of Anacapri is a villa known to the world because of a best-selling book, *The Story of San Michele*, published in 1929. Its Swedish author, Dr. Axel Munthe, came to the island as a young medical student and vowed to return to build his home there. He was true to his dream. The Villa San Michele took form slowly, a "house open to sun and wind and the voice of the sea," as he wrote. Much of it consists of marble columns, statues, and fragments found by peasants while tilling nearby fields.

I walked through with Eric Berggren, the superintendent and Swedish consul.

"When Axel Munthe died in 1949," he said, "his property was willed to the Swedish Government. We use the revenue from some 200,000 visitors a year to maintain the villa and to support the work of artists and scientists."

Among the projects is a study of migratory birds, for the island has always been rich in bird life. In the 10th century the Bishop of Capri drew so much income from the sale of birds for food that he was nicknamed "the Bishop of Quails."

"To stop the slaughter of birds for market, Axel Munthe bought the Castello Barbarossa, which stands above the villa," Dr. Berggren continued. "Its trees have always attracted birds like a magnet. Now we net the migratory species, and band them. Of the 83 species we have banded, individuals have been reported from Scandinavia to the Congo.

"May is the migratory peak," Dr. Berggren explained; "when the birds are on their way to Europe after wintering in Africa. By the time they reach Capri, they are ready for a rest. We may find 10,000 arrivals some mornings—orioles, swallows, warblers—even occasionally a nightingale."

We climbed a steep path to the medieval Castello, where the ornithologists live and work, then walked along its parapet. Far below spread a tapestry nature had taken millions of years to weave, and mankind countless generations to embellish. There was no sound except from the chattering birds.

Struck by a thought, I asked Dr. Berggren how many of the stream of visitors to the Villa San Michele made the short climb to see the Castello Barbarossa.

He shrugged. "Certainly not even a hundred a year."

I had my final answer. Quiet, uncrowded Capri survives—for those who seek it. THE END

LIFE'S TEMPO ON

NANTUCKET

By PETER BENCHLEY *Photographs by JAMES L. STANFIELD*

In the stillness of dawn, yachts rest on mirror-calm Nantucket Harbor. Across the

ON ANY SUMMER DAY you will find some 16,000 people, from almost every state and from many foreign countries, in happy residence on a little island 20 miles off Cape Cod. A remote patch of sand, 12 miles by 6, with a scanty year-round population of 3,900, Nantucket obviously has a secret allure. Other resorts have as good beaches, bathing, and boating. What is it, then, that brings the summer's thousands and turns them into die-hard repeaters?

"When I am here, nowhere else exists," Gill W. Peabody told me. A New York insurance broker whose family owns a house in Siasconset (shortened to 'Sconset by islanders), he has been summering on Nantucket since 1941. We were sitting on the south shore on a foggy afternoon, watching as waves materialized from the mist and crashed onto the beach.

"There's nothing I like better than hearing that the boat had to wait outside the jetties all night or that the airlines haven't been able

mist-shrouded island, Sankaty Head Light warns mariners of treacherous shoals.

to land a plane here for three days—unless, of course, it's me that's trying to get here. It gives me a real feeling of being away, in another country. You can walk the whole way around the island—I did that once when I was a kid—and look out to sea and never see anything but the ocean."

This most prized of Nantucket commodities—a sense of isolation—is what draws the summer visitor. For the Nantucketer it is the heart of the matter. Be he Negro or Portuguese, of English stock or Scottish (the whaling trade brought sailors to Nantucket from all over the world), he guards nothing more jealously than his identity as an islander.

He refers to the mainland as America, and

—because they told me I oughtn't to fall."

She has a favorite story to illustrate insular pride, about a man who waged a lifelong battle to become an islander.

"He was brought here by his parents when he was three months old," she said, "but whenever he saw his name in the paper, it was always prefaced by the words 'off-islander.' He wasn't about to take that treatment without a fight, so he did a little research into the newspaper editor's family and found just the weapon he needed.

"He saw that the editor's wife had left the island to have her first child. Complications were feared, so she went to a mainland hospital and came back the next week. Well, I

PHOTOCHROMES © NATIONAL GEOGRAPHIC SOCIETY

Savoring salt-spiced air, a vacationist relaxes amid dune grass. Wampanoag Indians, who once inhabited Nantucket, called it "Faraway Land." Today, more than ever, the island provides a refuge from noise-filled, people-cluttered cities.

Creamy Queen Anne's lace trims a field where island youngsters romp. The population includes descendants of sailors of Negro and Portuguese stock as well as English and Scottish. The windmill, built in 1746 of timbers taken from wrecks, still grinds grain.

if you were born in America you will always be an off-islander to him. A Nantucket student, asked to write a description of Alaska, placed it "in the northwest corner of off-island." Even Martha's Vineyard, Nantucket's neighbor to the west, is regarded as a pseudo-island (maps, page 815).* After all, if you can actually see it from Woods Hole—why, you might as well be in America.

One of the most venerable off-islanders is Mrs. Charles H. Walling, who has lived on Nantucket since 1912. In her nineties, she is still lively, with a pixie sense of humor. She told me she stopped driving a car in 1966 because "I thought it best for the public welfare. Then I stopped riding my bicycle—I used to ride out to 'Sconset for breakfast every Sunday

*In the June 1961 GEOGRAPHIC, William Graves found Martha's Vineyard folk equally proud of their insularity.

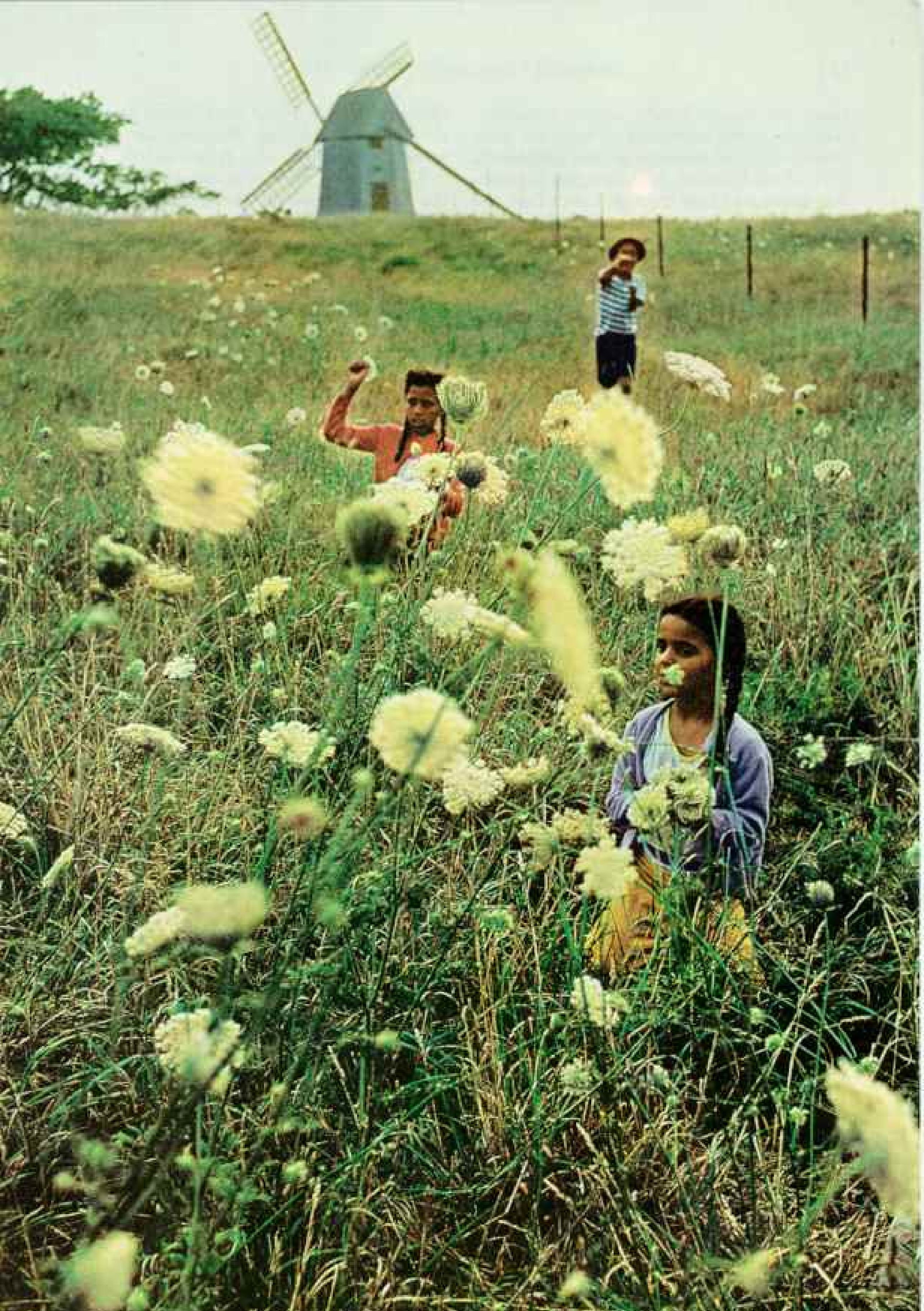
tell you—when that editor learned that someone might spill the beans about his son's true place of birth, he never again called my friend an off-islander."

The Nantucketer's insularity has several dimensions. If you were born on the island but choose to make your living on the mainland, you are no better than an off-islander. Rowland Macy, who went away and founded a famous department store, was a target for some gentle ribbing.

"Rowland just couldn't make it here," a Nantucketer might say. "He went to New York. I think he started a dry-goods business."

Benjamin Franklin's mother, born Abiah Folger on Nantucket, fared better. Though she defected to Boston, where she bore Ben, she is memorialized by a roadside fountain.

Ironically, the summer visitors, seeking to



share the Nantucketer's easeful insularity, inevitably bring something of "America" with them—cars and motorcycles and surfboards, a penchant for pizza, and a longing for night life. From mid-June through Labor Day, the half-dozen big hotels are packed and rooming houses are filled.

A Few Hours in a Gentler Age

Every day, "trippers" pour ashore at Nantucket town and flood the island (page 873): tourists who come on the two boats from Hyannis and who, as Nantucketers are fond of saying, "arrive with a shirt and a $5 bill and change neither"—a characterization that Nantucketers themselves know is unfair. Some trippers take bus tours, or rent bicycles and ride the seven-and-a-half miles to 'Sconset, with its wide beaches facing the Atlantic. Others rush in and out of the quaint shops along cobbled Main Street, loll on its benches beneath giant 120-year-old elms, or wander through the Whaling Museum, and then spend the afternoon on a public beach.

They have a good time, are welcomed by the natives (especially the merchants), and revel in the feeling of living, if only for a day, in a gentler age. Somehow, the island's remoteness and its pervasive sense of history seem always to overcome any crowd. Old buildings like the Pacific Club, where weathered sea captains met to rehash turbulent voyages, are dignified reminders that Nantucket was once the whaling capital of the world.

The trippers' impact nevertheless disquiets the established summer residents, loath to share their haven. Decades ago actors dominated the warm-weather colony, but today it is a heterogeneous group: Washington lawyers, Boston bankers, Cleveland industrialists, New York advertising men. They buy or rent large houses on Cliff Road overlooking

KODACHROME © NATIONAL GEOGRAPHIC SOCIETY

Plucked from the Atlantic, lobsters sell on Nantucket for as little as $1 a pound. The skipper of the *Ellen Marie*, out of New Bedford, Massachusetts, weighs choice catches at a town wharf. A century and a half ago, the world's mightiest whaling fleet crowded the harbor, and docks were redolent of Sicilian oranges, Cadiz olives, and Oriental spices, luxuries imported with the profits of the sperm-oil trade.

the water, or small cottages covered with roses or ivy on one of 'Sconset's narrow lanes.

They play tennis at the 'Sconset Casino or the Nantucket Yacht Club and sail Indians and Beetle Cats in the harbor (pages 818-19). They swim along the south shore at beaches seldom reached by bicycling trippers. And, sooner or later, almost every woman among them sports one of the beautiful lightship baskets, used as purses, that have become a badge of the summer-resident set.

Woven of Javanese or Malaysian cane and often decorated with ivory carvings, Nantucket's lightship baskets originated a century ago, created by lonely light keepers to help pass the time. Mitchell Ray, grandson of a whaleman, made baskets in the 1920's, adorned them with hand-carved ebony whales, and sold them for $25. Today a similar basket, decorated with an ivory carving, may bring as much as $185.

A Filipino immigrant, José Formoso Reyes, began to make the baskets 20 years ago and has become so successful that he welcomes competition. He works 12 hours a day in his tiny rose-covered shop. A sign on the counter proclaims, "No repairs until next year."

"Sometimes it takes two or three days to make a basket," he told me. "My backlog ranges between four and seven years. From the day I started it's been like this."

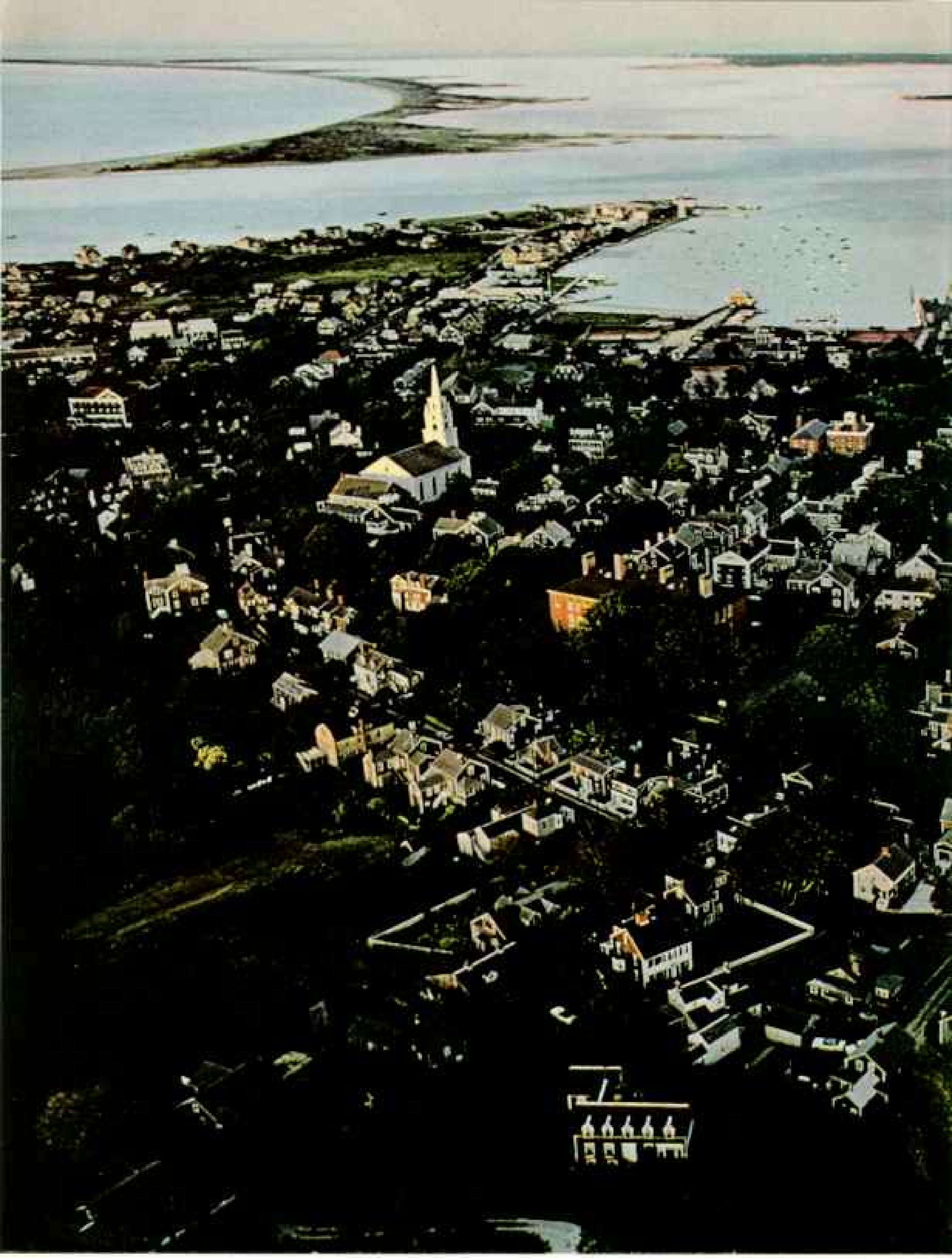
Artists Disturbed by Clean-up Trend

Nantucket supports a summer art colony, though some of its members lament the island's trend toward a respectable neatness.

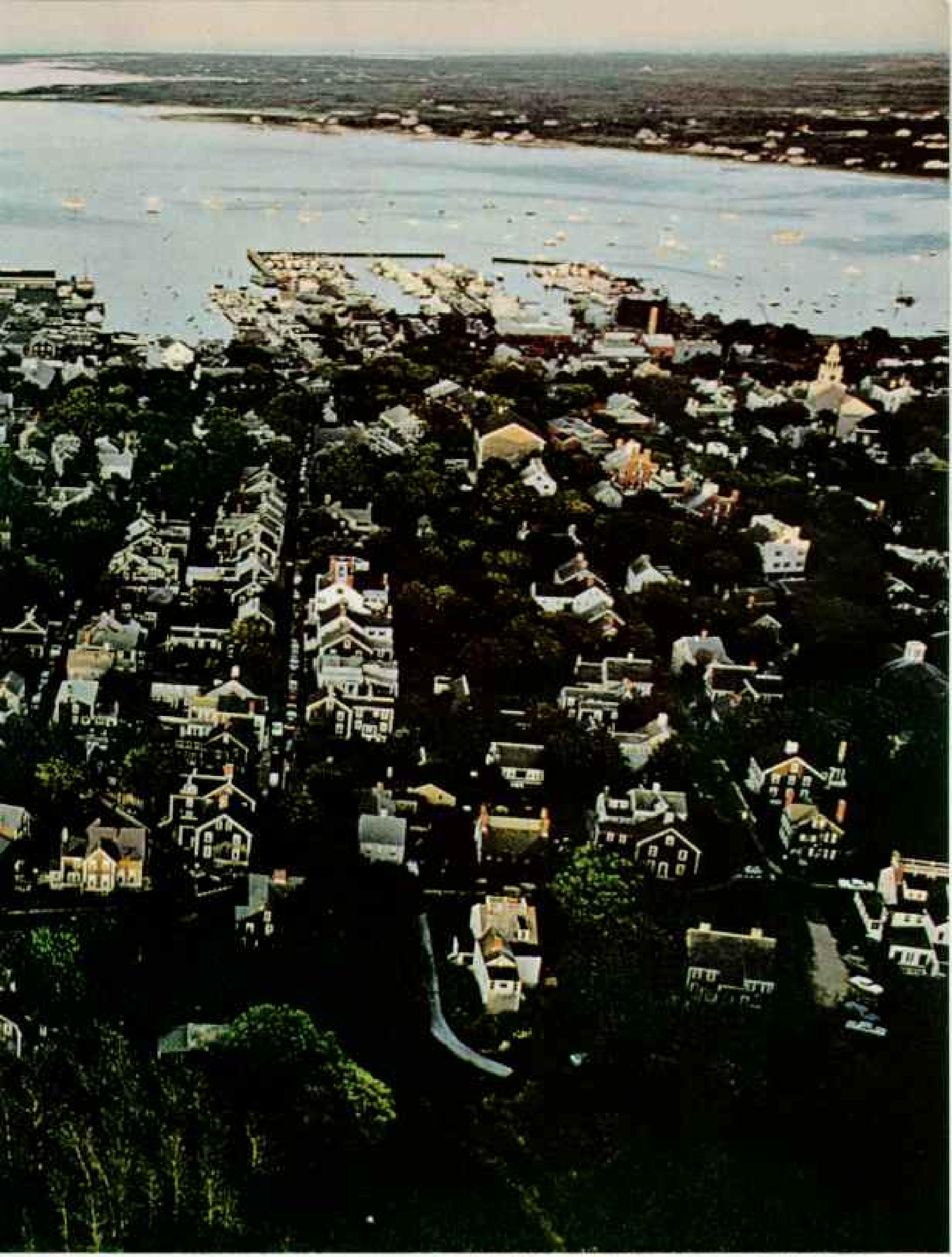
"This place has been cleaned up," an indignant artist told me. "Now Provincetown is really paintable; it's never been cleaned up."

Its paintability aside, Nantucket is indeed cleaner, more pristine, and quainter than most Cape Cod resorts. And, the day after Labor

LOPSIDED HORSESHOE, *the sandy chip of land known as Nantucket, 20 miles off Cape Cod, supports 3,900 year-round residents, who share space in warm months with 12,000 "summer people." Shoals almost trapped the island's discoverer, Bartholomew Gosnold, when he sailed past in 1602.*



Wedded to the sea for centuries, Nantucket town reflects the marriage in countless ways. Along cobbled streets and narrow lanes rise stately mansions built with the white gold of sperm oil. Years of weathering have turned shingled cottages dove-gray, giving the island its nickname, "Little Gray Lady



of the Sea." Towers of the Unitarian Church, extreme right, and the Congregational Church, left center, rise above the rooftops. Yachts and fishing boats throng the harbor. Vessels from the mainland follow the channel between the town and scalloped Coatue Point to berth at Steamboat Wharf, upper center.

Day, all these admirable qualities are intensified. As if by edict, the summer visitors flee, leaving the natives to batten down their island and wait for the winds of winter. Deer, which for months have remained hidden in clumps of bushes, reappear on the moors. The island begins to change her clothes.

"Nantucket has two suits," an old Nantucketer once told me. "One's green, for all the summer people. But she saves her best for us who live here. After Labor Day she really puts on her finery."

Autumn Brightens the "Faraway Land"

I have been coming to Nantucket for more than twenty years, and I love it in summer, but my favorite time has always been just after the island changes her clothes. Then the lumbering ships from Woods Hole cross Nantucket Sound full of cargo, and all but devoid of people. Standing alone on the deck, with scores of gulls hovering motionless above the ferry's fantail, you sense the isolation that inspired the Indians to name the island the "Faraway Land."

Ashore, the throngs have gone, but the days remain clear and lovely. The summer green on the moors gives way to the flaming reds and yellows of autumn, and small, secret ponds glisten placidly in the sunlight. Miles of beaches are deserted; footprints are erased from the sand by the building surf. Striped bass and bluefish still patrol the shoals off Madaket on the western side of the island; and on the eastern side, around 'Sconset, the winds are perfect for flying kites.

For those who cherish a landscape without human figures, autumn is the time to tramp the island's byways. Of 144 miles of public roads, 82 are paved. The rest are rutted dirt tracks crisscrossing the moors. On a crisp fall day, it is exhilarating to follow a winding trail to nowhere and watch the moors change into their spectacular regalia.

One day not long ago, I hiked from Altar Rock, one of the highest points on the island —about 100 feet—to Milestone Road (map, page 815). Vast patches of huckleberry had turned bright red, and some were beginning to soften down to rust. Green mealyplum (bearberry), the island's most common carpet vegetation, glistened brightly. Stands of scrub oak and bayberry and broom crowberry—the marvelously resilient "mattress grass"—dotted the undulating hills. By the road, skeins of brilliant red and yellow poison ivy climbed the trunks of small pines.

Looking at the shallow dips in the road, I remembered the awe I had felt when I first learned that they had been shaped by the Ice Age glaciers that created Nantucket. This bit of land began as early as 75,000 years ago as a moraine heaped up by the advancing ice. As warming climate melted the ice and raised the oceans, water invaded the coastal plains and made Nantucket an island. Wind and water continue to carve it, sometimes in spectacular fashion. In 1961 Hurricane Esther amputated the western tip, called Smith Point. Now Smith Point is part of Esther Island.

The glacial breath of winter still locks the island in an icy grip, at times freezing the

A fresh breeze on her quarter, the topsail schooner *Shenandoah* approaches Brant Point, where a light has guided seafarers since 1746. The 108-foot windjammer, depending entirely upon its sails for propulsion, cruises the Northeast coast weekly in summer with paying passengers.

Tending a spinnaker, a teen-age sailor helps maneuver an Indian in a race held by the Nantucket Yacht Club. The August regatta draws many sailboat classes, including the Beetle Cat, called Rainbow by Nantucketers because of its many-hued sails.

harbor so thick that supply ships can't buck through. Then cargo planes drop emergency rations—31,000 pounds one arctic day last January. But such crises only heighten the native's perverse pride in his insularity.

Off-season is the time to meet the real Nantucketers. They must make most of their income during the summer, and they have no time for socializing. They are a hardworking minority amid a crowd of vacationing strangers. But after Labor Day they are liberated.

One of the most engaging islanders is a tall, lanky man named Earl Coffin, a descendant of one of the families that comprised Nantucket's original elite. (The 1870 census recorded 76 Macys, 112 Gardners, 138 Folgers, and 185 Coffins.)

Rockweed Steam Gives Clams That Special Flavor

Earl is much in demand as Nantucket's most talented and knowledgeable gardener. But when gardening slacks off in the fall, he haunts the island's shores, wading in Polpis Harbor on cold and blustery days in search of scallops and clams.

One morning, Earl's wife Phoebe, a pretty and vivacious Newfoundlander, called to invite my wife Wendy and me to a clambake, a rare treat on Nantucket. To prepare a proper clambake, which consists not only of clams but also of lobsters, potatoes, corn on the cob, and cheesecloth bags stuffed

Zest of youth enlivens Nantucket in summer. Crowding a night spot called 30 Acres, the college set dances to a rock band's ear-shattering rhythm. Bouncing along cobblestoned Main Street, a dune buggy (above) scoots past the brightly lit Sweet Shop, a confectionery complete with an old-fashioned soda fountain. At the upper end of its business square, Main Street narrows to become one of the Nation's most distinguished summer addresses.

with sausage, requires skill and a lot of work. Only two or three men on the island relish a "bake" enough to bother.

The day before the bake, I went with Earl to gather the indispensable rockweed. The brownish-yellow weed, which grows on stones or mussels, contains small air sacs. When heated, it emits a steam that flavors the food. In an hour we gathered a couple of hundred pounds of weed in two burlap bags.

"There'll only be 10 of us this time," said Earl. "You should see it when we do the lodge bake. We need 15 bags."

Fire Builder Must Know His Business

The next morning a northwest wind was gusting upward of 40 miles an hour. "No problem," said Earl. "We'll find a lee."

We trekked off to the beach to set up windbreaks and build the fire. Earl dug a shallow pit, lined it with wood, and filled it with rocks. Then he carefully stacked wood around the rocks.

"This is the tricky part," he said. "You've got to build your mound so's air can filter around every rock. If you don't, you get a poor fire and the rocks don't get hot enough."

We flew kites for an hour while the rocks baked until they began to crack and flake. Earl spread them out and covered them with a layer of weed. On top of the weed went the food, and then another layer of weed. We threw a tarpaulin over the mound, and shoveled on sand to seal in the heat.

An hour later we reversed the process, removing the canvas in a great billow of steam, and treated ourselves to the tenderest, tastiest meal I can remember.

After lunch we packed our gear and drove into town to buy some new kites; we had lost two in the strong wind, and they were now heading for Portugal.

We walked along the waterfront, still the heart of the island. Square-riggers no longer crowd the wharves, of course, and the bustle of a thriving seaport is only a memory. But here still beats the pulse of the island. In bad weather, with planes grounded, the narrow channel is Nantucket's only lifeline.

As I gazed across the harbor at Brant Point, I recalled a remark by the venerable Mrs. Walling: "Something's changed, you know. When you come around the point, it just doesn't look like the Little Gray Lady any more. I hope that for the sake of a little money we haven't given up too many things that money can't buy."

The island, known fondly as the "Little Gray Lady of the Sea" (because of its weathered-gray houses),* has indeed changed in just a decade. The waterfront has been rebuilt to handle 180 boats, and finger piers stretch out in endless rows. Harbor Square has been constructed, complete with supermarket, Laundromat, gift shops—and cobblestones. Originally cobblestones covered Main Street for a practical purpose (preceding page)—heavy whale-oil wagons would have reduced a normal street to mire in a week—but now all of Harbor Square is paved with the picturesque but axle-jarring stones.

One-man Crusade Stirs Debate

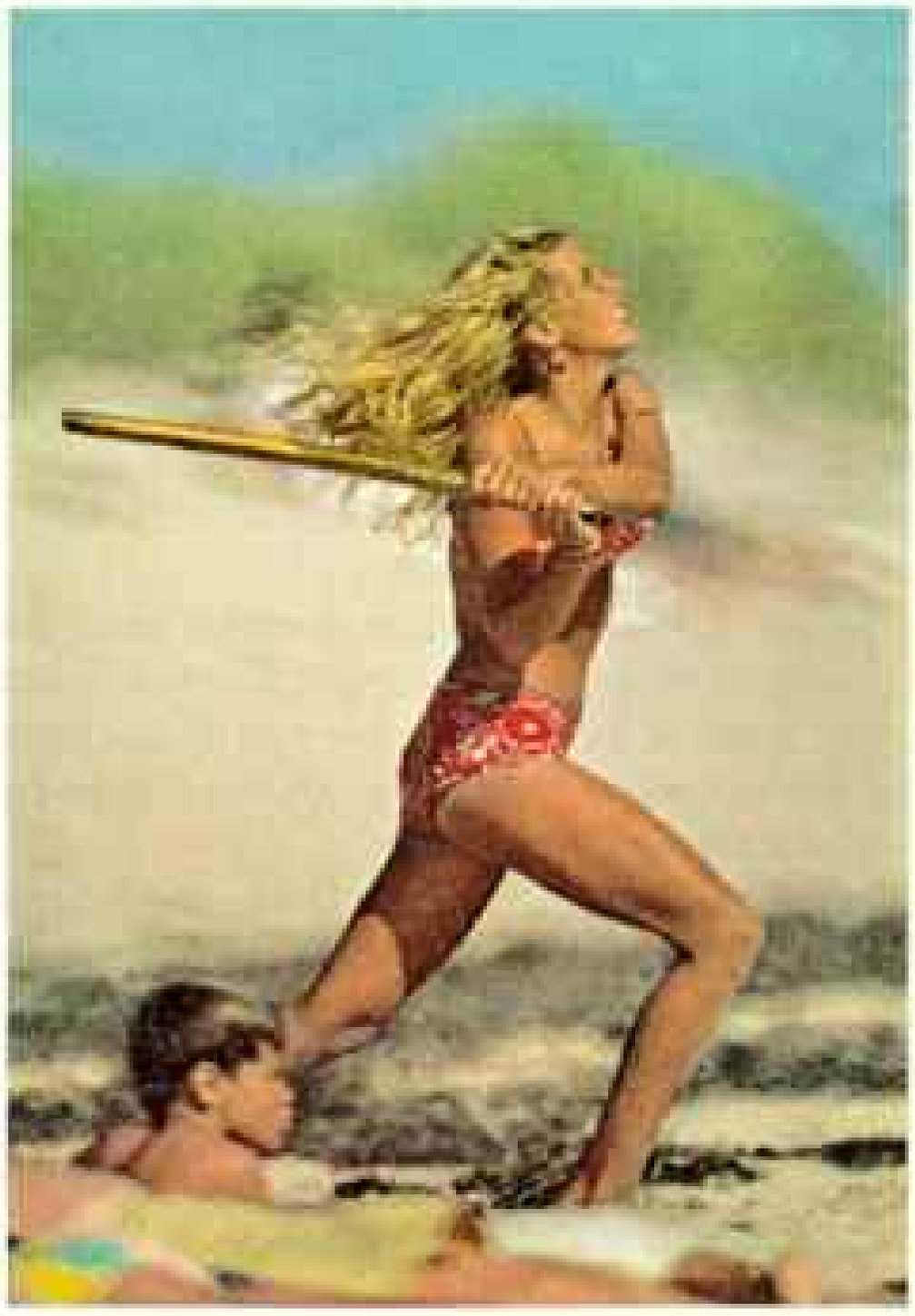
The recent changes on Nantucket have been wrought largely by Walter Beinecke, Jr., board chairman of a company promoting Christmas Club savings plans. Mr. Beinecke's father established the Nantucket Historical Trust in 1957, and in 1961 Walter Jr. and other trustees launched a crusade to preserve the town's historical heritage. In 1964 he and several others formed Sherburne Associates to rebuild the rundown waterfront. Their efforts have aroused considerable controversy.

I heard Mr. Beinecke praised for saving the island in spite of itself, and denounced for trying to turn Nantucket into a rich man's refuge. Some islanders feel Sherburne Associates' ownership of so much of the commercial waterfront is unjust; others claim they

*See "Nantucket—Little Gray Lady," by William H. Nicholas, NATIONAL GEOGRAPHIC, April 1944.

"The daily invasion," Nantucketers call this summer spectacle. Many hasten to harborside to watch the "trippers" swarm eagerly ashore, as many as 1,500 on a fine day. The three-deck passenger ship *Siasconset*—named for an island village and usually shortened to 'Sconset—makes the two-hour run from Hyannis on Cape Cod; supply-carrying car ferries churn out of Woods Hole.

Following the Civil War, which dealt the final blow to the once-booming whaling industry, impoverished families began to take in strangers during the vacation months. That modest beginning spawned today's tourist bonanza.



August — the golden time

FIFTY-FIVE MILES of sand beach rimming Nantucket provide sun seeker and sportsman alike with space and solitude to enjoy themselves in their own ways: A distaff Mickey Mantle slams a home run with a board bat; precariously balanced, a surfer struggles to ride a wave.

The Gulf Stream warms Nantucket waters to a summer high of 72° F., a happy contrast to the bone-chilling seas that lap most New England beaches even in the balmiest months.

AQUACHROMES BY JAMES L. STANFIELD © N.G.S.

have saved the wharves from dilapidation. Some summer people complain that the new construction work has tripled the cost of labor; others say it has given the economy a needed shot in the arm.

A few summers ago the proprietor of a gift shop turned a modest profit by selling buttons with anti-Beinecke legends, one of which read, "No Man Is an Island." But in the eyes of many Nantucketers Mr. Beinecke is close to being just that.

Day-trippers Keep Out?

I was anxious to meet this man who was changing "my" island, so I made an appointment to see him at his large home on the Nantucket Cliffs. A stocky, curly-haired man in his early fifties, wearing half-rim glasses, he bounced in from a scalloping expedition and plopped himself into a chair.

When I asked him to explain his program, he said, "I want to make sure that the beauty and charm of Nantucket are never destroyed by having more tourists than the island can realistically accommodate."

Some island merchants think this means that Mr. Beinecke might attempt to limit the number of tourists, primarily by imposing restrictions on one of Sherburne Associates' tenants, the boat line that brings trippers from Hyannis. The thought outrages the merchants' traditional sense of democracy—and their Yankee business sense, too. Restaurant and shop owners fear that if the trippers are priced out of Nantucket, they may be out of business.

Mr. Beinecke brushes aside these fears: "The boat line is a tenant that we feel is not only desirable but necessary for the economy of Nantucket."

Nevertheless he firmly believes that tourism

Recipe for a perfect beach party: a roaring fire, a full moon, a guitar, and a host of mellow voices. These members of the Historic American Buildings Survey, assembled near Great Point Light, spent last summer studying, drawing, and photographing notable Nantucket buildings, many of them protected by law.

Three in search of the sun amble down a boardwalk to Jetties Beach.

Shades of Red Grange! A broken-field virtuoso leaves his pursuer sprawled on the sands beside Nantucket Sound.

Light and lovely as spun silver, a spider web traps dew at the edge of a fresh-water pond. Perch, bass, and pickerel thrive in such pools, which lie in depressions left by the retreat of Ice Age glaciers. The frozen rivers, in fact, created Nantucket itself as a huge moraine.

must be controlled. "Nantucket can't hope to make a living as a resort if it offers only sunshine, the outdoors, and sports," he said. "To compete with the Cape, it must add something else—its romance, its isolation, its history. The normal approach in American business is 'more volume and more volume.' For us that would be death. Nantucket's charms are very fragile.

"We do not wish to run anyone out of business. But if a man wants to lease property from Sherburne Associates, we believe that the property should be used in a manner compatible with the historic and residential area. The commercial and residential parts of town should be run as a harmonious entity."

Bargain Price Included Beaver Hats

Whatever the feelings about Mr. Beinecke's crusade, no one denies that there is a great deal to preserve on Nantucket. Explorer Bartholomew Gosnold, off course on his way to Virginia, sighted it in 1602, when it was inhabited by Wampanoag Indians. By 1660 it had changed hands several times (once for the sum of 30 pounds and two beaver hats), and was owned by 20 English settlers.

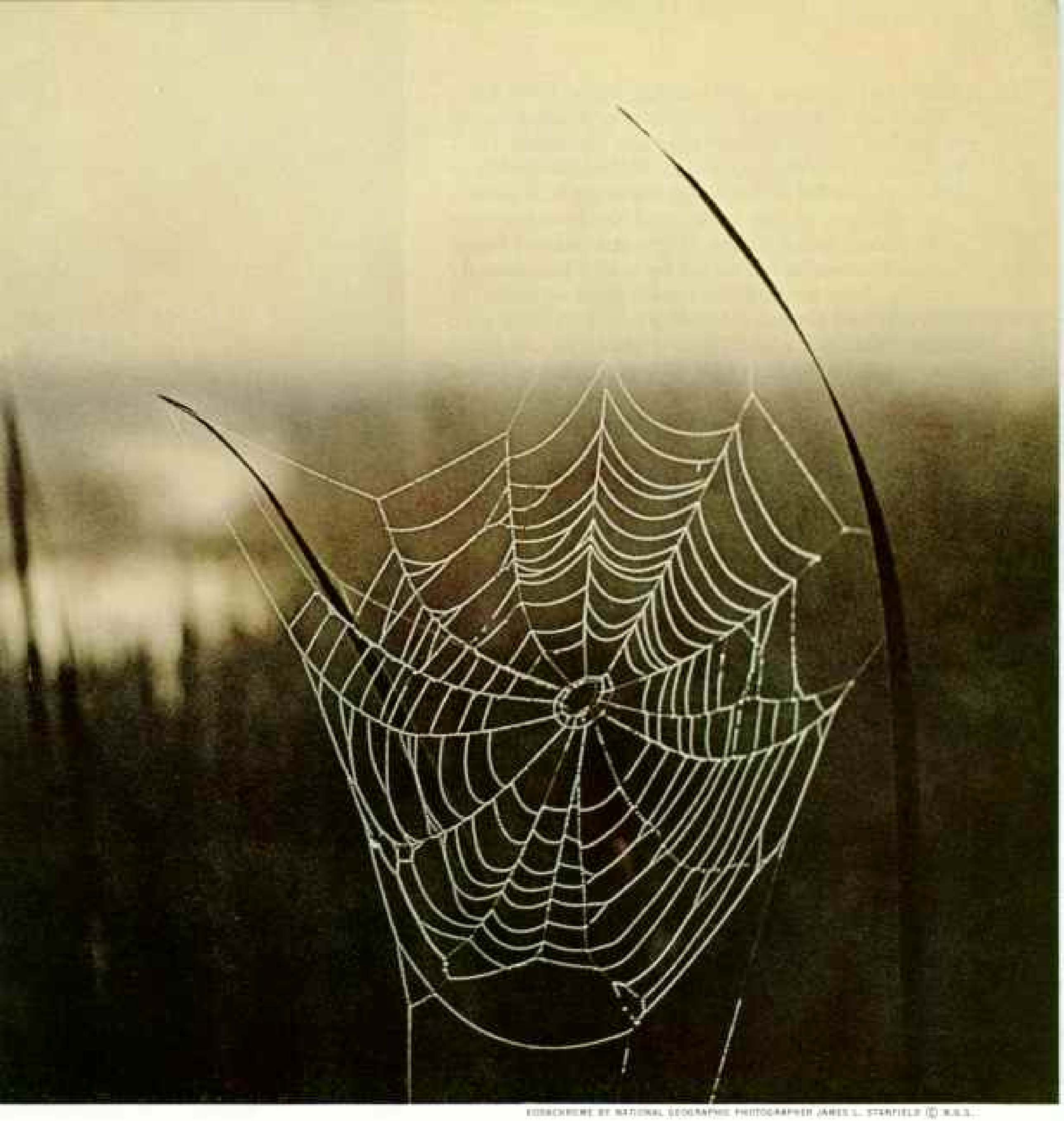
The first village, called Sherburne, stood about two miles west of present-day Nantucket town. The main occupations on the island were fishing, growing grain, and raising sheep. As the population boomed, other small settlements sprang up: Siasconset, Quidnet, Polpis, and Sesachacha.

'Sconset outstripped the others because it was an outpost for fishermen taking the blues, cod, and haddock when they ran to the east of the island. Several of the small houses still standing along the narrow streets of 'Sconset were fishing shacks 250 years ago.

In the 1690's the islanders began to make a business of pursuing whales, chasing them in rowboats and towing them to shore. Responding to an increasingly water-oriented populace, Sherburne slowly shifted toward the harbor. Having arrived there, it was renamed Nantucket in 1795.

As Nantucket whalers began to use larger vessels and range far oceans, the expanding whaling profession created an economy, heritage, and population that belied the island's size. As early as 1740 Nantucket was the leading whaling port in the world, a distinction it held for almost a century. By 1820 it had 78 ships in service, compared to New Bedford's 56. Enterprising fleet owners made fortunes, and they built majestic homes along upper Main Street.

Although I was born in New York, I remember reading with proprietary pride Herman Melville's paean to the island I have long considered my second home. "The Nantucketer, he alone resides and riots on the



EXPLORER BY NATIONAL GEOGRAPHIC PHOTOGRAPHER JAMES L. STANFIELD (C) N.G.S.

sea," Melville wrote in *Moby Dick*. "He alone, in Bible language, goes down to it in ships; to and fro ploughing it as his own special plantation. *There* is his home; *there* lies his business. . . . With the landless gull, that at sunset folds her wings and is rocked to sleep between billows: so at nightfall, the Nantucketer, out of sight of land, furls his sails, and lays him to his rest, while under his very pillow rush herds of walruses and whales."

But even while the world marveled at the epic stature of the Nantucket whaler, his demise was being written by changing conditions. By the 1790's whalers had to range into the remote Pacific to find sperm whales in profitable numbers, and they needed huge ships, large enough to carry all the oil gathered in a voyage that might last three years. While Nantucketers went willingly and successfully, they found that their fully laden vessels could not easily cross the shallow bar at the harbor entrance. New Bedford, with a deeper harbor and better access to mainland markets, began vying for world leadership.

Other factors, too, were working Nantucket's doom. In 1849 the California gold rush siphoned off a dozen or more ships and hordes of would-be prospectors. Then, only a decade later, petroleum was discovered in Pennsylvania, and the price of sperm oil

plummeted at a time when whaling was at its costliest.

The Civil War struck the crowning blow, drawing off the best sailors, and for a decade Nantucket knew terrible poverty. The population, which had climbed to almost 10,000, fell to 3,000. All construction ceased.

But poverty, in one sense, bred the prosperity the island knows today. In the 1870's, mainlanders began to come to peaceful Nantucket for restful summers. By the turn of the century, the former whaling capital of the world had become a budding resort. Poverty even helped retain the island's charm: Since no one could afford to build houses in the 70's and 80's, the island was spared the gingerbread Victorian architecture that was all the rage. History was preserved perforce.

Today it is preserved by municipal law. For 14 years the small core of the town has been an inviolable sanctuary for the past.

Three Houses for Three Sons

Though Nantucket town has some 1,500 houses, most built between 1790 and 1850, the keystone of its architectural heritage is the trio of red brick houses that stand in a stately row on upper Main Street. Built in the 1830's by fleet owner Joseph Starbuck for his three sons, George, Matthew, and William, they are named West Brick, Middle Brick, and East Brick.

Middle Brick is owned by Matthew's great-granddaughter, Mrs. H. Crowell Freeman, who treated Wendy and me to a tour of the house. Gale warnings had been posted that night. Rain slashed down on the cobblestones, and leaves flew along the deserted street. The only light on upper Main came from the softly glowing lamps in the living room of Middle Brick.

The Freemans ushered us to the rear of the house, where they have added a spacious, comfortable study.

"We were tired of living in a museum," said Mr. Freeman, a friendly man in his middle sixties.

I could see what he meant. The early-Victorian furniture in the double parlor was immaculate. Small tables were crowded with delicate scrimshaw, testimony to the boredom of long voyages.

"Can you imagine how long this must have taken?" asked Mrs. Freeman, holding an intricate ivory gimcrack. "The carver started with a whole walrus tusk."

It looked like a child's rattle, with precisely round balls carved inside the ivory framework.

One of the Freemans' proudest possessions is a frayed account book from the *President*, a Starbuck ship that had sailed from Nantucket in the late 1830's. Each sailor was allotted two pages, on which were written all charges for items he bought from the ship's stores.

"If they were very thrifty," said Mr. Freeman, "these fellows might end a two- or three-year voyage making ten to twenty dollars. But many of them jumped ship before the long voyage ended."

One member of the ship's company was named Hugh VanBuren, and I asked Mr. Freeman to explain an

Film of morning fog blurs Nantucket Harbor, its placid surface reflecting the dark pilings of Old North Wharf.

"**No reserved seats** for the mighty," reads the motto of the Wharf Rat Club, which meets in this shanty on Old North Wharf. Shunning dues, bylaws, and formality of any kind, the club requires only that members exercise the "proper amount of humility and self-effacement" during the chief activity: yarn spinning. Quarter boards of old vessels adorn the ceiling. Beneath them hang flags bearing the club emblem—a white pipe-smoking, cane-sporting rat—which members have carried to many parts of the world, including the Arctic and Antarctic.

Treasury of Nantucket's golden age, the Whaling Museum at the foot of Steamboat Wharf houses a whaleboat complete with harpoons, stowed mast, tubs of line, and a 20-foot steering oar in the stern. Jawbone of a sperm whale at left, most of its 44 teeth still in place, attests to the size of the seamen's quarry. Above the whaleboat stretches the beam of a massive spermaceti press,

KODACHROME © NATIONAL GEOGRAPHIC SOCIETY

used to separate the sperm oil from the candle wax. Visitors at center inspect a model of a "camel" —a form of floating drydock designed to help move heavily laden ships through the shallow channel to Nantucket Harbor. Beyond gleams the giant lens that focused Sankaty Head Light's oil flame for a century; overhead hangs a model of an early-16th-century Spanish merchantman.

item charged to him: "$15—for catching him."

"You mean they charged him for the honor of being shanghaied?"

"Sure," he said. "There were people who caught sailors for a fee. The whaling captain passed the cost along—to the poor seaman."

Evidently the unfortunate Mr. VanBuren never resigned himself to his fate. Among such items as "Jack knife—$.50; pair of shoes —$1.50; shirt and trousers—$3" was the sorry note, "To prison fee—$1.25."

"I wonder how much they charged a man to hang him," I mused. But for Mr. VanBuren, the need never arose. The last entry in the accounts, in 1840, was one word—"Deserted."

Mansion Ballroom Open to the Stars

Across the street from the Freemans sits a pair of stately white-pillared houses that were also built by a whaling tycoon, the husband of one of Joseph Starbuck's daughters. Number 96 Main Street is a Nantucket Historical Association exhibit, open to the public. Number 94 belongs to Mr. and Mrs. John A. Lodge of Washington, D. C. It was built in 1845, in faithful Greek-revival style. An elegant staircase curves up from the foyer and is capped by an elaborate domed ceiling.

Mrs. Lodge showed us to the main room upstairs, a large domed salon.

"A round opening in the center of the ceiling slides away," she said. "A similar panel in the roof slides, too, so the dancers could have the stars above them.

"This room is famous for its beautiful plaster work, done by craftsmen brought all the way from Italy, and for its unusual 'sprung floor.' The floor really does have a slight bounce to it, though you can't feel it now because of the weight of the furniture. Long, gently curved pieces of wood resembling barrel staves separate the downstairs ceiling from the upstairs floor.

"Remember the dances they did in those days—polkas and gavottes? You had to have some give in the floor, or a whole party might come crashing through the ceiling into the living room below."

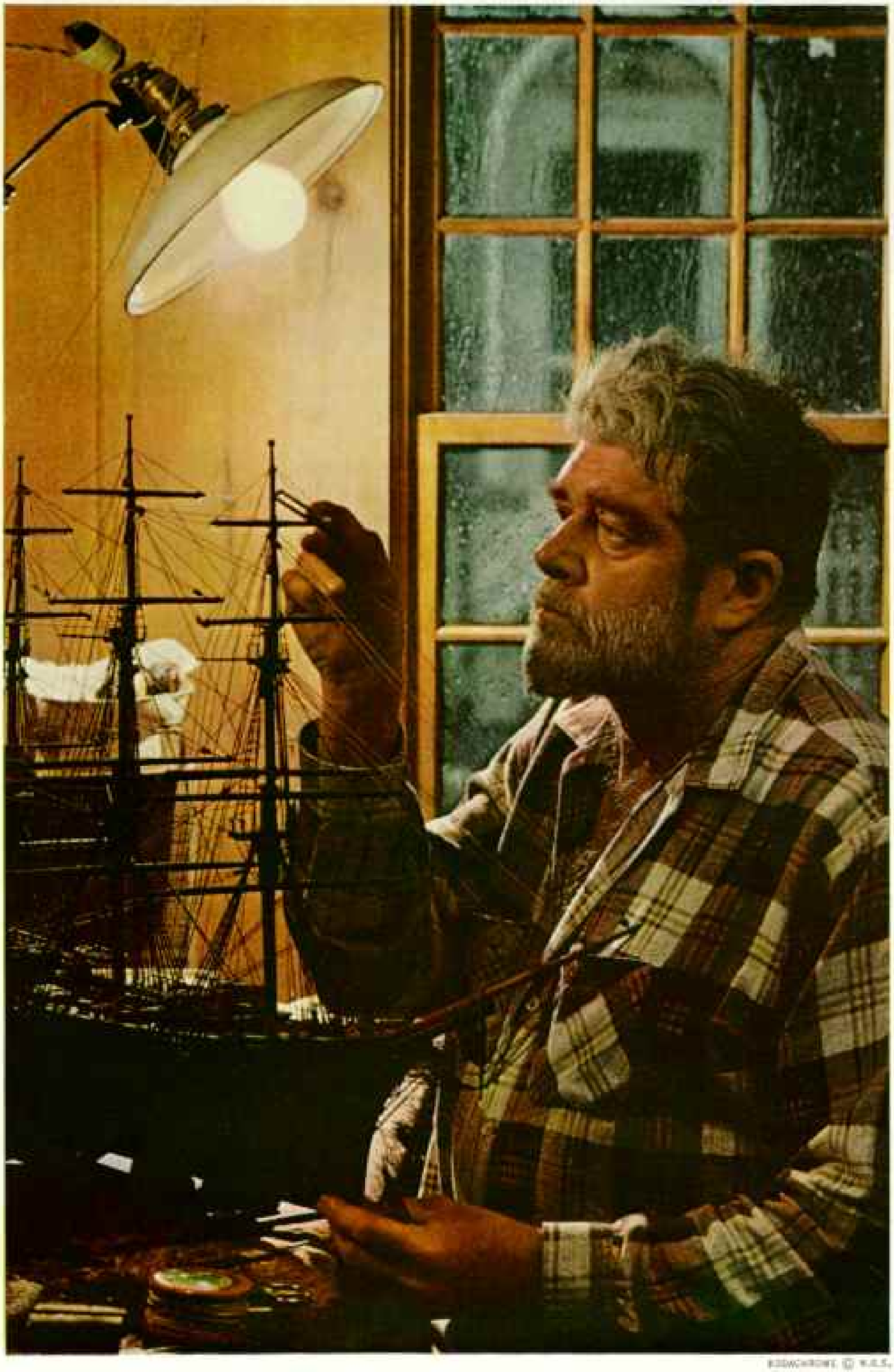
As we went down the stairs, I ran my hand along the polished bannister. At the bottom I felt a small ivory bump.

"That's called a mortgage button," Mrs. Lodge explained. "People on Nantucket used to plant an ivory button in the bottom post of their stairs when they had finished paying for the house. When we looked at the original bill for building this house, the last item on the

Sailor in skirts, Mildred Jewett won honorary Coast Guard membership for patrolling Nantucket beaches during World War II. She lives in Madaket, and islanders affectionately call her Madaket Millie.

"Eight bells and all's well." A sun dial's shadow marks the hour as 8 a.m. in Siasconset, a fishing village that became a favorite retreat of Broadway stars in the early 1900's.

Only 13 when he first went to sea, 61-year-old Charles Sayle bears a fitting name; a Nantucketer for 40 years, he sails often with his sons and writes a column, "Waterfront News," for the island's weekly *Inquirer and Mirror*. But he spends most of his time in this workshop, patiently making ship models that require as many as 2,000 hours. Here he repairs a square-rigger.



sheet said, 'Ivory mortgage button—$.33.' The house must have been paid for in cash, on the spot."

Outside, Main Street was shrouded in a thick fog. Looking up through the mist at the lighted windows in the ballroom, I could almost hear drifting toward me the strains of a waltz.

By the next afternoon, the sea around Nantucket was warning in earnest about the coming winter. The wind whipped up whitecaps and streaked the surface of the water. The surf boomed onto the land and tore away great chunks of sand and soil. Some parts of the shore are being eroded at a rate of as much as 17 feet a year, and anguished property owners are watching helplessly as their investment washes out to sea. At the same time, the shore is building up around other parts of the island.

Nantucketer Relies on a Built-in Barometer

Despite the wintry seas, there were still fish to be caught—or so I had been told. Bass and bluefish were said to be feeding on the Point Rip, where tides surge over the shoals. So, bundled up like Antarctic whalers, Wendy and I set out for the rip with Capt. Gilbert Nickerson in his 25-foot powerboat *Flicka*.

"We may scare up a blue or two," said Gibby, as we bounced along the channel. "Anyway, it's a nice day for a boat ride."

By the time we reached the rip, the sea had calmed enough to permit Gibby to keep our fishing lines in the "white water." Almost immediately Wendy hooked a large bluefish.

Gibby tossed the catch into the fish box. "The weather's going to change," he said. "You watch." There wasn't a cloud in the sky. The water was quiet, the wind steady from the southwest.

"How can you tell?" I asked him.

"I've been on the water a long time," he said. "I can feel a change coming."

Within ten minutes we couldn't see twenty yards in any direction. A fog that had appeared as a gray line on the horizon had raced across the water, engulfing us in a windy cloak.

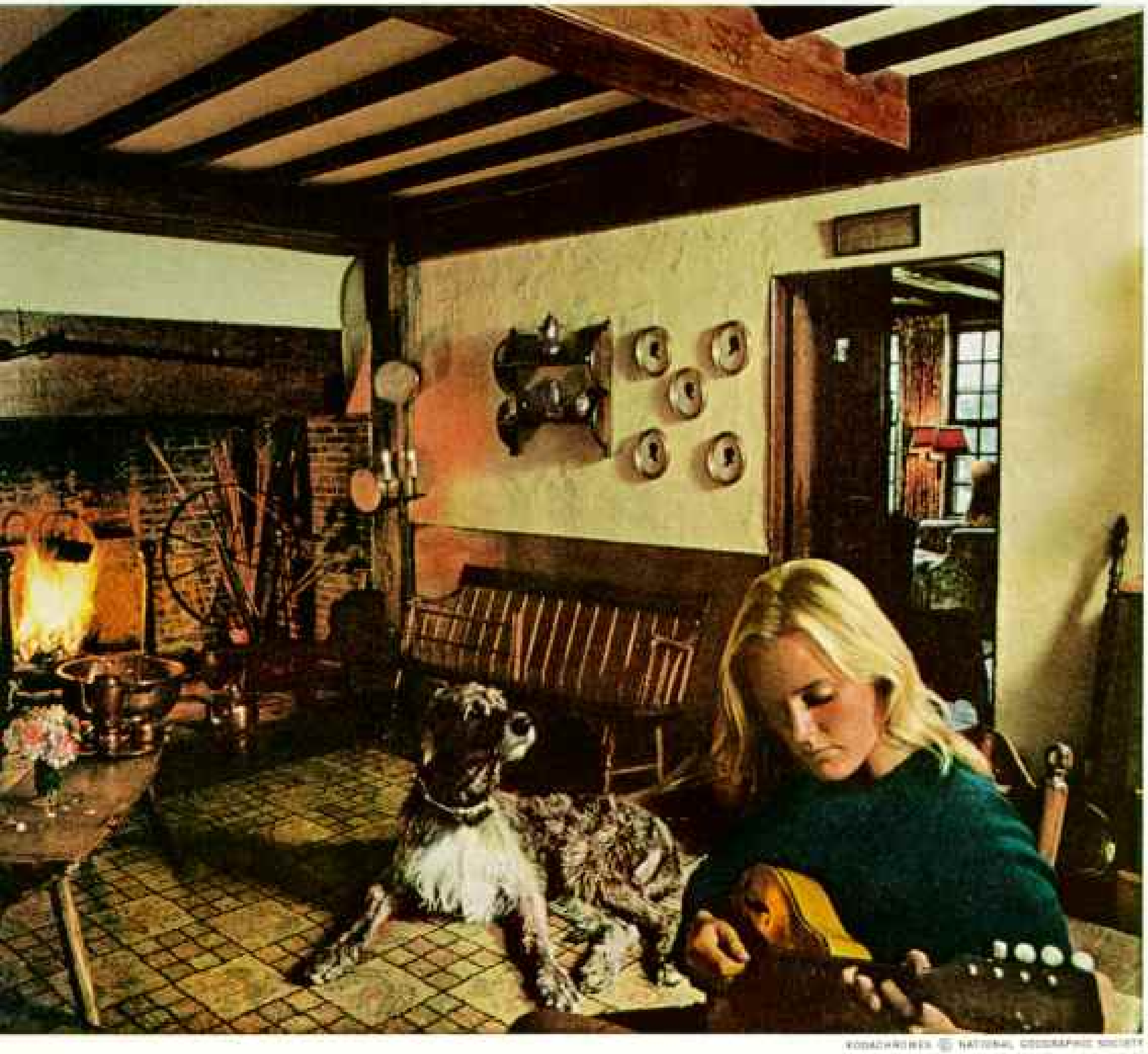
"Now there's a good old Nantucket fog," said Gibby.

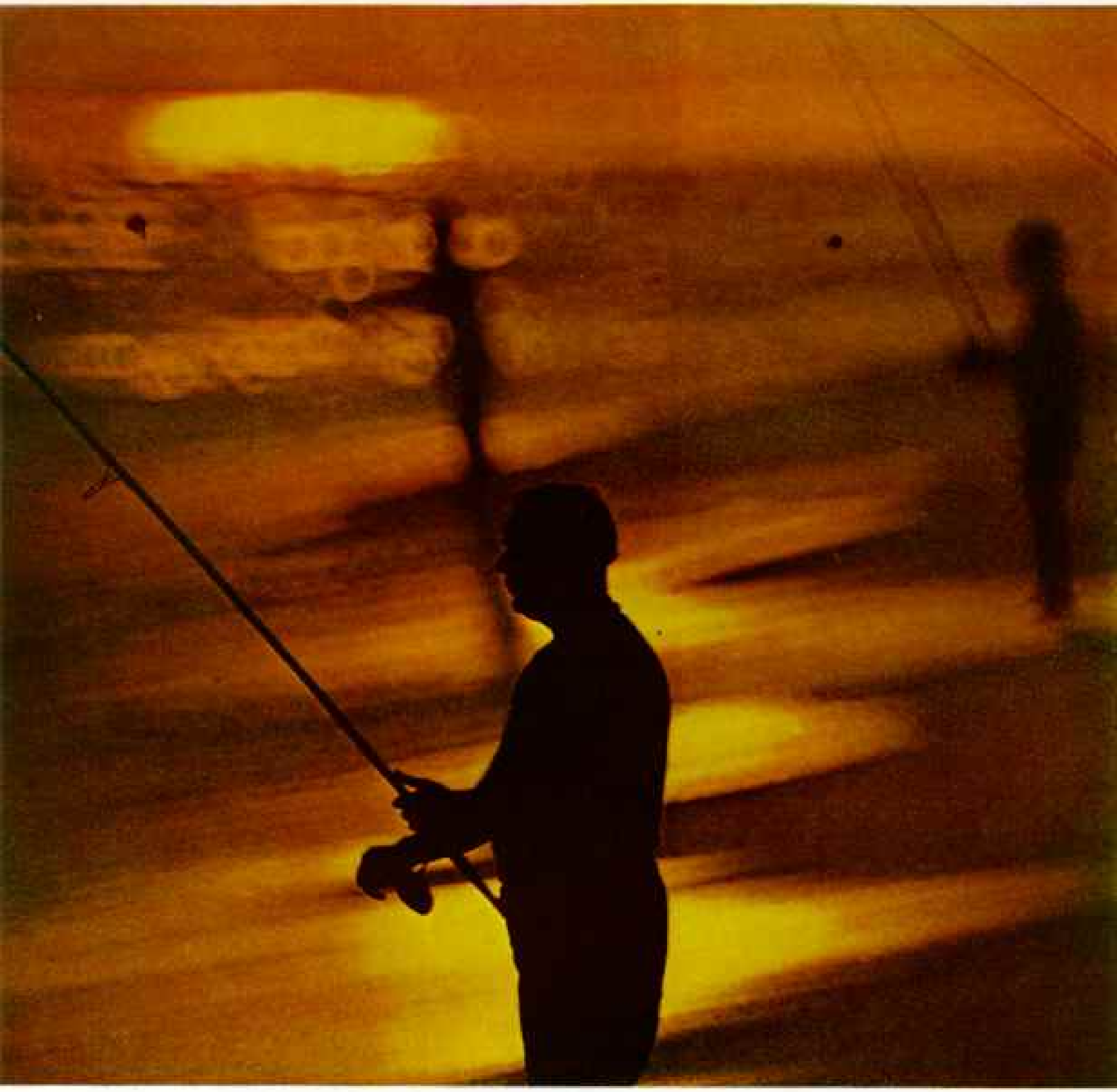
We moved silently up and down the invisible rip. As we worked our way home through the fog, I asked Gibby how much longer he would fish this year.

"About another week," he said. "Then the scalloping season starts." Like many islanders, he has two boats and two professions

History lives on in island homes

COMMANDING A VIEW at every point of the compass, Tashama Farm looms above flowering fields. A whaling master built the shingled mansion; his wife perhaps kept watch for his ship from the cupola-like penthouse. Most of the Kilvert home on Main Street (below) dates from 1693. One of its eight-foot-wide fireplaces blazes cheerily as Lilly Kilvert plucks a tune for an appreciative friend.





—charter-boat captain in the summer, scalloper in the winter.

The professional scalloping season begins November 1 and lasts through March. The law limits the quantity of scallops that may be taken: six bushel bags per person per day, no more than 12 bags to a boat. A bag of shellfish will usually yield a gallon of shucked scallops, which in a good year brings about $10.

Scalloping is backbreaking work. The scallopers cast off at first light, in any but the most perilous weather. Behind the boat they drag six dredges made of a material that resembles chain-link door mats. The dredges are hauled aboard—either by hand or by power-driven winch—and the heaping muddy mess is dumped onto a culling board, where it must be gleaned by hand.

At the beginning of the season, scallops are plentiful in the harbor, but by the end of February the boats have to travel all the way around Eel Point to Madaket. They leave before dawn and return after dark.

Gibby said he had just removed the inboard motor from his scalloping boat and was replacing it with an outboard, which seemed to me a reverse procedure.

"Not at all," he said. "Out at Madaket

Daydreams of bluefish and striped bass hold surf casters to their sport as daylight wanes. Nantucket offers vacationists a wide range of pastimes: fishing, sailing, swimming, bicycling, or flying kites on the strong sea winds. After sunset, only an occasional beach fire will break the darkness along this lonely shore near Smith Point.

PHOTO-REMS BY JAMES L. STANFIELD © N.G.S.

there's almost no water. If you go aground with an outboard, you can lift the motor up, which is something you sure can't do with an inboard. Can you imagine it getting dark and beginning to blow, and there's a whiff of snow in the air, and you're the only boat out there —and you can't get home?"

"What do you do?" I asked.

"You sit and freeze until the tide lifts you off the bar. Not for me, thanks just the same. I'm getting too old for that kind of work."

We were scheduled to leave November 1, so we couldn't go scalloping with the professionals, but I was determined to make an amateur try. Off-season you are permitted to collect a "family mess"—one bushel per family per week. You may use no dredges and no boat, but must walk along looking at the bottom through a plastic box while gathering the scallops with a rake or chicken-wire scoop.

Five of us went into Polpis Harbor one icy day, clad in waders and armed with bizarre paraphernalia. An inner tube attached to a line at my waist supported a basket into which I threw my scallops. I became so entranced looking at the moving bottom that I waded out too far and was rewarded with a cascade of freezing water down my boots.

In an hour and a half, we gathered basket on basket of spitting, snapping scallops—several gallons, I was sure.

Our total take, open and ready to eat, proved humbling: slightly less than one pint.

"You can't pick up a trade in twenty minutes," said Gibby when I told him of our dismal failure. "Stick around. You'll learn."

Sea Still Provides a Bounty

To be on Nantucket is to want to stay, but we had to get back to the mainland—to stoplights, drive-ins and parking meters, elevators and garbage disposals.

Departure day was crisp and sunny. With a blast of its air horn, the little motorship *Uncatena*, whose sole cabin furnishings during winter's stormier weather are airplane seats bolted to the deck, slid away from the pier.

It was the first day of the scalloping season, and the tiny boats bobbed and scuttled around the harbor, somehow avoiding entangling their dredges with their neighbors'. Wives labored over the culling boards as husbands manned the dredges.

Their contentment seemed unmarred. There were no sailboats or water-skiers to beware; no gift shop or carpentry work awaited them; no summer housewife would call to ask that her lawn be cut. They were gathering their living from the sea, as their forebears had done for 300 years.

They waved at us. We waved back. And then we sailed to America. THE END

Resurrecting the Oldest Known Greek Ship

By MICHAEL L. KATZEV

Photographs by BATES LITTLEHALES

National Geographic Staff

A GLANCE CONFIRMED that the sponge diver had spoken truly. Even in the dim light at 90 feet, the heaped-up amphorae were unmistakable. Seaweed fanned the curved flanks of the big jars. Bright fish darted amid their graceful shapes.

Jubilant, my wife Susan and I swam once more around the encrusted relics, then ascended along the anchor chain of the boat that had brought us.

We had seen enough to give us hope of an important discovery, but there was no way then to guess how great a prize lay there for the winning. As it turned out, this lost and lonely spot less than a mile off the port of Kyrenia, Cyprus (map, page 844), yielded not only the cargo but also the ship itself—a Greek merchantman of the fourth century B.C. Those clustered amphorae marked the grave of the oldest seagoing hull ever recovered, one so nearly intact that it could be brought to the surface, preserved, studied, and exhibited.

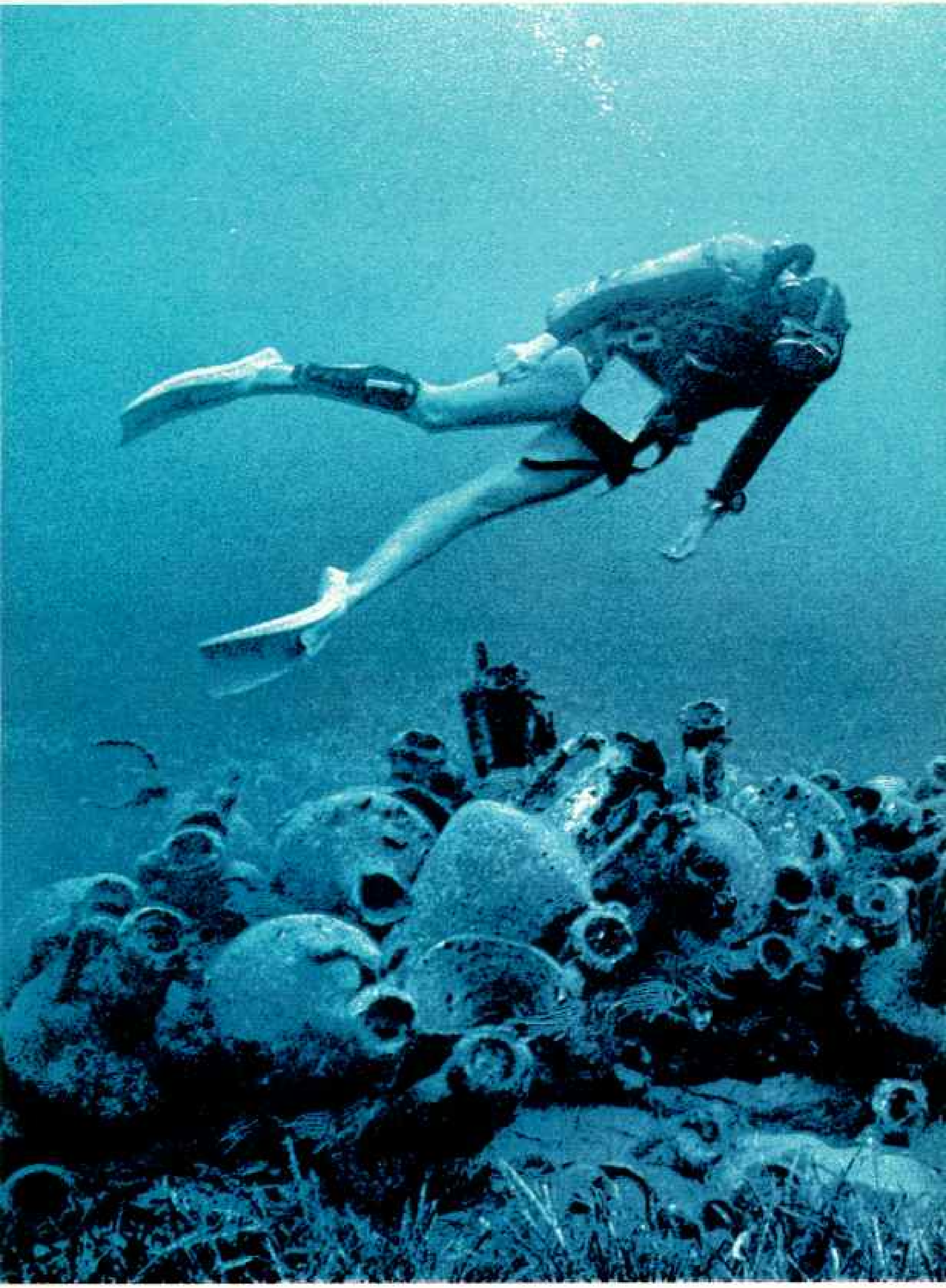
An hour earlier we had sailed aboard a local boat from the harbor of Kyrenia. We were gambling on the eye and memory of a sponge diver named Andreas Cariolou, who had told me in confidence of finding evidence of "an old wreck." Ten minutes out, our pilot took a sight on the Crusader castle half a mile away and then, at another angle, on the five-fingered mountain, Pentadaktylos:

"The wreck is very near now," said Andreas. "Slow!" He looked once more toward land. "Ten yards east.... Now five yards toward shore. O.K.! Throw your anchor."

Susan and I donned wet suits and scuba gear and jumped over the side. Plummeting through the clear water, we could almost immediately see the bottom 15 fathoms below.

Seaweed carpeted the sea floor to the limits of sight. And then suddenly we saw it—the mound of amphorae that Andreas had described (next pages). But where was the ship?

Futile armor, lead sheathing of the oldest seagoing hull ever found rises from the Mediterranean floor; the metal apparently failed to protect the vessel from shipworms. Timbers and cargo, sunk off the coast of Cyprus in the late fourth century B.C., were recovered by the author's team in two seasons of excavation, with support from the National Geographic Society. An artist recreates the plunge to the bottom (right), probably the result of a storm. Wine, escaping from the hold, swirls in the ship's final wake.



MICHAEL L. ARTHUR (ABOVE); INSET AT RIGHT BY BATES LITTLEHALES © N.G.S.

We scanned the small mound—it measured no more than 10 by 15 feet—seeking other clues to its antiquity. Alas, except for a few ballast stones, there were none. Then some squirrelfish and a few groupers swam over the jars, reminding us that we were in an alien world and our air supplies were nearly exhausted. We headed for the surface, pausing at the 10-foot depth to decompress.

For a month we had been searching the coast of Cyprus for ancient ships. We had found half a dozen wrecks, but they all lay in shallow water, too badly smashed to warrant further investigation.

Ashore, this day, my weary crew of six divers awaited the results of this last look. We had come to Cyprus at the end of the 1967 summer season of work on a Roman ship off Yassi Ada, Turkey. The director of that expedition, Dr. George Bass of the University Museum at the University of Pennsylvania,* had sent me to Cyprus to follow up an invitation from the republic's Department of Antiquities to make a search for ancient ships, and I had lined up this strong party to assure an effective effort.

Though elated by what we had just seen, I still was troubled. No more than 100 amphorae were visible. Was the craft sunk here merely a small lighter? Or did the overburden of sand hide hundreds more amphorae, the cargo of a full-size merchantman?

Susan tapped my watch, signaling that it was time to surface.

"What do you think?" Andreas asked as we clambered aboard.

"It's beautiful! No doubt about it—only a late classical or early Hellenistic vessel would carry jars shaped like that. If it's fourth century, it'll be the earliest Greek wreck ever found. . . ."

Pleased by our enthusiasm, Andreas dug

*See "New Tools for Undersea Archeology," by George F. Bass; NATIONAL GEOGRAPHIC, September 1968.

Like jumbled tombstones, amphorae mark the weed-shrouded mound that hid the bones of the Kyrenia Ship. On this first dive in 1967, the author's wife Susan counted about 100 wine jars; 403 were eventually recovered. Some handles bore Greek initials such as API (inset), belonging to long-dead magistrates who thus certified a jar's capacity.

Expedition's land base, Kyrenia drowses in the late afternoon sun. Local sponge diver Andreas Cariolou led the author to the wreck. Island authorities lent the team living quarters in a mansion not far

Last voyage of the sunken ship, as indicated by its cargo, began at Samos with the loading of a few jars of wine. Then the vessel stopped at Kos for a shipment of millstones. Most of the amphorae came aboard at Rhodes, lauded in ancient documents for its inexpensive wine.

BOOKCHROME BY BATES LITTLEHALES © NATIONAL GEOGRAPHIC SOCIETY

from the town's Crusader castle, background, which provided space for work and storage.

back into his memory for events long past.

"I was diving for sponges," he said, "when I suddenly noticed the anchor of my boat dragging. I followed it, and it slid right past that mound. But when I got to the surface, I was in a gale with no time to take bearings. For three years I tried to locate the jars again. You're lucky. It was only a few weeks ago that I got my second look at her.

"She is yours now," Andreas went on. "Only archeologists must touch her. I've kept the secret for just such a group as yours, and to assure proper honor to my town. You must not forget that she's part of Kyrenia's history."

I knew that Andreas served his town as a councilman, and I appreciated his civic pride. Whatever the wreck revealed, I decided, it would be called "the Kyrenia Ship."

That evening, in Cypriot champagne, my crew toasted the wonderful secrets we hoped lay hidden beneath the mound of amphorae. But already it was early October. Autumn waves crashed across Kyrenia's harbor wall. Not many diving days were left.

Underwater veteran Claude Duthuit, our chief diver that year, directed the first project: staking out the wreck by placing a cord grid over it. We dived in teams, using a metal rod to probe within the quadrants of the net.

Beneath the sand, amphorae lay over an area 60 by 30 feet. A metal detector and a proton magnetometer pinpointed nine metal masses. Our excitement mounted.

Rhodian Jars Give Classical Date

Armed with photographs and sketches, we flew off to Athens to consult Miss Virginia Grace, specialist on amphorae for the American School of Classical Studies.

"I'd guess that most of your jars are Rhodian," said Miss Grace, "one of their earliest shapes—from the last third of the fourth century before Christ."

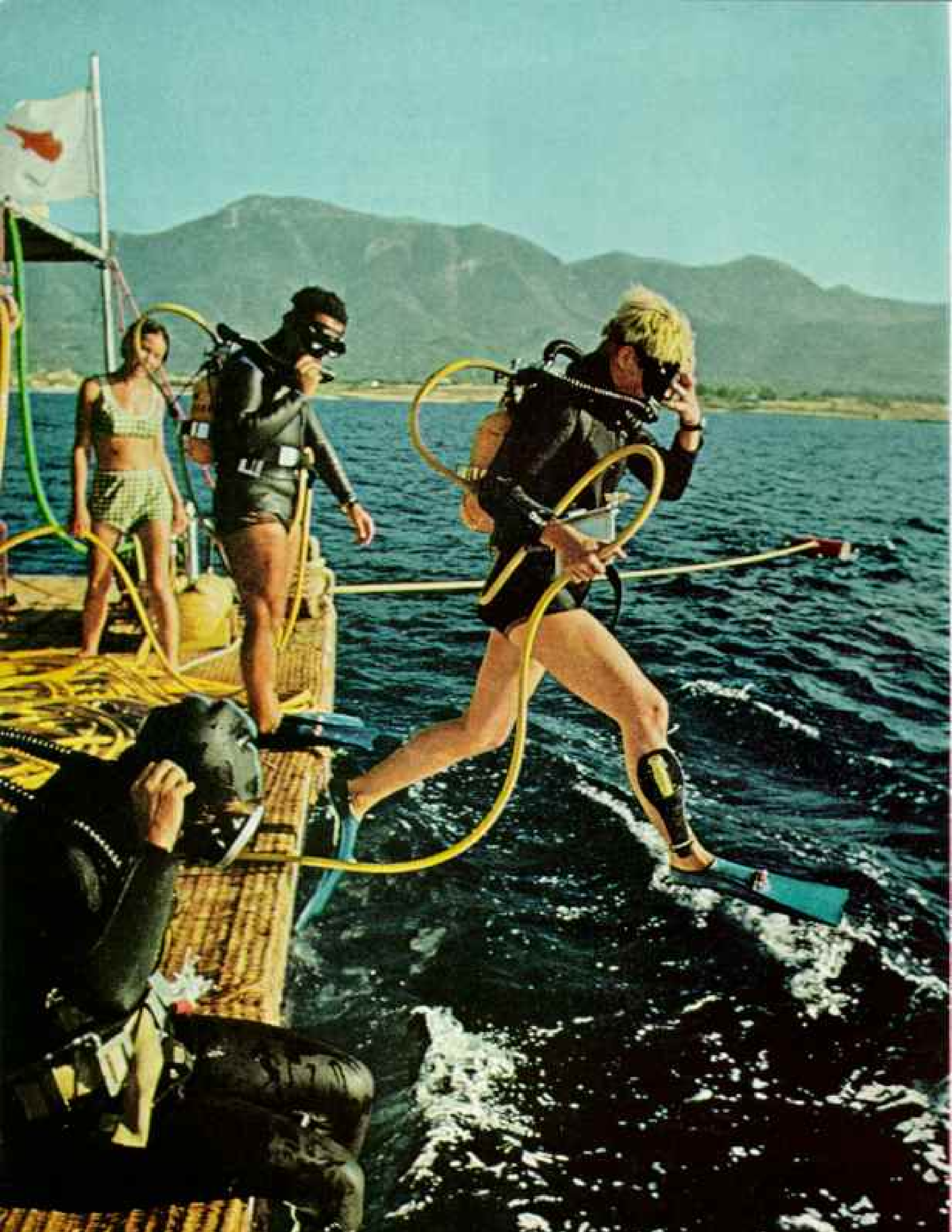
Fourth century! It was truly an ancient ship.

I was then a graduate student at the University of Pennsylvania. My professors at the University Museum listened with interest to my account of the Greek ship. Off Turkey, George Bass had already excavated the cargo of a Bronze Age Phoenician vessel—the world's oldest known shipwreck—and also the skeleton of a Byzantine merchantman.* A wreck from the age of Alexander the Great would help fill the 1,800-year void between those two landmarks of maritime history. The museum encouraged immediate excavation.

Dr. Vassos Karageorghis, Director of the Cyprus Department of Antiquities, granted his government's approval. The National Geographic Society provided support funds. Other sponsors helped bear the heavy costs: The Cook Foundation, Inc., Cyprus Mines Corporation, the National Endowment for the Humanities, the Ford Foundation, the Houghton-Carpenter Foundation, the Dietrich Foundation, Inc., and Oberlin College, where I am now an assistant professor.

Six months later we were back on Cyprus.

*See, in the NATIONAL GEOGRAPHIC: "Oldest Known Shipwreck Yields Bronze Age Cargo," by Peter Throckmorton, May 1962, and "Underwater Archeology: Key to History's Warehouse," by George F. Bass, July 1963.



Bound for the bottom, 90 feet down, Mrs. Katzev holds an underwater slate and her air line; an emergency air tank rides her back. Leg knife could cut her free from a fouled line or aid in excavation of the wreck, less than a mile off Kyrenia. Assistant expedition director Dr. David I. Owen stands ready to follow. The Cypriot flag flies over the barge, called *Alasia*—an early name for Cyprus.

Tons of equipment and an international crew of 40 students, mechanics, draftsmen, photographers, and doctors converged on Kyrenia. Accommodations proved no problem; Archbishop Makarios III (right), President of Cyprus, and Bishop Anthimos of Kition put at our disposal an old vacant mansion.

From the builders of new harbor works at Famagusta we bought our barge, a sturdy 53-by-26-foot diving platform. We christened it *Alasia*, perhaps the earliest name for Cyprus, and moored it over the wreck (left).

Each of us planned to work at a depth of 90 feet for 30- to 40-minute periods twice a day continuously for three months, so safety was my primary consideration. First over the side went our "telephone booth," a dome of plexiglass on metal legs (page 852). This gave divers a place to rest in an enclosed capsule of air and to talk by telephone with an operator topside. No dime was needed.

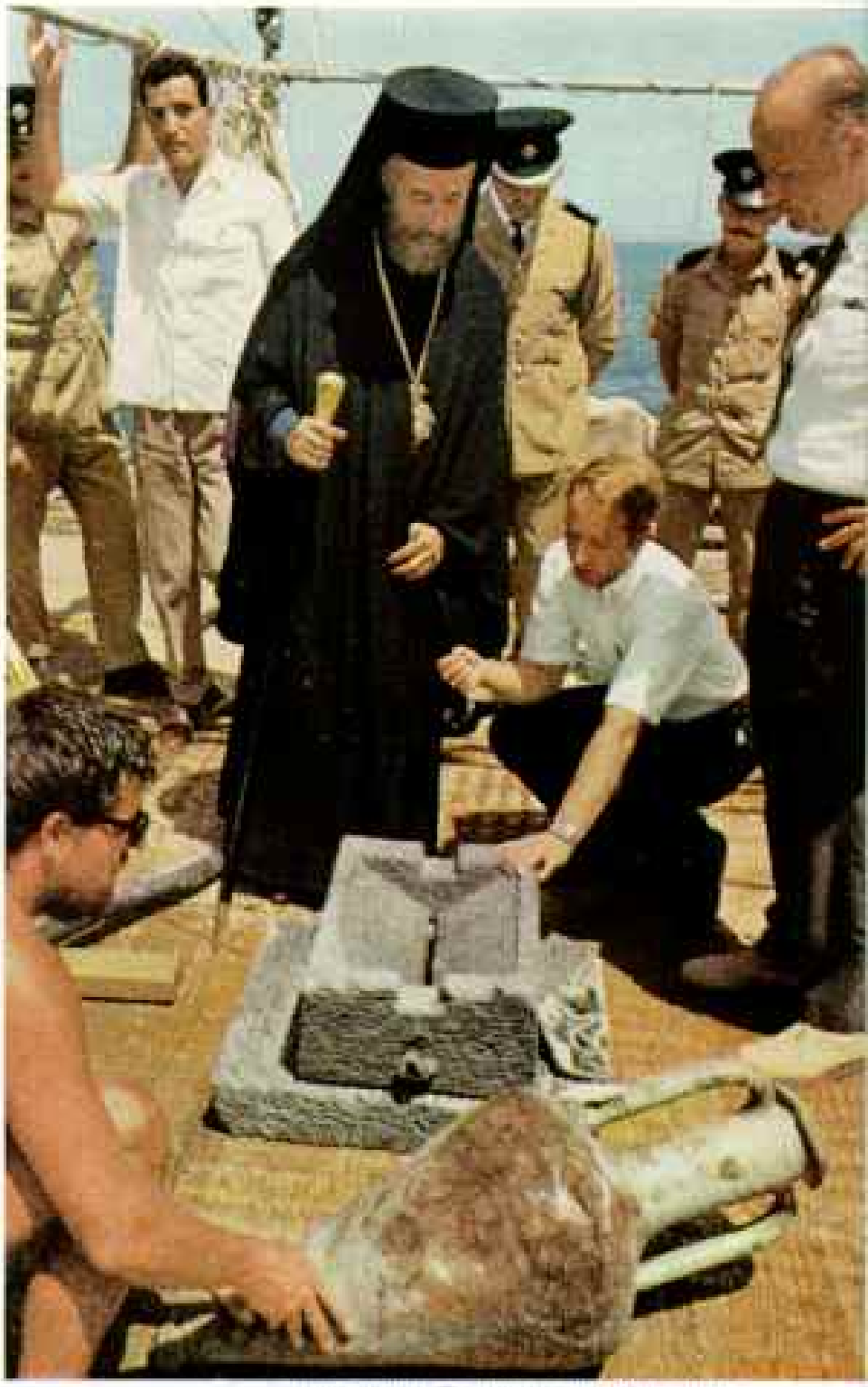
With emergency air tanks strategically placed on the bottom, two decompression stations on the way up, and a recompression chamber on the barge, we were ready to begin.

"Magic Wand" Solves a Problem

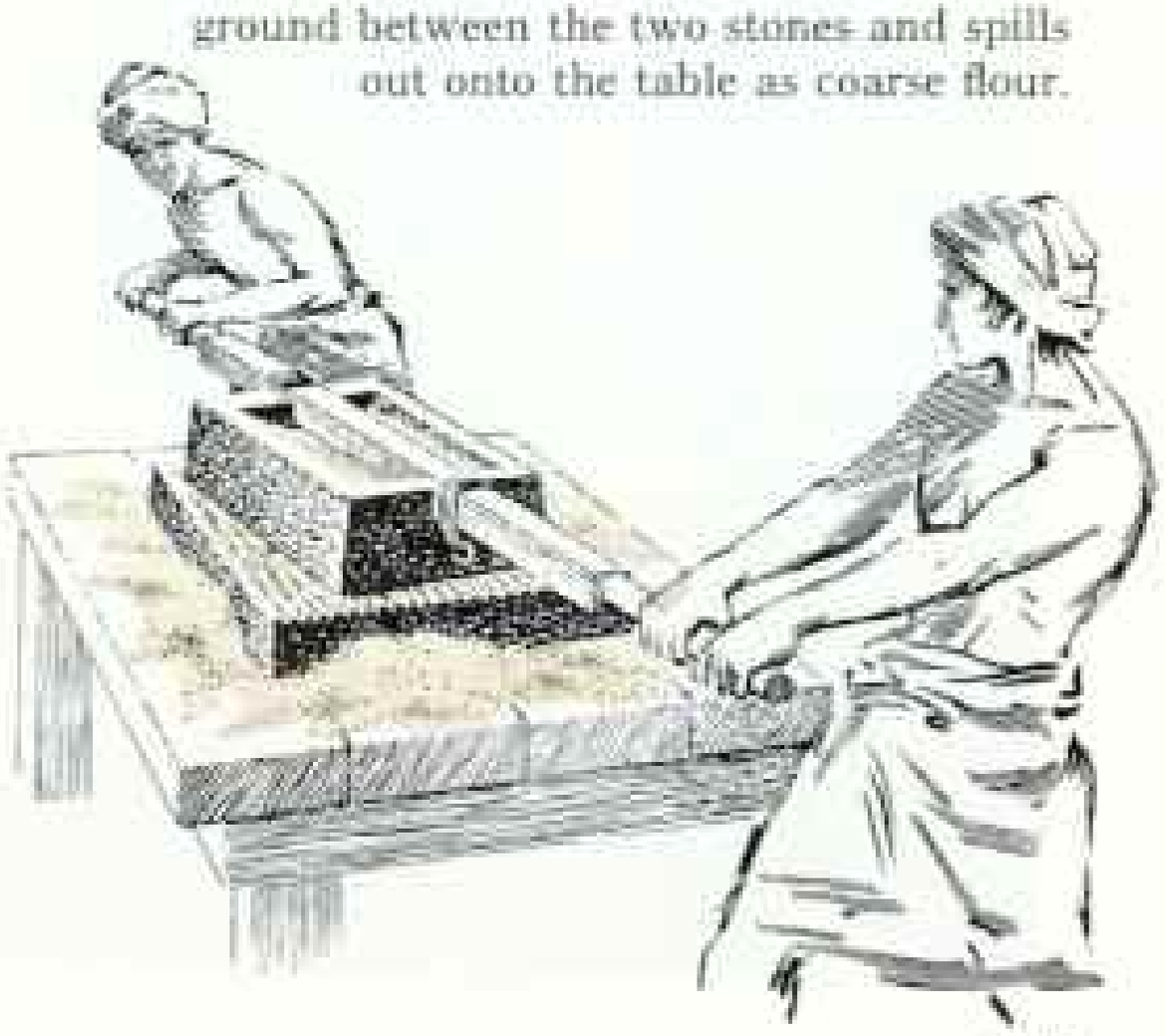
"Man, that's tough going," reported Bruce Dahlin, our new chief diver, when he climbed up the barge ladder from his first working dive. "Hacking that seaweed sod is like trying to cut an Oriental rug with a butter knife."

Assistant director Dr. David I. Owen met the challenge. He designed a "magic air wand"—a pipe with perforations and a sharp tip—to be shoved at an angle into the sea bottom. Compressed air forced out through the holes bubbled up and loosened the mass of roots. The freed sod could then be vacuumed up the air lift, the pipe through which air under pressure carries away material to be sorted or discarded (next pages). Soon we were making rich finds.

The Cyprus Department of Antiquities provided working space in Kyrenia's Crusader castle (pages 844-5). By August, 300 Rhodian amphorae crowded our storeroom there.



President and prelate of Cyprus, Archbishop Makarios III, and Taylor G. Belcher, then United States Ambassador to the island republic, inspect ancient millstones aboard the barge. The author explains how he believes they worked (drawing below). Two men, gripping a bar, swivel a block over a corrugated base. Grain fed into the slit is ground between the two stones and spills out onto the table as coarse flour.



Wine, almost certainly, had been shipped in them. Rhodes was virtually one huge vineyard, and its wine was widely traded in the eastern Mediterranean during antiquity.

Those Rhodian amphorae brought us a delightful surprise. All traces of their original stoppers had vanished, and silt now filled the jars to the brim. But in flushing out the mud, we recovered dozens of almonds, their shells perfectly preserved (page 853).

Soon thousands more of the nuts came to light, masses of them piled within the hull as if stowed in sacks that had long ago rotted away. Almonds, we knew, formed a regular part of the ancient Greek diet.

In the final week of that season, David Owen dug an exploratory trench and in it unearthed the treasure we had hoped for—the hull itself. He found the last row of amphorae leaning against beautifully preserved pine ribs.

In a blue world, Norwegian diver Christian Keller uses a pitchfork to dig a trench around the wreck; air-lift hose at left removes loosened silt. Diving teams of two to six people limited themselves to 30- to 40-minute shifts when doing this strenuous work.

"Magic air wand" trails bubbles as inventor David Owen clears away roots; to avoid stirring

Copper nails still held the planking in place. Our merchantman had survived the centuries; the bulk of it was still buried under two more feet of hard-packed silt.

Recompression Chamber Saves a Life

But no time remained that year for further excavation. We would have to rebury these tantalizing timbers and blanket the site with plastic sheets against the winter storms.

Ashore that night, I felt uneasy. Tomorrow would be our final diving day for 1968. Had we done everything necessary to button up until next year? I hoped so.

Happy voices echoed from the men's shower. It was a song I had heard before, gently ribbing the expedition leader: "Michael, row the boat ashore," the chorus began.

It was then that diver Peter Leonard remarked that he felt sick. "I guess it's just

clouds of sediment, he works without flippers. The perforated pipe jets air from a compressor through the tangled growth to loosen it. Scaffolding of plastic pipe divides the site into numbered squares (following pages), providing reference lines for measurements that record exactly where each item was found.

Miraculously intact, the bared 40-foot skeleton of the Kyrenia Ship lies beneath a network of grid pipes and dangling air hoses. Preparing for precise photographic measurements of one section, team members have loosened a bar and positioned an identifying slate bearing a Roman numeral. The port side,

EKTACHROME BY BATES LITTLEHALES © N.G.S.

foreground, owes its preservation to the blanket of mud that covered it soon after the vessel settled on that side. Decay has riddled the more exposed starboard. Black air-lift hoses loop downward fore and aft for trenching out silt; the stern area has already been cleared, and a diver prepares to start work at the bow.

EXTACHROME BY NATIONAL GEOGRAPHIC PHOTOGRAPHER OTIS IMBODEN © N.G.S.

Harvesting the past

TETHERED TO A BALLOON LIFT, a tray of hull planks begins its ascent. Cloth covering keeps water friction from moving and damaging the fragile, soggy wood. The author rides along, regulating the air in the balloon so that the tray rises slowly. Another tray, one of 29 loads raised, waits on the bottom. Dismantling the hull piece by piece, the team brought up some five tons of timber.

Plexiglass dome in the background, enclosing a pocket of air, serves as a telephone booth where divers receive instructions from above. An underwater loudspeaker calls them to the phone. A reserve air tank beside the booth awaits divers in case of equipment failure.

Work crews ashore cleaned and catalogued artifacts from the wreck. An expedition artist (above right) draws a pitcher (with broken handle), an oil jug, and a plate from the ship's galley, all now free of encrustations. Utensils for four place settings indicate the ship's captain sailed with at least three crewmen.

Part of the ship's cargo, a handful of almonds retains outer shells, though the soft nuts have partially disintegrated. The expedition recovered thousands.

exhaustion," he said to Bruce Dahlin, "but the afternoon dive took a lot out of me."

Soon there was pain, an ache in Peter's legs. Bruce sent for Dr. Blair and Jeff Feld. Jeff had modified our recompression chamber, which had been lent to us by the Canadian Government, adding a pure-oxygen intake.

"I think Peter's bent!" Jeff said, using the colloquialism for decompression sickness.

"Let's get him to the chamber . . . quickly!"

Even in the few minutes it took to get Peter to the barge, the pain became intense.

Air began to scream in around the patient, recompressing the nitrogen bubble that was causing the difficulty. In 15 minutes the pain was gone. Through a mask Peter breathed oxygen, then air in alternation, while we slowly lowered the chamber pressure. In just over four hours the ordeal was over. The tiny one-man cylinder had saved Peter's life.

But what if two of us had got the bends on that dive? I vowed we would never face that crisis, and when we returned to Cyprus in early May 1969, Peter was there to help uncrate our new four-man recompression chamber aboard *Alasia*.

KODACHROMES BY BATES LITTLEHALES © N.G.S.

Members of the old crew back for another season taught our new divers the underwater skills learned the year before. We positioned seven plastic-pipe air lifts of various diameters around the wreck. Thus each diver in the normal four-man team found an excavation tool ready in place for work in any grid area.

To the surface in baskets came the last 100 amphorae—bringing the grand total to 403—and 29 curiously carved stone blocks, components of ingenious grain mills (page 847).

To archeologist-draftsman Laina Wylde fell the task of plotting the location of each find. Then the precious objects, shelf after shelf of them, went for cleaning and repair to our conservator, Miss Frances Talbot, in her workshop—the castle storeroom.

"Don't bring any more!" Frances begged. "There's hardly room for me as it is!"

But there was no way we could satisfy Frances's plea. We kept finding more and more artifacts. Kitchen wares lay scattered throughout the hull. A pattern began to emerge—four spoons, four jugs, four cups, four salt bowls. . . . Our captain had had at least three companions.

Our discoveries excited great interest. Archbishop Makarios came to view them, as did the United States Ambassador. For crowds of eager questioners, we finally set up an exhibit of artifacts and photographs.

The Long Eight Arms of the Lawless

"Octo has done it again!" my wife complained one day. "How can I ever keep the lead rings straight with that pilferer in my trench? There were 17 rings there this morning; now three are missing."

Susan was speaking of fixtures from the ship's rigging. Sewn to the leeward side of the square sail, more than 100 flat lead rings had guided the many pull cords known as "brail lines" that raised the sail (next page).

There was indeed a thief loose in area 6A. An octopus had happily stowed half a dozen of the bracelet-size rings inside his home in the neck of a broken amphora.

"I'll take him into the phone booth for a man-to-octopus talk," suggested Britisher Owen Gander. "But we mustn't be too hard on old Octo. It's obvious his family has been looting for centuries!"

And obvious it was. While cleaning the amphorae, we had come upon a salt dish, an iron chisel, a wooden spoon, a spouted pitcher, amphora sherds—all stowed away through the mischievous habits of our culprit and his ancestors. Perhaps the almonds in the wine jars had been cached there over the centuries by these eight-armed "squirrels."

By mid-August the ancient hull stretched almost 40 feet before us over the sandy sea floor. As if waiting 22 centuries for this final roll call, the ribs of pine stood at silent attention, curve and countercurve as graceful as when the ship took form (pages 850-51).

During the first years after the wreck, the exposed timbers of the starboard side weakened, collapsed, and spilled out the heavy wine jars in disarray. But the port side,

New trader on the ways

HULL OF THE KYRENIA SHIP takes shape. Carpenter in foreground cuts mortises in a pine timber to match tenons on a plank already installed. Worker at left drills holes through mortises and tenons to lock them with dowels; shipwrights at the stern mark holes to be drilled. Man inside the hull fastens reinforcing ribs, the reverse of modern methods, in which ribs are assembled first. The completed ship was sheathed in lead to protect it from shipworms—the earliest known use of this technique. Actually, the 1/8-inch casing may have hastened the ship's death by hiding damage done by the teredos. Lead rings (top left) guided lines that furled the sail like a Venetian blind (pages 856-7). Wooden block (top right), with its sheave still in place, was probably used to raise the yard.

PAINTING BY WILLIAM H. BOND © N.G.S.

settling into the sandy bottom, preserved its shape nearly intact.

Greek shipwrights worked in a tradition quite the opposite of our own. They assembled their hulls shell first. The outer planks were laid upward from the keel on scaffold supports. Only after much of the hull was complete did the builders begin to attach the ribs with long copper nails (painting, below).

We found the entire exterior of the preserved parts of the hull sheathed in lead as much as an eighth of an inch thick. Fastened with copper tacks, the lead served the same purpose as modern antifouling paint. It was there to keep teredos—shipworms—from invading the planking (page 840).

From the Grand Congloué ship excavated by Jacques-Yves Cousteau off Marseille, we had learned that this trick was known from the second century B.C.* Now our Kyrenia merchantman proved an even earlier Greek use; in fact, it is the earliest example of this technique yet found.

Various patches on the sheathing showed that the lead "skin" of our ship had proved vulnerable. Had the captain been lulled into believing his vessel seaworthy, when it wasn't? Even to our eyes the aged ribs and planking looked sound enough on the surface. Only as we began to dismantle the hull could we see the extensive damage our captain had missed—the planking riddled with shipworm holes. Hundreds of the worms, tunneling at will, apparently had dealt the vessel her death blow long before she shuddered to rest on the sea floor.

Ship Moved Ashore Piece by Piece

By August the work had gone along so well that we decided to raise the ship before the season's end. We wanted not only to save the timbers of this unique discovery, but also to reassemble them into the form in which we had found them.

Susan Owen made more than 1,000 coded plastic labels. Pinned to each wooden member before it left the sea floor, these markers would simplify reconstructing the ship—a giant three-dimensional jigsaw puzzle.

With an underwater compressed-air saw, we cut some parts of the hull into manageable lengths. Most of it, however, was dismantled on the bottom piece by piece. Using balloon-lifted trays as elevators, we carried the soft and fragile timbers to the surface (page 852).

*Captain Cousteau reported the discovery in the NATIONAL GEOGRAPHIC of January 1954.

KODACHROME BY OTIS IMBODEN (C) NATIONAL GEOGRAPHIC SOCIETY

Fresh-water shower protects sea-logged hull planks against warping and shrinking; Mrs. Katzev and expedition volunteer Jenny Boyse (left) clean and hose down the ancient wood. A waxlike preservative will stabilize the timbers. The author's group plans to reconstruct the ship, using as many of the original planks as possible. It will then go on view in the Crusader castle, background, built around 1200.

"**The ship came alive for us,**" says author Katzev, recalling the excitement of excavation. Guided by expedition findings, artist Lloyd Townsend here envisions the lead-sheathed vessel at a port on the island of Rhodes. Fishermen bring in their catches in small skiffs, while a Greek warship with double banks of oars, right, moves into the harbor, perhaps patrolling this corner of the vast Hellenic empire. After off-loading an order of millstones from the merchantman, longshoremen carry

From the barge we quickly transferred the wood to the castle for cleaning and storage in fresh-water tanks. Nancy Palmer made a tracing of each rib to record its precise curvature for later reconstruction.

The sea stayed miraculously calm. On October 3 the last of the ship's planks broke surface. Altogether, in 29 trayloads, we had raised about five tons of waterlogged wood.

Last winter a group of expedition members stayed in Kyrenia to supervise preservation and stabilization of the ship's wood. The Cyprus Department of Antiquities is restoring one of the vaulted galleries in the Kyrenia castle to house the ship during treatment and for eventual display. The timbers and wood fragments will be soaked with polyethylene glycol, which will replace the missing fibers of the riddled wood with a waxy substance.

Of the five badly corroded bronze coins recovered from the wreck, two had been struck by the Macedonian ruler Demetrios Poliorketes. They could have been minted no earlier than 306 B.C. And a welcome report has come from the carbon-14 Laboratory of the University Museum, confirming archeological evidence of the ship's great age. The planks were cut in 389 B.C., plus or minus 44 years.

Veteran of a Busy Trade Route

The ship, then, was possibly more than 80 years old when loaded for her final voyage. The period of her working life spanned an era when Greece had taken a commanding position in the commerce of the eastern Mediterranean. Sea-borne trade was booming.

PAINTING BY NATIONAL GEOGRAPHIC STAFF ARTIST LLOYD K. TOWNSEND © N.G.S.

amphorae aboard, adding dangerous stress to worm-eaten hull planks cut about 389 B.C., according to carbon-14 tests. Coins found in the wreck, minted no earlier than 306 B.C., indicate that the ship could have been more than 80 years old. Straw matting to starboard offers some protection from spray when the vessel plows the waves, guided by two steering oars. After cargo and provisions have been loaded, the crew will set sail for the open sea—and an appointment with the 20th century.

Even our thus-far incomplete study of the ship and cargo allows us to reconstruct the probable route of her final voyage. Putting to sea from Samos, the vessel likely called at Kos to load millstones. I believe most of those stones were unloaded at Rhodes, where the topping-off cargo of wine-filled amphorae was stowed against the ship's rotting planks (painting, above). The unsold millstones became part of the ballast.

The captain looked farther east to Cyprus's coastal cities as likely markets for the wine. But did she ever make the little bay at Kyrenia? Or was the old craft sunk just short of the harbor's safety in one of those sudden gales that haunt the nightmares even of modern sailors along these shores?

We picture her, tempest tossed, rolling broadside to the waves. We can imagine the sailors scrambling to lower sail. The captain would have rushed to save his purse of coins, the earnings from the voyage.

In one final thunderous catastrophe, the millstones and tons of ballast shifted violently to port. With shattered amphorae spilling their contents into a sea truly wine-dark, the crew groped for broken timbers to buoy them ashore. Only a few minutes would have passed before the floundering sailors watched the sea foam over the rails to take the lead-heavy old craft to her salty tomb.

But that was only the end of one life for the Kyrenia Ship. Soon, preserved and reconstructed, she will enter new service, exhibited nearly intact as the oldest vessel ever brought up from the sea. THE END

EKTACHROMES BY ROBERT S. OAKES (INSET) AND DEAN CONGER © N.G.S.

"A record that no one can better. . . . You have been first." With these words, Vice President Spiro T. Agnew, right, presents the National Geographic Society's highest award, the Hubbard Medal, inset, to Astronaut Neil A. Armstrong and (right to left) his Apollo 11 teammates, Col. Edwin E. Aldrin, Jr., and Col. Michael Collins. Society President Dr. Melvin M. Payne shares the stage at Constitution Hall in Washington, D. C., on February 16.

First Moon Explorers Receive the Society's Hubbard Medal

"THE FLIGHT of Apollo 11 was as much a mission of the spirit as a mission to the moon. It sparked patriotism, renewed inspiration, and symbolized in today's terms the American dream of human achievement —and the unrelenting march toward knowledge. Tonight we honor three men whose mission contributed so much to knowledge, and even more to the spirit of mankind."

Spiro T. Agnew, Vice President of the United States, paid this tribute in presenting the National Geographic Society's Hubbard Medal, one of the Nation's most coveted honors, to the men of Apollo 11—Neil A. Armstrong and Air Force Colonels Edwin E. Aldrin, Jr., and Michael Collins (opposite).

The impressive ceremony took place before a capacity audience of Society members and guests at Constitution Hall in Washington, D. C., on February 16, 1970.

Geographic Flag Accompanied Astronauts

Mr. Armstrong, civilian commander of the mission and first man to set foot on the moon, accepted the gold medal for the space team. "It's an honor for me to stand here tonight on behalf of my crew in thanking you for this grand award," he said, "but even more to thank the hundreds of thousands of Americans across this land who made our adventure possible.

"The National Geographic Society has been the sponsor, participant, contributor, documentor, enthusiastic recorder of every explorative expedition for the past several decades."

A number of mementos were left on the moon, Mr. Armstrong recalled, including a plaque and a silicon disk bearing 73 electronically reduced good-will messages from heads of state around the globe. "One other memento which we were privileged to take along with us on our trip was the flag that has accompanied every major recent expedition, the flag of the National Geographic Society," he said. "It is my pleasure to return it to this organization tonight."

The astronaut presented the blue, brown, and green emblem—mounted and framed beneath a dramatic color photograph taken on the moon—to Dr. Melvin M. Payne, President of the Society (next page). Dr. Payne announced that it would be given a place of honor in Explorers Hall, along with memorabilia of other outstanding expeditions.

Alone as None Before Had Ever Been

In opening the ceremony, Dr. Payne recalled the historic moment seven months earlier when the lunar module *Eagle* carried Mr. Armstrong and Colonel Aldrin to the dry Sea of Tranquillity, while Colonel Collins orbited in the command module *Columbia*.

"No one who sat that July night welded to his television screen will ever forget the sight of that ghostly foot groping slowly past the ladder to *Eagle*'s footpad and then stepping tentatively onto the virgin soil," Dr. Payne said. "Man had made his first footprint on the moon. Then the unforgettable words Neil Armstrong spoke into his microphone: 'That's one small step for a man, one giant leap for mankind.'

"In less than two seconds, the message that will live forever in the annals of exploration flew around the world, where half a billion fascinated watchers witnessed this incredible moment in history. . . .

"Shortly afterward, flight commander Armstrong was joined by Colonel Aldrin, and while they were busy collecting specimens and setting up scientific instruments, Colonel Collins continued his lonely vigil in the command craft.

"Mission Control in Houston observed, 'Not since Adam has any human known such solitude as Mike Collins is experiencing during this 47 minutes of each lunar revolution when he is behind the moon.' Alone! As no man before him had ever been.

ATTACHMENT BY DEAN CONGER (C) N.G.S.

Geographic's colors, carried to the moon and back, stir Vice Presidential applause. Neil Armstrong has just presented to Dr. Payne (left) the far-traveled National Geographic Society flag, framed with a photograph of fellow astronaut Edwin Aldrin on the lunar surface. The treasured memento now hangs in Explorers Hall at the Society's headquarters in Washington, D. C.

The Hubbard Medal, awarded by the Society for achievements in exploration and research, has been presented only 25 times since 1906, when the first went to Arctic explorer Robert E. Peary. Seven recipients have been astronauts.

"Today," continued Dr. Payne, "all of us can see for ourselves the strange gray, porous-looking rocks the astronauts brought back from the moon—the most sought after, the most eagerly awaited of all specimens in the history of science."

The moon landing, he added, has been described as "an evolutionary breakthrough as significant as the movement of life from the sea to the land. And the ultimate implications of that event are just as obscure today as they were to that primordial amphibian."

Mars Landing This Century Predicted

Vice President Agnew noted that the flight capped a decade of effort by many Americans. Its success, he commented, united all the world as no act has before in human history.

"We have new knowledge of the moon's surface," he said. "We have made great advances in science and technology, in communication and navigation, in national security and international cooperation because of the space program. We have increased our understanding of the earth's resources and improved medicine. Our computers are more dependable and more compact; our weather predictions more accurate.

"All of these have been the results of America's first space decade. But this is just the beginning, and only the perspective of future centuries will provide the full measure of Apollo 11's value," the Vice President told the audience.

Before the 20th century ends, he predicted, "another Vice President will present another Hubbard Medal to the first astronauts to land on Mars.

"But no matter the feats of the future, our generation has had its moment of history. Space communications have enabled each of us to share the first tense lunar landing, to watch man's first step upon the moon, to witness the first moon walk, and to view our nation's flag first placed against the moon's stark panorama."

Addressing the astronauts, Mr. Agnew said: "Gentlemen, you have won a place alongside Christopher Columbus in American history. Yours is a record that no one can better and no one can reproduce.

"You have been first."

The Hubbard Medal, named for the Society's first President, has been awarded to such previous heroes of exploration as Peary, Amundsen, and Byrd.

Besides the Vice President and Dr. Payne, the official party on the stage included former Chief Justice of the United States Earl Warren; Dr. Robert C. Seamans, Jr., Secretary of the Air Force; Dr. James E. Webb, former Administrator, National Aeronautics and Space Administration, all Trustees of the Society; Gen. John D. Ryan, Chief of

Staff, USAF; Dr. Thomas O. Paine, Administrator, NASA; and the following officers of the National Geographic Society: Dr. Melville Bell Grosvenor, Chairman of the Board and Editor-in-Chief; Dr. Thomas W. McKnew, Advisory Chairman of the Board; Frederick G. Vosburgh, Vice President and Editor; and Dr. Leonard Carmichael, Vice President for Research and Exploration.

Before afternoon and evening audiences, the astronauts—using magnificent color film and slides—described their remarkable lunar adventure.*

Apollo 8 Honored for First Lunar Orbit

In a similar ceremony at Constitution Hall on April 3, 1969, Vice President Agnew presented the Hubbard Medal to the Apollo 8 astronauts—Air Force Col. Frank Borman, Navy Capt. James A. Lovell, Jr., and Air Force Lt. Col. William A. Anders (below). The Vice President commended the crew—the first to achieve lunar orbit—for paving the way for the manned lunar landing.

"The possibilities of space exploration are infinite. They overwhelm the mind," the Vice President said on that occasion. "The speed with which we have reached this new threshold of hope itself is awesome. Less than half a century has passed since the Hubbard award was presented to Col. Charles A. Lindbergh for his solo flight from New York to Paris. Less than a decade has passed since Col. John Glenn was awarded the first Hubbard Medal for exploration in space."

In accomplishing the mission of December 1968, the Vice President said, the three Apollo 8 astronauts "boldly left earth's proximity, skillfully maneuvered their spacecraft to and around our satellite, the moon, enlarged scientific knowledge of the moon and deep space, and returned safely for a perfect landing."

Colonel Borman, accepting the award for the team, described his companions and himself as "merely representatives of the 400,000 people who did the real work on this job." The award holds special significance, he said, because the National Geographic Society "has done so much to foster exploration in the world and in this country." THE END

*The December 1969 NATIONAL GEOGRAPHIC presented the full story of the Apollo 11 moon-landing mission, together with excerpts from the astronauts' own conversations, a discussion of the moon rocks, thoughts on our future in space, and a recording, "Sounds of the Space Age, From Sputnik to Lunar Landing."

KODACHROME (LEFT) BY OTIS IMBODEN; DATACHROME BY ROBERT L. CASEY © N.G.S.

Lunar trail blazers, Apollo 8 Astronauts Col. Frank Borman, left, Lt. Col. William A. Anders, and Capt. James A. Lovell, Jr., greet a thrilled world from the carrier U.S.S. *Yorktown* after their epic voyage at Christmastime, 1968. "First to break the bonds of earth and soar in orbit around the moon," says their Hubbard Medal, presented April 3, 1969.

Fleeing a helicopter, musk oxen pound across the tundra of Ellesmere Island. Once

Domesticating the Wild

By JOHN J. TEAL, JR. Photographs by

TEN DEGREES below the North Pole, in Canada's Northwest Territories, our helicopter skimmed a barren gravel plain on Ellesmere Island. Fifty yards ahead, just 15 feet beneath us, a herd of 20 shaggy, scimitar-horned musk oxen, with two calves, fled before our noisy bird.

The bull in charge looked formidable—four and a half feet at the shoulder and 700 or 800 pounds. His profusion of hair made him seem even more massive. It would be impossible to take the calves away from him if we once let him drive the herd into its instinctive "hedgehog" defense—a ring with the young in the center. But it was the calves we had to take—and with our bare hands.

Our permit to capture 15 calves—three males and a dozen females—for a domestication project in the Province of Quebec wisely provided that we must neither kill nor injure any member of the herd, and so we did not even carry guns. This has, indeed, been our practice on all hunts throughout the 16 years that my associates and I have been

EXTACHROME © N.G.S.

hunted almost to extinction, the now-protected animals face the future as allies of man.

and Woolly Musk Ox

ROBERT W. MADDEN

working toward establishing the wild musk ox as a domestic animal.

Our ultimate aim, under the sponsorship of the Institute of Northern Agricultural Research, with headquarters at Huntington Center, Vermont, is to make selectively bred musk oxen an important addition to Eskimo economy, chiefly through utilization of their fine underwool, called *qiviut*. Not in modern times has any other ruminant been domesticated on a large scale.

To split off the calves racing beneath us took tricky flying, but pilot Tim Schwenk did it just right. As the herd wheeled to form its ring, the calves drifted to the outside, like skaters cracking the whip. At that precise instant, Tim put the helicopter low over the adult nearest them. The adult predictably veered to join the herd, but the calves, as we hoped, raced straight ahead trying to escape our clattering machine (pages 866-7).

"Put down!" I shouted, and Tim landed us 50 yards from the two panicky youngsters. Jim Buckley, my partner on the day's

hunt, climbed out with me to pursue them on foot. They were three or four months old, which meant each weighed some 150 pounds. They would be no pushovers.

It took us half an hour to capture them, lassoing the first, tackling the second, but we established a record for our institute. Never before, in well over a hundred captures, had we caught two calves on one hunt. Best of all, both were females, more precious than males since we had to take four females for every future breeding bull.

We wrestled our captives back to the helicopter and doused them with pails of water. Because the musk ox has sweat glands only in its hind feet, an overheated animal must be cooled quickly. We covered the calves with tarpaulins and tied them securely to the helicopter's pontoons.

As we took off with Quebec's thirteenth and fourteenth domestic musk-oxen-to-be, we saw the herd, tightly bunched, awaiting the return of the calves. In an instinctive evasion pattern, calves frightened into leaving the herd normally start a wide, circular cross-country run that covers two or three miles before they rejoin their elders. Invariably, the herd will wait several hours before giving up hope.

Name Stems From Wishful Thinking

Watching the loyal herd fade from view, I thought again of what a splendid creature the musk ox is. This powerful, shaggy relic of the Pleistocene, remarkably intelligent and adaptable, and now residing only in the most remote regions of the Far North, is not really an ox, and has no musk glands. Its popular name dates from the 17th century and reflects the wishful thinking of an era in which musk was a much-sought base for perfume. Perhaps the misnomer derived from the odor of its droppings and urine on the tundra.

The musk ox's generic name, bestowed in 1816, stems from another misconception, for *Ovibos* implies the animal is part sheep, part cow. Actually, the musk ox's nearest living relatives are goats and, possibly, antelopes; all its direct forebears have become extinct. The Eskimo name is probably best—*Oomingmak*, "the bearded one."

Once widely distributed in the Far North, the bearded ones were pushed south by the ice sheets of the Pleistocene, and in central Europe were hunted by early man. Today their natural range is only northern Canada, which has about 10,000 animals, and Greenland, with 6,000 (map, page 873).

Defense Designed for Wolves, not Men

The characteristic defense formation of musk oxen—the ring with the calves inside—was designed for their principal enemy, the wolf. Such a defense, supplemented with sharp horns, is effective against wolves but has been useless against man. Even primitive hunters could easily close in for a kill with spears and arrows.

The musk ox's instinct to defend the carcass of a fallen comrade often led to the slaughter of the whole herd. As a consequence, the animals were hunted to extinction in Eurasia in prehistoric times, and to near-extinction in North America in recent times. The last musk ox in Alaska had been killed by the 1850's. In Canada, around the turn of the century, almost 10,000 were slaughtered for the carriage-robe trade alone.

The redoubtable Arctic explorer Otto Sverdrup wrote in 1904 of the cruelty of hunting these "peaceable animals":

"It is not sport: it is simple butchery; it requires little skill, and causes no one excitement. Anybody can set a team of dogs on the trail and then quietly follow them with his gun, walk up to the animals, and shoot down the whole herd. . . ."

By 1926 the Canadian Government decided that Sverdrup was right, and gave its musk oxen total protection.

In our overcrowded world the ability of this docile ruminant to convert the sparse grasses of the Arctic into useful products for mankind cannot be overlooked. The animal's underwool, shed in great sheets in May or June, possesses the fine qualities of cashmere;

Armful of bawling baby complains to herder Paul Wilkinson at a musk-ox breeding farm in College, Alaska. The author began domesticating the animals in 1954 in Vermont, where he tamed seven that successfully produced young. Now he has established herds at experimental farms in Alaska and northern Quebec. Eskimo cooperatives, he hopes, will be able to market garments made of *qiviut*, the animals' silky underwool.

PHOTOGRAPH BY JOSEPH S. RYCHETNIK © N.G.S.

in fact, qiviut fibers I have measured have been even longer than those of cashmere and, on the average, only two-thirds the diameter. Explorers of the 18th century gathered bundles of this gossamer fluff found blowing around on the tundra and urged domestication of the musk ox for its wool.

Not till 1954 did that old dream begin to come true. That year, and again in 1955, the Institute of Northern Agricultural Research, of which I became the first director, sent expeditions to Canada's Barren Grounds, some 300 miles northeast of Yellowknife on Great Slave Lake. We captured seven calves and brought them to the institute's experimental farm in Vermont.

That stage of the program lasted 10 years. After intensive study of our animals, we decided that musk oxen were, in fact, suitable for domestication. They yielded a useful product, were responsive to humans, bred easily in captivity, lent themselves to farm management and routine, and were even affectionate.

Inquisitive Beasts Learn to Open Gates

Over the years, we of the institute have come to marvel at the playfulness of our charges. At our various breeding stations, when the first snow falls, our managers use motor-drawn sledges to haul hay to the feed racks. As soon as a sledge appears in a pen, the whole herd gathers around, nudging it with their noses, pawing it, and testing it. Then, one by one, they climb aboard and ride. After five or ten yards each ecstatic rider gets shoved off by a new passenger. The sight of our manager pulling ox passengers about makes us wonder sometimes: Who is domesticating whom?

Domestic musk oxen enjoy sharing human activities. One summer day at our Vermont station, my wife and children were swimming in our pond when they heard splashes and snorts. Suddenly they were surrounded by musk oxen, paddling and frisking around them like outsize dogs.

Intelligent and curious, musk oxen make it hard for a photographer to take their pictures because they come bounding up to snuffle his lens. They also nuzzle up to any visitor to be scratched and petted, and while the victim's attention is thus distracted, they nosily search his pockets for apples.

During the Vermont experiments, I soon learned that musk-ox curiosity is far from idle. When I closed their corral gate, the oxen always watched the procedure carefully. After shutting the gate, I fastened it to the fence with a loop of chain, then hooked the chain with a padlock, which I did not bother to snap shut. One day as I was leaving, an ox ambled up and looked at my handiwork for a moment. Then he yanked the chain till the lock fell off, and pushed the gate open. Soon other

Cutting out the calves before the adults can form a defense perimeter around them, a helicopter pilot maneuvers a herd across the bleak Arctic plain.

Musk oxen developed their bulwark defense (lower), in which adults stand shoulder to shoulder between an enemy and their offspring, as a protection against wolves. The animals' instinctive behavior persists in domestication. Even two-month-old calves will form a circle, photographer Madden discovered when he entered a farm enclosure.

EXTACHROME (BELOW) AND KODACHROME BY ROBERT W. MADDEN © N.G.S.

members of the herd could do the same trick, disposing of the lock in about five minutes.

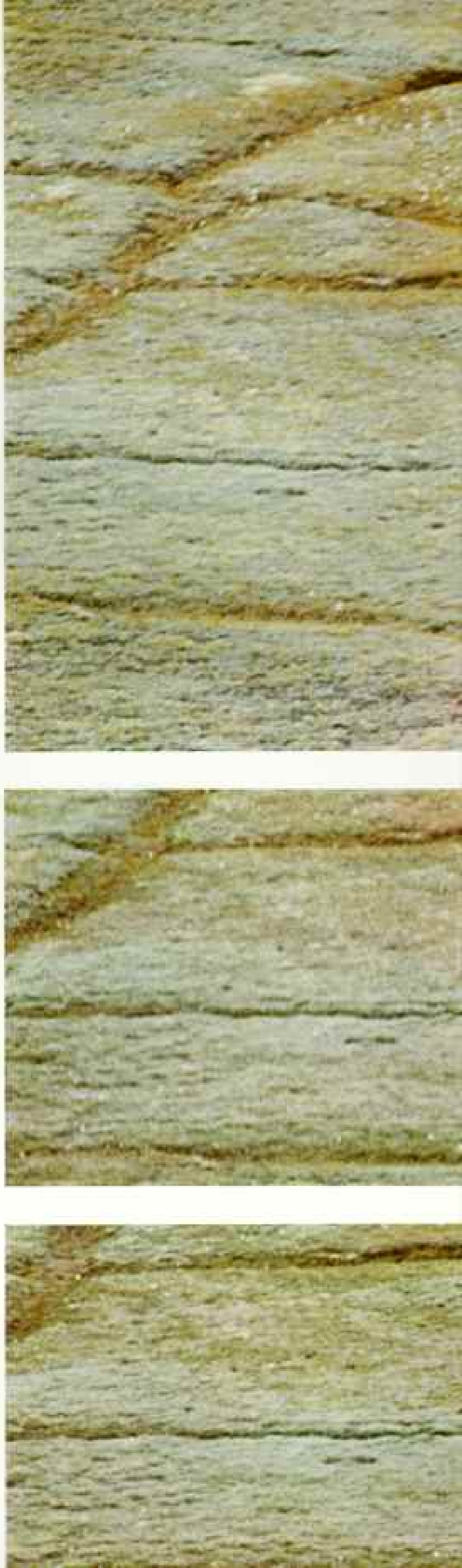
My most memorable experience with the Vermont herd was the day the oxen accepted me as one of them. I was in the pen when our dogs came to the fence. The oxen apparently decided that wolves were attacking. With much snorting and stamping of feet, they dashed toward me. What were they up to? I had no time to move out of range, for in a flash the thundering herd had formed its instinctive defensive ring—with me in the middle!

We continue some studies at the Vermont station, where we still have the first animal captured by the institute. Angnanguak, known as Girlie, is now 16. She remains vigorous and is capable of producing several more calves. We have, however, lost another of our early captives, Bully Boy, who grew into a 1,400-pound bull. Largest musk ox on record, he died in 1962.

We have no intention, however, of trying to prove that a commercial musk-ox ranch will work as far south as Vermont. The calves are born in May or June and, having heavy coats and practically no sweat glands, are sensitive to summer heat. Internal parasites unknown in the Arctic killed several animals. And the musk ox's own curiosity about strange southern fauna created unexpected problems: Nuzzling porcupines, they got their muzzles full of quills. All of the victims went off their feed, and pregnant ones aborted.

After our decade of studies at the Vermont station, the institute moved on to stage two: the establishment of breeding stations in the Far North. We began in 1964 at College, Alaska, in collaboration with the University of Alaska and with financial support from the W. K. Kellogg Foundation. In two expeditions, approved by both state and federal authorities, we captured 53 calves for the station from the herds on Nunivak Island. The Department of the Interior had released Greenland musk oxen there in the 1930's to reestablish the species in Alaska.

(Continued on page 874)



Like locomotives on a collision course, musk-ox bulls battle for control of a herd on an Ellesmere plain. Squaring off at 25 to 100 feet, the animals gallop across the frost-cracked soil and meet with a resounding crash; sometimes a fractured skull results. They will charge and charge again until one veers off in defeat.

Musk oxen breed in late summer and early fall; eight months later the calves, each weighing some 20 pounds, are born.

Keep your back to the wall! A bull chases a calf to the shelter of a rock as the author advances to capture it (following pages). Encountered in a gully, the youngster had apparently become separated from the herd and joined up with this solitary bull. Adult males

measure up to 5 feet at the shoulder and weigh an average of 800 pounds, about half as much as an American plains buffalo. Somehow musk oxen survive in a region where clumps of grass may be yards apart; they thrive on a sixth of the fodder needed for cattle.

Arctic cowboy, the author drops his rope over the calf; his teammates chased the bull away by throwing lumps of mud. Discovering that the youngster was a male, they marked and released him, since they already had the three males needed for a new herd.

Bundle of furred fury squirms in the arms of Peter Strong, who waits for help to secure this female. Team members often resorted to flying tackles to capture the calves.

EKTACHROME (UPPER) AND KODACHROME (LOWER)
BY ROBERT W. MADDEN, KODACHROME BY LARSURD HOLDEN © N.G.S.

Animal airlift, courtesy of the Canadian Coast Guard, ferries a four-month-old, 175-pound calf to base camp at Eureka on Ellesmere Island. Peter Strong, left, beams as the quieted female, swathed in burlap, rides a pontoon. The animals lack sweat glands except on hind feet; after capture, the overheated youngsters had to be cooled by dousing them with water.

Barren retreat, Greenland and the northern reaches of Canada harbor the last native musk oxen. They disappeared from Eurasia in prehistoric times and from Alaska more than a century ago. Nunivak Island protects a herd of 700, descendants of 34 calves imported from Greenland in 1930.

At College today we have 63 musk oxen, with another batch of calves, perhaps 26, due to be born just about the time this article appears. We are already well into a program of training Eskimo men in herd management and Eskimo women in the art of knitting qiviut garments. Soon we hope to begin the third and final stage of our project: the distribution of the musk oxen as domestic animals to the coastal villages of Alaska.

Meanwhile we continue with stage two in other parts of the North. In 1967, acting in response to Eskimo petitions and in collaboration with the Province of Quebec, we set out to establish a breeding station near Ungava Bay. We chose for our site Old Fort Chimo, an abandoned trading post of the Hudson's Bay Company (map, page 873).

Eureka, the joint Canadian-U. S. weather station on Ellesmere Island's Fosheim Peninsula, in the Northwest Territories, was selected as main base for our capture operations. We landed there on August 19 and began searching on foot for a herd that weather-station personnel had seen that morning a mile from the airstrip.

The barren terrain seemed incapable of supporting large animal life, yet we saw thirty or so adults, with four calves frisking about. Most of the ground they were grazing was gravel or frost-churned mud, with yards between the occasional clumps of grass. This is typical of the Fosheim Peninsula, yet it supports a dense population of wild musk oxen.

Roundup Concentrates on Cows

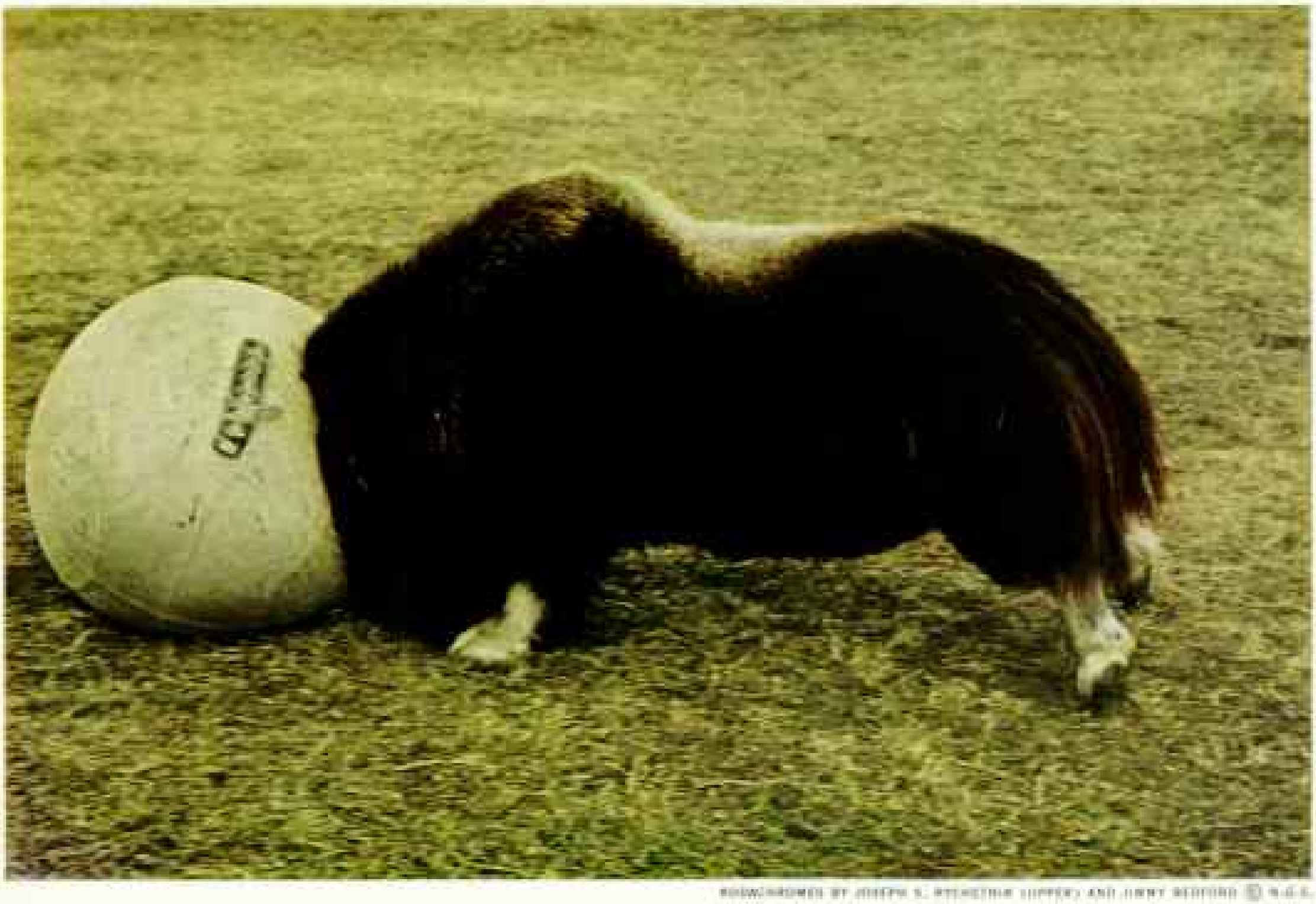
The next morning I flew with Leo Durocher—not baseball's Durocher but the pilot of our Super Cub—to spot herds. Within a 10-mile radius of the station we counted 51 calves—a bumper crop! Our only problem would be distinguishing the sexes so that we could capture our 12 females and three males without wasting effort taking surplus males.

It proved a big problem. We had discovered during our hunts on Nunivak in October 1964 that female calves show a reddish-brown stain under their tails, and we had been able to capture the desired sex without a mistake. On Ellesmere, in mid-August, we found no sign of the stain, and concluded it probably did not appear till fall. As a result, we were forced to capture at random.

I had eight companions on our hunts out of Eureka: Peter Strong, Lansing Holden, Burges Smith, Duke Watson, Jim Buckley, Roger Le Jeune, and photographers Robert Madden and Lars Åby. Still, it took us more than two weeks to take 15 calves in the desired sex ratio. The time would have been much longer had we not had helicopters to support the work of our Super Cub. For the choppers, we were indebted to the Canadian icebreakers *John A. Macdonald* and *Labrador* and the Canadian

Bound for the barn, bulls run before a scooter-mounted herder on the College, Alaska, farm. Carefully cleaned of their valuable qiviut, these musk oxen look sleeker than their wild relatives. The captives have been dehorned so they will not injure each other. The animals produce excellent meat, but the author feels musk oxen are too valuable as wool-bearers to butcher.

Games musk oxen play include pushball. When the author throws the ball into the pen, the animals divide into two teams and nose the ball back and forth. Another favorite is "king of the mountain": If one climbs a mound, the others feel obliged to shove him off. They also hitch rides on the motor-drawn sledges that bring their winter hay.



ROSWELL/HOWES BY JOSEPH S. RYCHTYNIK (UPPER) AND JIMMY REDFORD © N.G.S.

ATTACHMENT (ABOVE) BY JOSEPH E. RICHETTOR;
ATTACHMENTS BY JIMMY BEDFORD (LOWER), STEVEN C. WILSON
(OPPOSITE), AND ROBERT W. MADDEN © N.G.S.

"Golden fleece of the Arctic," the author calls gossamer-light qiviut (above). As the weather warms, musk oxen begin to shed their underwool, and soon it can be pulled off in sheets from the outer guard hairs (upper left). Mature animals produce 5½ to 6 pounds annually. The raw wool does not shrink when boiled and takes dyes easily.

Pretty Eskimo coed at the University of Alaska (left) demonstrates the spinning of qiviut. Comparable in texture to cashmere and vicuña, a pound of the wool is converted into 10 miles of yarn. Dress, modeled in Seattle, Washington (right), required only four ounces. It features a traditional harpoon motif. Nearly two hundred Eskimo knitters in Alaska and Canada are already being taught to make scarfs from qiviut produced on the experimental farms. Incredibly, each scarf—4 feet by 16 inches—weighs less than an ounce. For villagers unable to read, special knitting instructions have been developed, using symbols instead of words.

Polar Continental Shelf Project. We wrestled down 31 animals, more than half surplus males, which we had to release, first marking them on the rump with white crayon so we would not recapture them. Ironically, the day we took our fifteenth acceptable calf—which we of course named Eureka—the reddish marking appeared on females all around us.

By the time we flew out for Old Fort Chimo, we had trained all the calves to the nipple, using a can fitted with a piece of rubber hose, and the "all's-well" sign of a musk-ox expedition could be heard twice daily: the rapid click-click-click as the calves sucked up their formula of milk powder mixed with water. It is our best taming device, for though the calves have to be force-fed at first, they learn in only a day or two to come to us for nourishment.

Herd Readily Adapts to Human Keepers

When we unloaded and uncrated our captives at their permanent home in Old Fort Chimo, we were amused by the way the calves attempted to leap over the tall grass in the pen. They regarded it as a fixed obstacle, since high vegetation is unknown on their native plains. Some also dashed at the heavy wire of the pen, never having seen a fence before and thinking they could burst through it. But usually one bounce taught them all they needed to know about fence lore, and from then on even chicken wire would keep them in.

The Chimo station, which the Eskimos have renamed Umingmaqautik—"Enclosure for Musk Oxen"—has been a success under the skilled management of Diederik Bellaar-Spruyt, who has had the help of his wife Joan, their son Christiaan, and Eskimo Sandy Gordon and his family. Without any training, some oxen allow Diederik's and Sandy's young children to mount them and take short rides. The children also pluck the qiviut at the yearly gathering, while the oxen placidly chew the cud. Musk oxen should not be sheared because they need their outer coat to protect them against sun and insects.

It is fortunate the Chimo herd has become responsive to humans. Last June, Diederik's dog—the very picture of a ravening wolf—began pestering the beasts. Fearing trouble if the cows were frightened later during calving, Diederik decided to teach the dog a lesson by taking it into the pen and releasing it. Instead of forming a defensive ring, the musk oxen gave chase, showing amazing agility for their size. As they pounded around the corral, one ox would shoot ahead, putting on a spurt

of several laps. When it tired, another sprinter took its place. These tactics soon exhausted the dog and put him in real danger. Hoping for the best, Diederik stepped in front of the herd and shouted "Halt!" Surprisingly, the musk oxen obeyed, and a wiser dog retired from the field. There has been no return engagement.

After 16 years the establishment of a musk-ox industry in the Far North is more than a dream. Our animal husbandry methods have increased the productivity of the cows so that they now bear every year. To accomplish this, we wean the calves at three months. Once a cow stops nursing, she comes in heat and can be bred to reproduce again some eight months later. If left to themselves, calves nurse for six months or more, limiting breeding of mothers to once every two years.

Species Thrives on Meager Rations

Fortunately, musk oxen need no barns and little fodder. They eat a sixth of what cattle do and can forage for themselves, their favorite food being the leaves and tender shoots of willows. In winter they use their broad front hoofs to break through deep snow to sparse grasses, and, when thirsty, they "drink" snow.

Even in the wild, musk oxen usually do not range far. Our domestic animals are especially easy to round up, since each knows its own name and comes bounding when it hears it. The one man musk oxen definitely won't come to when called by name, however, is the veterinarian. They recognize his car at a distance, and, hating shots, retreat precipitately to the farthest end of the pen.

By selective breeding, we hope to increase qiviut yield per animal substantially. Already, our best mature bulls are shedding six and a half pounds a year. This compares well with the less than a pound of *pashm* produced annually by a cashmere goat. We estimate that a musk ox will produce qiviut for 20 years. After cleaning, one pound can be spun into a strand of yarn 10 miles long. With four ounces of the yarn, an Eskimo knitter created the outfit shown on the preceding page.

A finished garment is wonderfully warm and so soft and light that the wearer is barely conscious of having it on. The raw wool will not shrink when boiled or scrubbed, takes all of the 50-odd natural dyes the Eskimos have so far tried, and can be knitted into traditional Eskimo designs.

The greatest tribute to the natural attractions of qiviut was paid by the robins, bluebirds, and sparrows around our Vermont station. They promptly supplemented their usual materials by lining their nests with the qiviut that had caught on fences.

We are now testing the economic feasibility of the qiviut industry, and have established producers' cooperatives run by the Eskimos. These supervise the work of 150 village knitters in Alaska and 23 around Fort Chimo. The women are mostly knitting scarfs, four feet long by 16 inches wide, weighing less than an ounce. Even a spare-time knitter can, during this training period, produce a scarf a week, for which the cooperative pays her $25.

Retail prices for finished products will be considerably higher, but we expect that a luxury market which accepts cashmere, vicuña, mink, and sable will make a special place for qiviut. The co-ops are now beginning to fill orders placed by individuals over the years, and famous department stores have asked for sales rights.

Hope for the Arctic's Underprivileged

For the Eskimos the musk-ox industry promises a happy adjustment of economy and environment, fitting into the pattern of their traditional outdoor life. More than twenty Alaskan villages already have asked to participate in knitting, and we have applications from even more communities for the first commercial herd.

In addition to the Alaskan and Quebec establishments, the institute has a new station in north Norway, and plans operations in southwest Greenland, Iceland, and Baker Lake in the Northwest Territories. Eventually, we hope, several thousand desperately poor families in all these places, now largely existing on welfare, will have a chance for regular cash incomes—thanks to an animal that their ancestors and ours once very nearly exterminated. THE END

Gentle nuzzle reassures an hour-old calf. Herders will wean it after three months, thus allowing the mother to produce another calf next year. Cows in the wild usually calve every other year. Soon, the author hopes, requests for breeding stock by Eskimo cooperatives can be filled, opening the way to a brighter future for both the musk oxen and their owners.

Exciting New Books for

WHEN the Hawaiian volcano Kilauea erupted in 1959 (below), one observer showed an almost reckless interest. He climbed so close to the record-breaking 1,900-foot fountain of lava that his face blistered from the searing heat. A few days later, as he wrote his report for NATIONAL GEOGRAPHIC, his nose was actually peeling from the burn. But because of his extra effort and enthusiasm, what might have been only dry geology acquired an added ingredient—high adventure.

Recently the same man, William Graves of our Senior Editorial Staff, returned to the 132 islands of Hawaii to write a book—a project prompted by requests of Society members.

1970-71

By GILBERT M. GROSVENOR Associate Editor

"We'd like to know more about our 50th state," said a typical letter. "My daughter is writing a school report on Hawaii. . .," said another. Many members planning Pacific vacations wrote us for information.

The result is a fascinating and informative book that makes Hawaii a delight to visit by plane, cruise ship, or armchair.

Bill takes us along on his first surfboard lesson off Waikiki; up to the 13,796-foot brim of Mauna Kea's crater; then down into the Pacific to catch marine specimens—and to elude an eight-foot shark. Bill even manages to visit the off-bounds island of Niihau, a privately owned 73-square-mile preserve where nearly 300 pure Hawaiians live in seclusion.

EKTACHROME, CAMERA HAWAII

JAMES L. AMOS © N.G.S.

JAMES L. AMOS

BATES LITTLEHALES

Hawaii

THE ALOHA STATE unfolds a glittering panorama: Lava pulses from Kilauea. On the same island, Hawaii, surf foams onto a black sand beach. Leis drape a pint-size hula dancer on Kauai. Lion dance climaxes Chinese New Year in Honolulu.

Lewis and Clark

RE-CREATING an epic journey across half a continent, Special Publications writer Gerald S. Snyder and his family spend a strenuous year *In the Footsteps of Lewis and Clark*. Guided by the explorers' own journals, they follow their trail up the wide Missouri by keelboat and barge, across Idaho's swirling river rapids, over the snowy splendor of the Continental Divide, to Oregon's gleaming Pacific shore.

This painting by noted Western artist Charles M. Russell shows Captain Clark meeting Indians along his route, while Lewis scouts ahead with a hunting party.

With abundant color photographs throughout 200 pages, this book offers an exciting eyewitness tour as well as an informative survey of the newest of our United States.

In breadth, *Hawaii* is typical of our new four-volume series of Special Publications for 1970-71. Each book is designed to serve a broad range of ages in the libraries of member-families. Color illustrations appeal to the youngest children; first-person accounts interest even the casual reader; but careful research makes the books invaluable to the serious scholar.

Consider, for example, the second volume in the series, *In the Footsteps of Lewis and Clark*. Perhaps no other exploring expedition has influenced our history more profoundly. The epic journey of Meriwether Lewis and William Clark in the years 1804 to 1806 gave the young U. S. A. an early but strong sense of westward expansion. The expedition brought back plant and animal specimens, maps of almost unknown regions, and firsthand descriptions of unfamiliar Indian tribes (below).

Along with these larger accomplishments, the expedition's "robust helthy hardy young men"—in Clark's own words—logged one of the most fascinating journeys of all time. Now a young American family, the Gerald S. Snyders, have followed the same 4,000-mile trail from a riverbank 15 miles from St. Louis, Missouri, west to Fort Clatsop, Oregon. Early-19th-century paintings, by explorer-artists like George Catlin and Karl Bodmer, contrast with modern color photographs and sketches to form an American album of past and present.

An even longer journey unfolds with the third book,

PAINTING BY CHARLES M. RUSSELL, COURTESY ED M. BOHANNON COLLECTION

EKTACHROME (ABOVE) AND KODACHROME BY NATIONAL GEOGRAPHIC PHOTOGRAPHER BRUCE DALE © N.G.S.

Gypsies, Wanderers of the World. For years author Bart McDowell had been fascinated by bands of Gypsies. On NATIONAL GEOGRAPHIC assignments, he has met flamenco dancers in Spain, violinists from Hungary, bear trainers in Turkey, and even Gypsy fortunetellers near his own home outside Washington, D. C.

"Why couldn't we trace the Gypsies back to their source in India?" Bart suggested three years ago. "I have a Gypsy friend in England—a knife-grinder by trade," he said. "He speaks a good deal of Romany—the old Sanskrit-derived tongue of the Gypsies. My friend is planning to drive overland to India. If I went along, we could retrace the old migration routes back through 16 countries. Visit other Gypsies along the way. Interview the best philologists and historians."

The intriguing book that resulted takes readers on Bart's Gypsy journey. With photographer Bruce Dale, the party camps beneath castle battlements and fortresses famed in Romany legend. They join Gypsy concerts in forest and cafe, dance at wedding feasts, and record folk tales of the old nomadic life. More than once, the party gets arrested in places distrustful of footloose strangers.

Pushing through wild mountain passes in Iran and Afghanistan, the author shows how linguists document the early wanderings of an illiterate people by the words they added to their language as they traveled—now Slavic, now Greek, now Persian. Mr. McDowell skillfully weaves together travel lore, highly personalized history, and

Gypsies

THE OPEN ROAD beckons. Follow one of the world's most fascinating peoples from England back to their Indian homeland. In Spain, Gypsies entertain with song and dance (above). Near New Delhi, a shy Banjara girl (below) veils her face from visitors.

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Those Inventive Americans

YANKEE INGENUITY forged our Nation. Now you can step into shops and laboratories and meet the men behind the machines: In the 1950's Nobel Prize winner Dr. Charles H. Townes invents the maser, forerunner of the laser (left). Cyrus Hall McCormick demonstrates his reaper in 1831. Alexander Graham Bell, inventor of the telephone, inaugurates long-distance service between New York and Chicago in 1892. Wilbur Wright, introducing Europe to his airplane, flies above Pau, France, in 1909.

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geography into this brilliant book, *Gypsies*.

Our fourth volume, *Those Inventive Americans*, explores in still other directions. "We want to know more about these extraordinary men than biographies tell us," Special Publications Chief Robert L. Breeden wrote to the distinguished authors of this book. "What motivated them? How did this small band of Americans influence the growth and heritage of this great country?"

The result is a colorful narrative that explains whole eras. Here we read about an almost universal struggle that inventors face.

In 1878, for example, the French Academy of Sciences meets to examine Thomas Edison's phonograph. "Wretch!" shouts one famous scientist as sound pours forth. "We are not to be made dupes of by a ventriloquist."

Sir William Barrett recorded the same reaction to Alexander Graham Bell's telephone. "I happened to be staying in Edinburgh with that famous physicist, Professor Tait, when the news of the discovery of the telephone came to us by cable. I asked Tait what he thought of it. He replied, 'It is all humbug, for such a discovery is physically impossible.' "

Why does one inventor succeed and another fail? A careful reader can find many insights. In a letter to his father in 1793 Eli Whitney tells his own story: how on a visit to Georgia he learned of the need for "a machine . . . which could clean the cotton with expedition. . . . I involuntarily happened to be thinking on the subject and struck out a plan. . . . In about ten Days I made a little model. . . ."

Is the independent inventor finished? Well, this book tells us about such modern triumphs as the cyclotron, the transistor, and the laser. And if you have a son who likes to tinker and to dream about his own great discovery, *Those Inventive Americans* will explain that his idea is impossible—like Dr. Bell's telephone.

Members who want to reserve their copies of these books for their family libraries may do so now. The first volume, *Hawaii*, will be mailed at once; the others will arrive at approximately three-month intervals. Simply fill out the coupon on the flap at left, and drop it into a mailbox.

884

COVER: The Colosseum has watched over Rome for 19 centuries (pages 742-3). KODACHROME BY WINFIELD PARKS © N.G.S.

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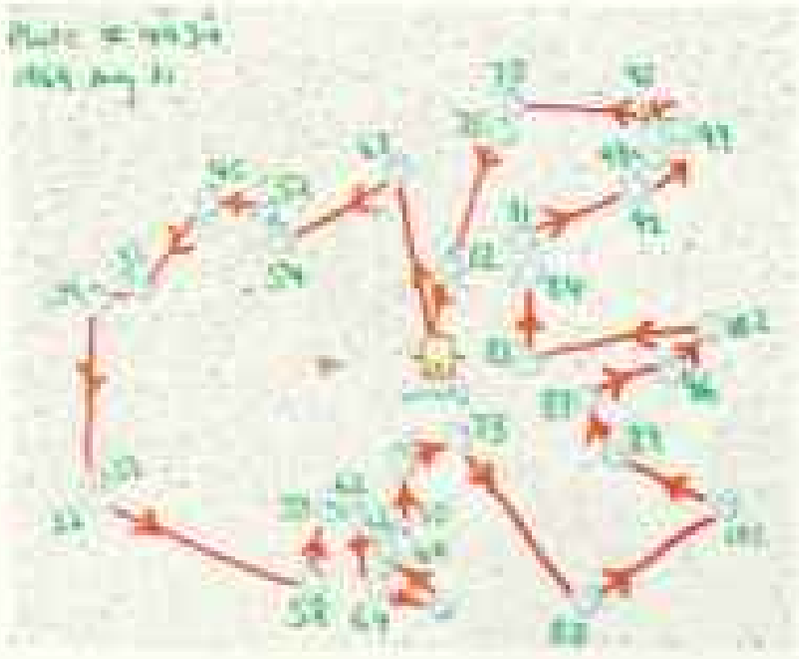
Tracking the asteroid Geographos



Only a speck in space: Markings on a negative (left) pinpoint Geographos (in brown rectangle, center) in relation to known stars. At right an enlarged positive from the small boxed portion of the negative shows the asteroid's 2,300-mile, cigar-shaped trail during the two-minute exposure. Large smudge below it is a hand-drawn arrow, highly magnified.

IN THE STARBRIGHT IMMENSITY of the heavens a tiny asteroid last summer orbited tantalizingly close to the earth by celestial standards—5.6 million miles. Discovered in 1951 during the National Geographic-sponsored Palomar Observatory Sky Survey, the 1/2-by-1½-mile body was named Geographos in honor of the Society.

Since the whirling space mote would be observable at its closest approach only from the Southern Hemisphere, Betty Mintz of the U. S. Naval Observatory journeyed to Cerro Tololo Inter-American Observatory in Chile (right) with the aid of a Geographic research grant. Aiming a 24-inch telescope at the part of the sky through which Geographos would pass, Mrs. Mintz took 93 photographs that provide valuable data on the asteroid's speed and direction.

Your Society dues help unlock the secrets of the universe. Invite your friends to share in sponsoring such research. Nominate them for membership below.

Asteroid watcher Betty Mintz wields a telescope-aiming control at Cerro Tololo Observatory in Chile (below).

PHOTOGRAPHS BY BETTY F. MINTZ © N.G.S.

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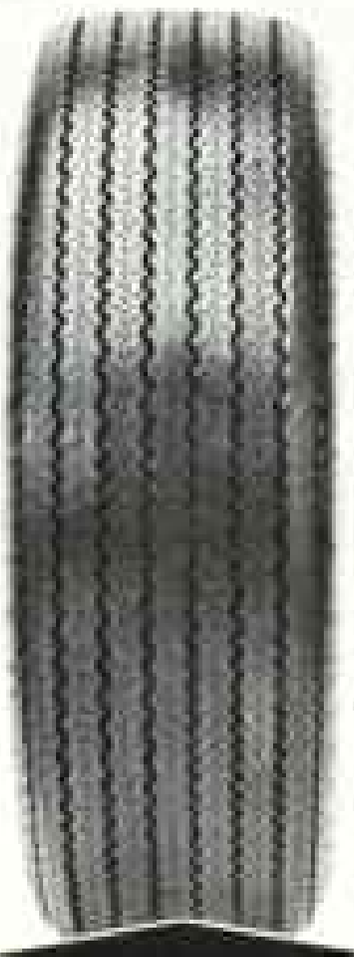

They run cooler because they're made with Dynacor® Rayon Cord. They're the safest tires we've ever made.

The radial construction of Lifesavers is unique. The sidewalls flex, keeping all the tread on the road all the time. And the Dynacor Rayon belt stabilizes the tread for extra strength and mileage. 33% stronger than our fiberglass tires. 40,000 miles or more on a set.

BFG *Lifesaver* Radials. They're like no tires you've ever ridden on. They're the tires your life should be riding on.

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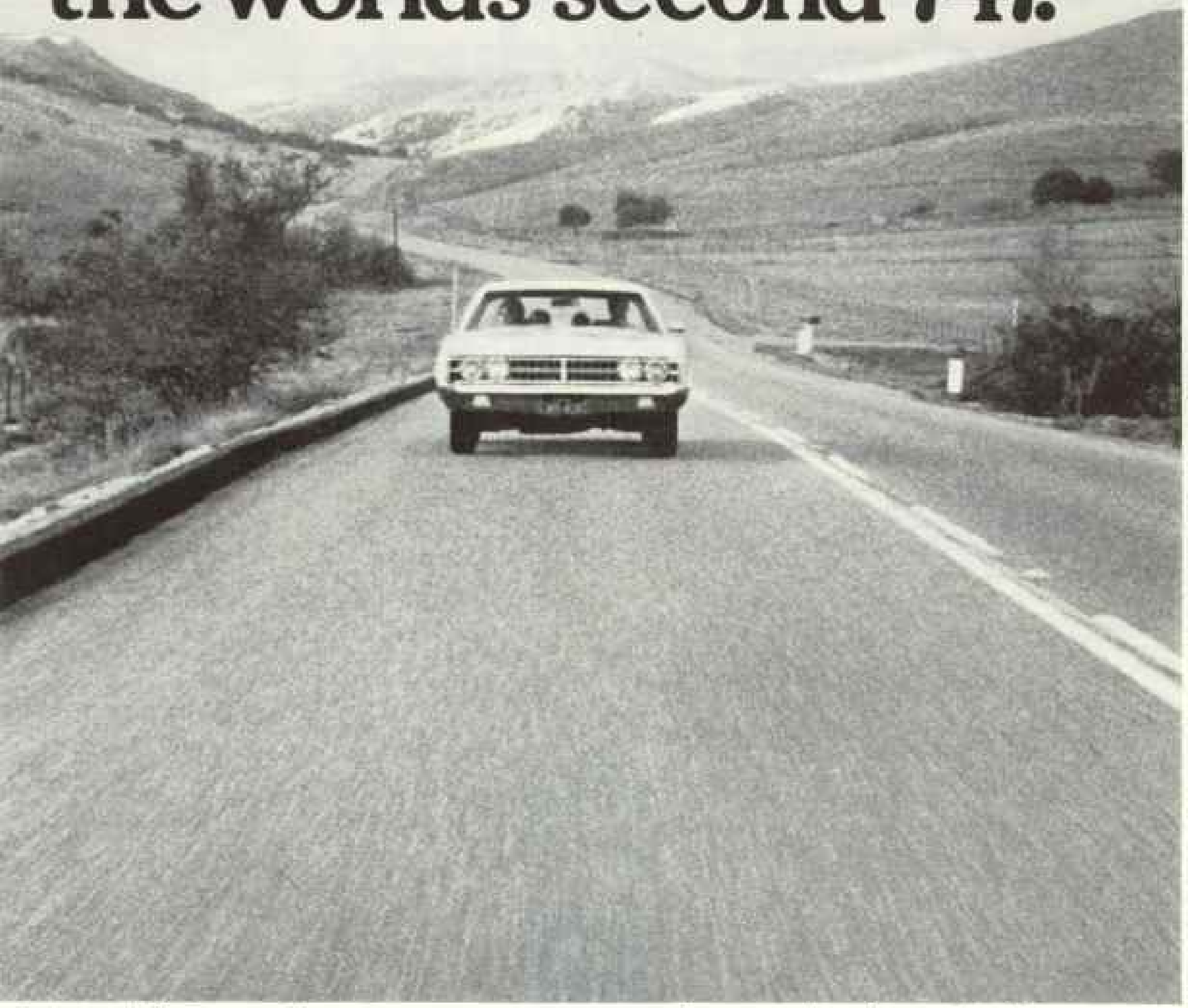
The New BFG Lifesaver Radials.

Your life should be riding on them.

Hertz introduces the world's second 747.



It doesn't fly. It merely saves you money on vacations, weekends, and holidays.

We intend to revolutionize vacation travel on the ground with our new 747 rate the way the new 747 jets are doing it in the air.

Now you can rent one of our intermediate or standard Fords or a similar sedan at most of our 1275 offices in the U.S. and Canada for $7.47 a day and 10¢ a mile for a minimum of seven days, for a weekend, or over a two-day holiday. Insurance is included, gas isn't.

This new 747 rate is an excellent deal if you're driving less than 500 miles. If you're driving farther, we have a rate that's even better: the $99 Unlimited Mileage Plan.

This rate lets you rent an intermediate or standard sedan for any seven consecutive days for $99. Insurance is included, gas isn't.

You can drive as far as you like at no extra charge provided you return it to the city where you rented it.

The 747 rate and the $99 Unlimited Mileage Plan are not available at all Hertz locations, so it's wise to check with your travel agent or with us.

Outside the U.S. and Canada we have arranged similar special vacation deals.

And no matter which rate you choose, you always get the maps and touring guides, and Survival Manuals, and all the other Hertz services that make the difference between renting a car and a company and just renting a car.

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built to last as long as you care to own it

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Five years ago the Tyonek Indians

The Tyonek Indians in Alaska used to struggle for their living. Their sole means of support was trapping and fishing.

Then one of our affiliates, Humble Oil & Refining Company, paid the Tyoneks several million dollars for the right to explore for oil on their land.

We didn't discover any oil. But we're used to that. (After all, only one out of every fifty exploratory wells drilled in the U.S. actually results in the discovery of oil in commercial quantities.)

The Tyoneks used their money wisely.

They invested in a modern office building, in nearby Anchorage, for future income.

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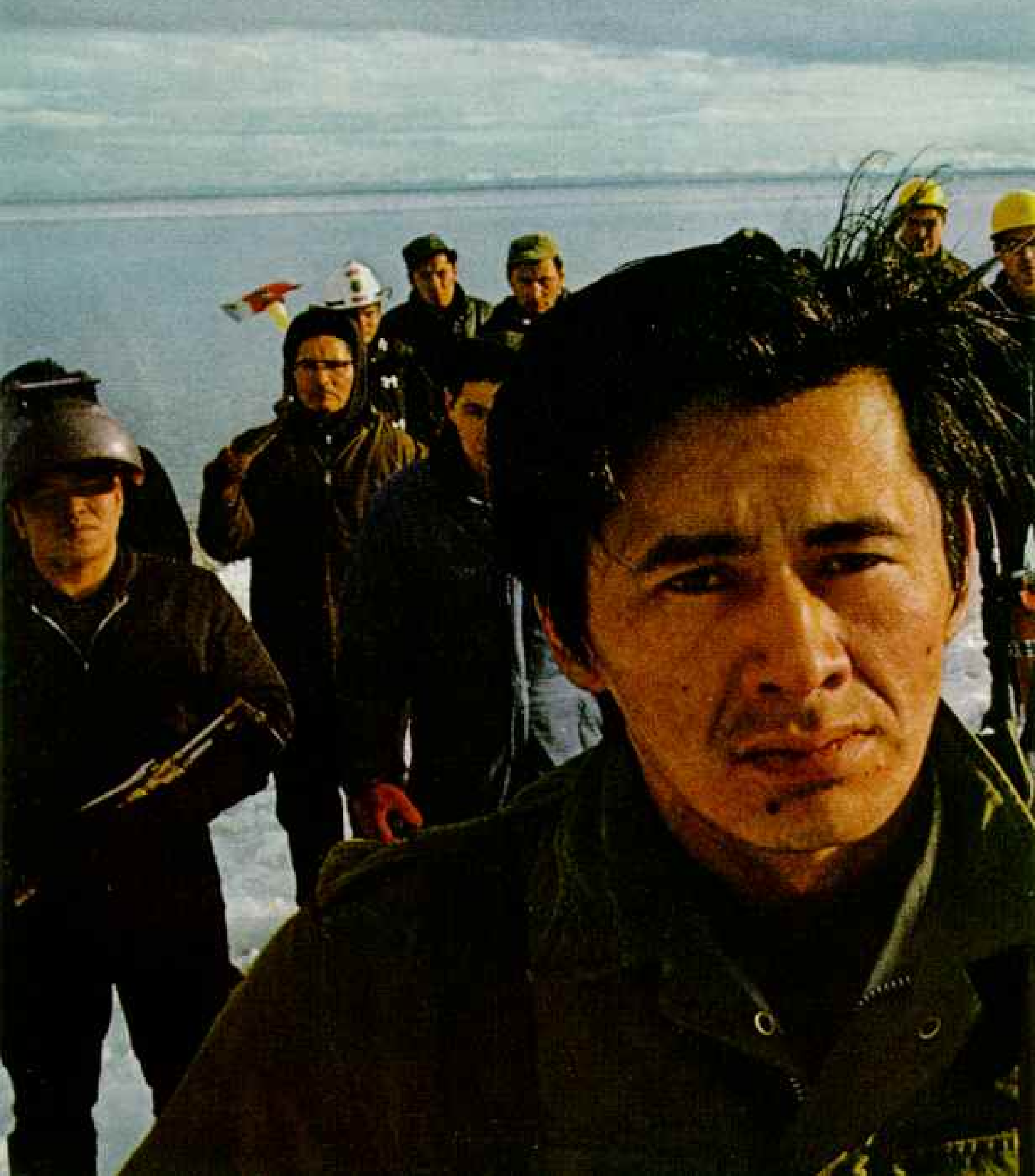

needed food. Now they need an industry.

a sawmill and a small airline.

And they formed their own construction company, and rebuilt their village, complete with modern homes, electricity, roads and a new school.

While they were rebuilding their village, the Tyoneks learned to be welders and electricians and surveyors and technicians.

Now the work is done.

The village is completed. The Tyonek Indians have many new skills. And now they're looking for some new ways to use them.

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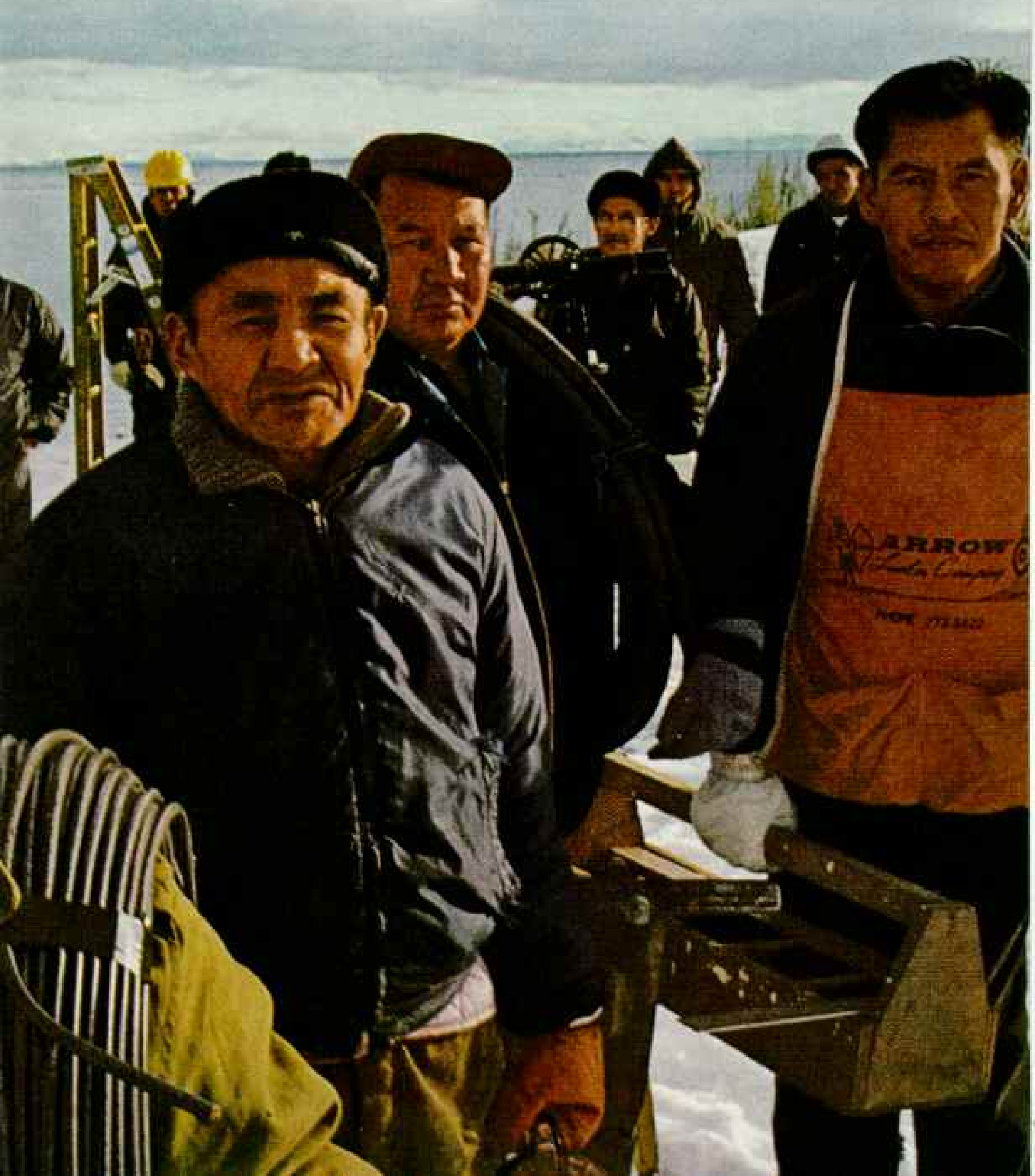
ESSO



Albert Bumstead's backward sundial saw Byrd safely home

It was May 9, 1926. Three thousand feet above bleak polar ice stretching featureless to the horizon, Lt. Comdr. Richard Evelyn Byrd and his pilot, Floyd Bennett, gazed with nearly equal fascination at two things—the North Pole below them, and the oil leaking from one of their airplane's three straining engines.

Now they belonged to history, the first men to fly to the North Pole. It remained for them to return safely to their base over the endless frozen ocean.

The pioneers pointed the nose of the *Josephine Ford* toward their base in Spitsbergen, nearly 700 miles away. Suddenly, their sextant slid from the chart board and crashed to the deck of the plane, broken.

At the top of the world, where their magnetic compass was useless, where there were no charts and no landmarks, their lives now depended on the accuracy of one instrument, the Bumstead Sun Compass.

Simple in principle, as are many great inventions, and ingenious in operation, the sun compass was invented and built by National Geographic Society's first Chief Cartographer, Albert H. Bumstead. It was a remarkable answer to the unique problems of polar navigation which the Byrd Expedition faced.

Since during the polar summer the sun never goes below the horizon, the Bumstead compass was made to be a kind of sundial in reverse.

A sundial, accurately adjusted according to its position on earth, will, by the sun's shadow, tell *time*. Conversely, the Bumstead compass, with the time already known, makes use of the sun's shadow to tell *position*.

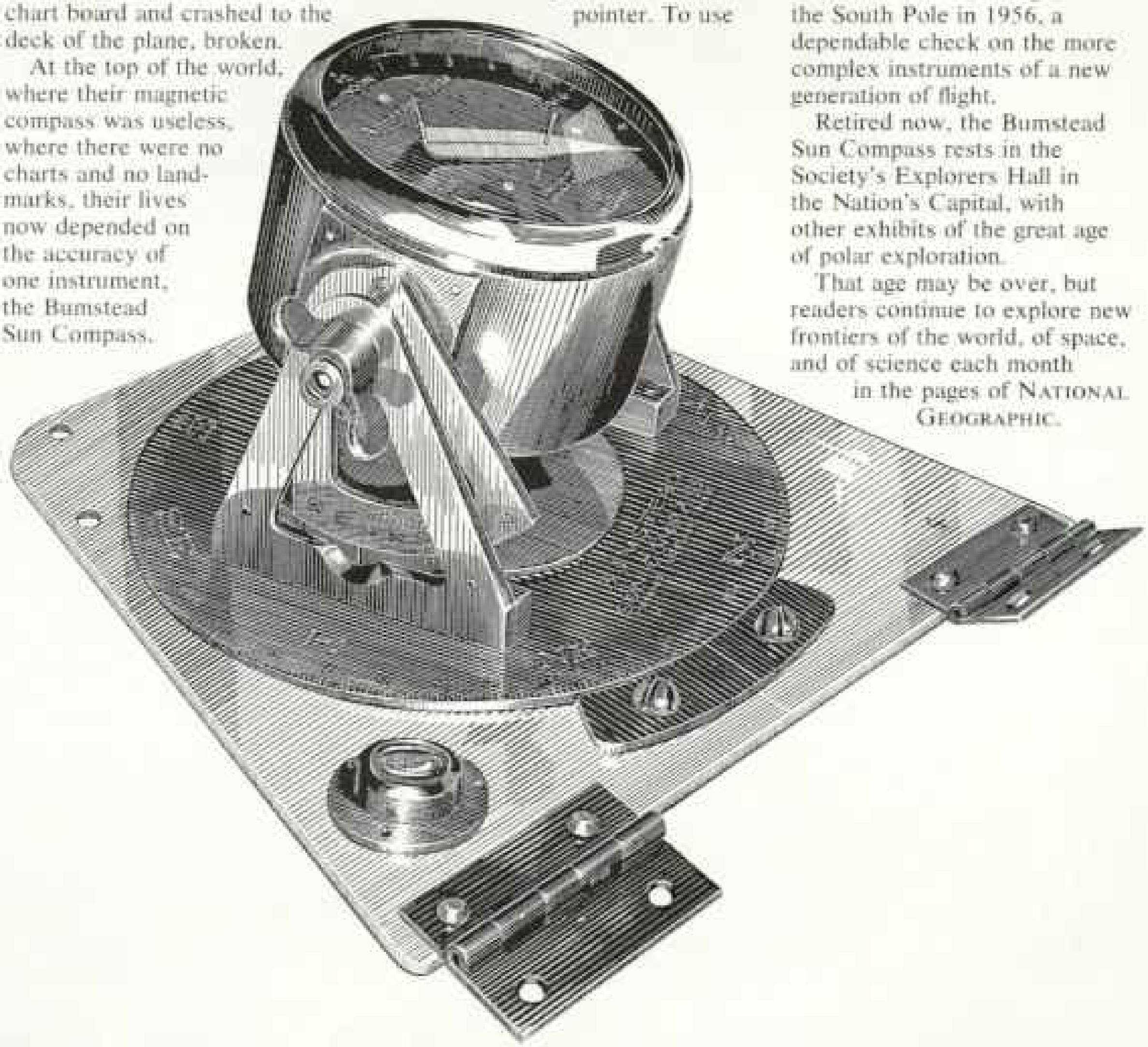
The Bumstead compass is basically an accurate 24-hour clock, or chronometer, with a single hand, or pointer. To use it, the clock is set carefully to local sun time, the clock face is tipped to the approximate latitude of the area by means of the latitude quadrant, and the whole instrument turned so that the hour hand points directly to the sun. By keeping the hour hand steadily toward the sun, with the shadow of the vertical pin centered along it, the 12 o'clock mark on the dial will point south.

Navigating more than five hours with the sun compass alone, the two polar explorers raised their base dead ahead on the horizon and made a safe, triumphant landing.

In 1929, the same sun compass, with its mechanism adjusted for southern polarity, guided Byrd on his epic flight over the towering 10,000-foot South Polar plateau. And it was with him on his last flight to the South Pole in 1956, a dependable check on the more complex instruments of a new generation of flight.

Retired now, the Bumstead Sun Compass rests in the Society's Explorers Hall in the Nation's Capital, with other exhibits of the great age of polar exploration.

That age may be over, but readers continue to explore new frontiers of the world, of space, and of science each month in the pages of NATIONAL GEOGRAPHIC.



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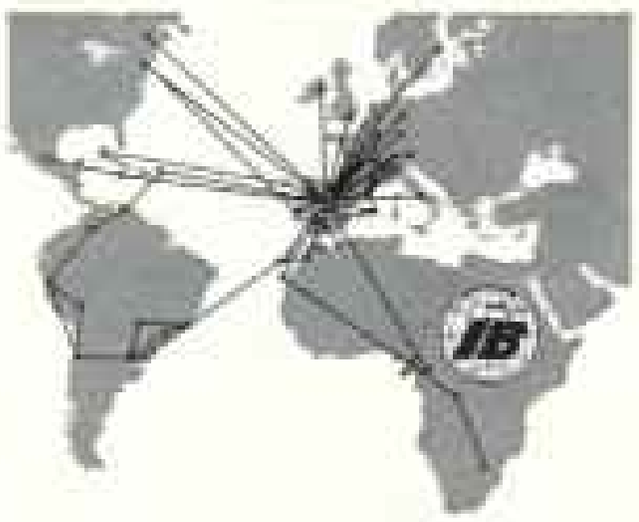

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This is squirm at high speed. We run this conventional two-ply tire in our laboratories at exaggerated speeds (under rated conditions) so you can see how bad tread squirm can get. Notice how the tread surface of this two-ply tire is badly distorted.

The Polyglas tire fights squirm. Look how this Polyglas tire stands up under the exact same speed and conditions as the two-ply tire. That's how much difference the fiberglass belts on the Polyglas tires can make in increasing mileage and improving traction.

Polyglas tires You'll see why many 1970 cars.

Polyglas tires fight squirm for long mileage. That's one of the reasons why the Goodyear Custom Power Cushion Polyglas tire is standard or optional equipment on many 1970 car models.

When a tire rolls, the tread grooves tend to squeeze together as they meet the ground, and open up as they leave. So the tread squirms—scrubbing itself away against the pavement.

A conventional two-ply tire has no way to resist this squirming, but a Goodyear Polyglas tire has two tough fiberglass belts underneath the tread to reinforce it. The belts act like hoops around the tire and hold the tread firm to help fight squirm and give you better tread mileage.

Less squirm means a better grip.

When tread grooves stay open, the tread grips better. Especially in the wet. So you'll feel the difference when you brake and corner.

In a specific test on a wet macadam road, the Custom Power Cushion Polyglas tire was tested against our conventional two-ply Power Cushion tire, on two identical cars. Then we braked both cars from 45 mph to 0 mph. The Polyglas tires *cut 32 ft. off* the stopping distance.

51 million test miles.

Polyglas tires have run 40 million test miles on our Texas Proving Grounds alone—and another 11 million on laboratory test wheels. Since 1967, when we started selling Polyglas tires, they've run billions of miles on automobiles all over America.

Like more facts?

A booklet about the testing of the Goodyear Custom Power Cushion Polyglas tire is available. Just write to Goodyear, Dept. 805V, Akron, Ohio 44316.

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So we started a visiting nurse service for our policyholders and their families, to fight the spread of disease with the spread of medical knowledge.

By 1952, we'd made over 100 million house calls.

By 1953, Visiting Nurse Associations had taken over from us in the field of nursing. Leaving us free to tackle other problems in the field of health.

This year, for example, we're working with a large medical center to investigate ways of holding down the cost of medical care, without cutting down the personal attention a doctor gives his patients.

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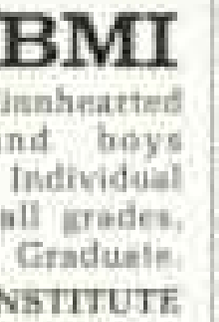

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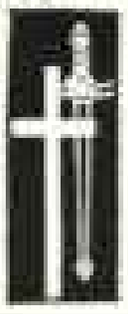

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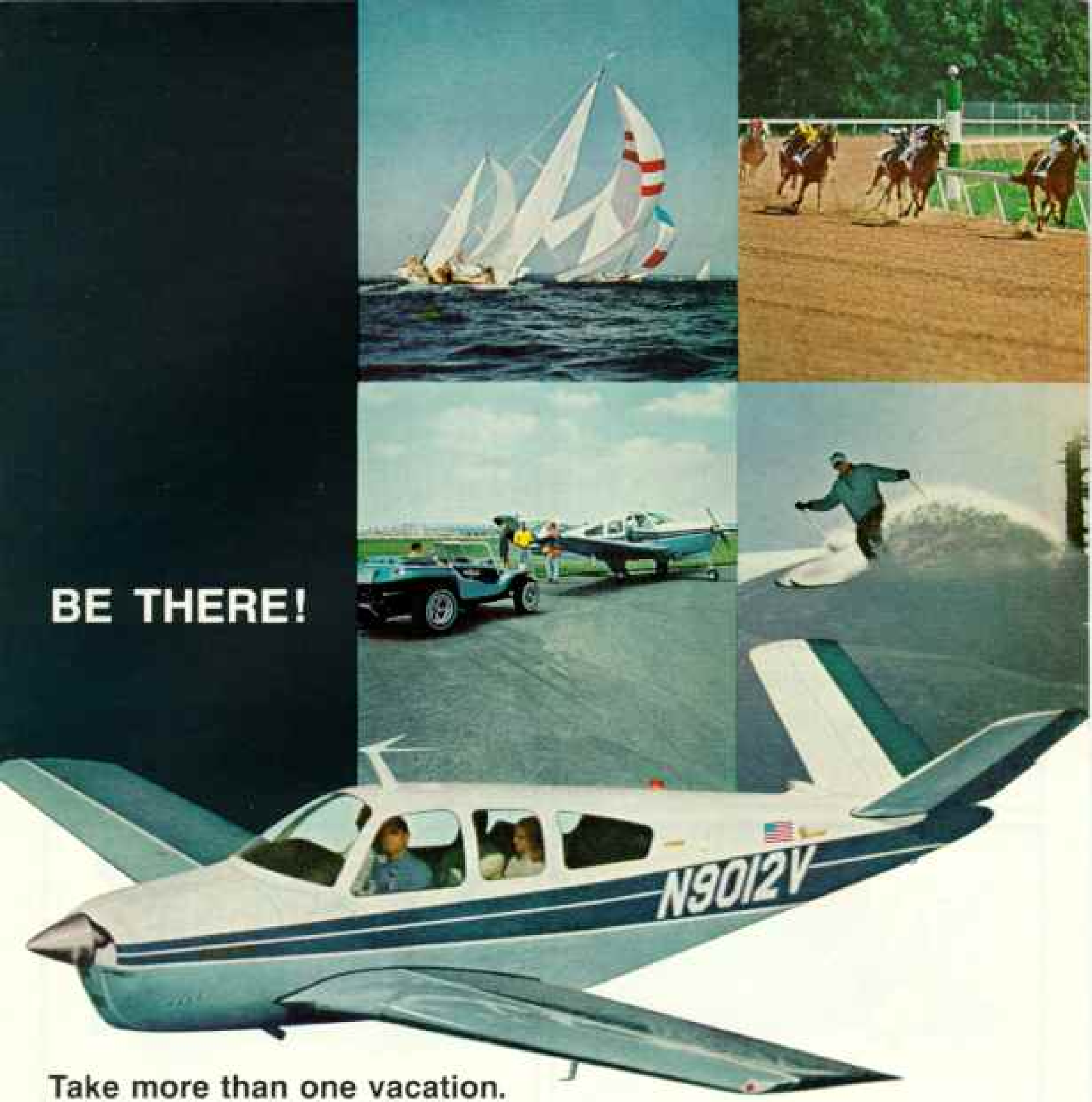

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It can fire a high-pressure spray to tops of 25-foot trees as well as down at the ground.

Trombone® sprayer

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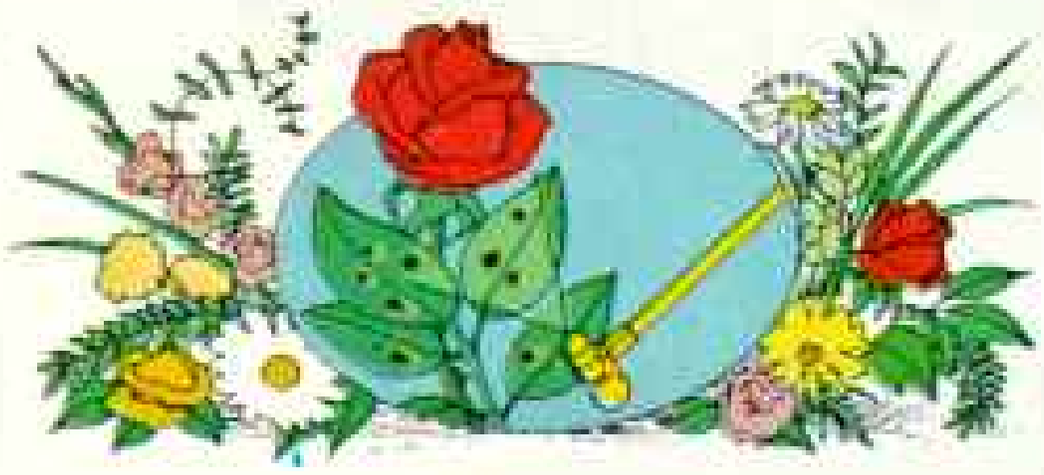

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Hydra-Gun® sprayer

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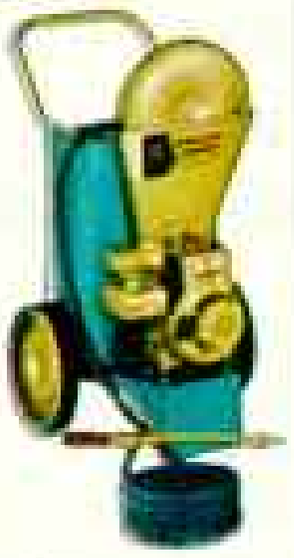

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