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THE NATIONAL GEOGRAPHIC MAGAZINE

JUNE, 1955

Ten-Color Supplement Map of New England

Seventy-two Pages of Illustrations in Color

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To carry out the purposes for which it was founded sixty-seven years ago, the National Geographic Society publishes the National Geographic Magazine monthly. All receipts are invested in The Magazine itself or expended directly to promote geographic knowledge.

Articles and photographs are desired. For material The Magazine uses, generous remuneration is made.

In addition to the editorial and photographic services constantly being made, The Society has sponsored more than 100 scientific expeditions, some of which required years of field work to achieve their objectives.

The Society's notable expeditions have pushed back the historic horizons of the southwestern United States to a period nearly eight centuries before Columbus. By dating the ruins of vast communal dwellings in that region, The Society's researches solved secrets that had puzzled historians for 300 years.

In Mexico, The Society and the Smithsonian Institution, January 16, 1940, discovered the oldest dated work of man in the Americas. This stone is engraved, in Mayan characters, November 4, 291 B. C. (Spinden Correlation). It antedates by 300 years anything else dated in America and reveals a great center of early American culture, previously unknown.

On November 11, 1935, the stratosphere flight of the world's largest balloon, *Explorer II*, sponsored by The Society and the U. S. Army Air Corps, reached a world-record altitude of 72,395 feet. Capts. Albert W. Stevens and Orvil A. Anderson took aloft a ton of scientific instruments and obtained results of extraordinary value.

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In 1948 The Society sent seven expeditions to study the sun's eclipse on a 9,520-mile arc from Burma to the Aleutians.

A Greek cargo ship sunk in the Mediterranean 2,300 years ago was found in 1952 and is being excavated by the National Geographic Society-Calypso Marine Archeological Expedition led by Capt. J.-Y. Cousteau of the French Navy.

The National Geographic Society and the Royal Ontario Museum in 1951 explored and measured newly found Chubb meteor crater, 11,000 feet in diameter, in northern Quebec.

The Society and individual members contributed $100,000 to help preserve for the American people the finest of California's sequoias, the Giant Forest in Sequoia National Park.

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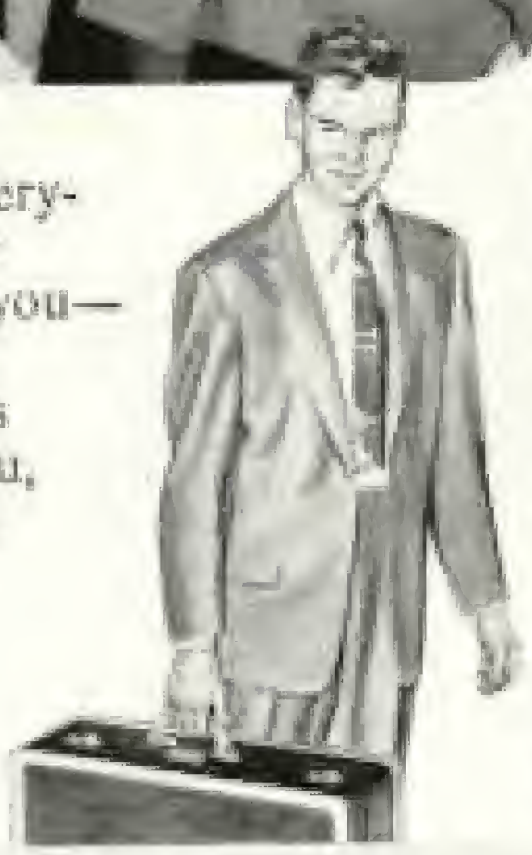

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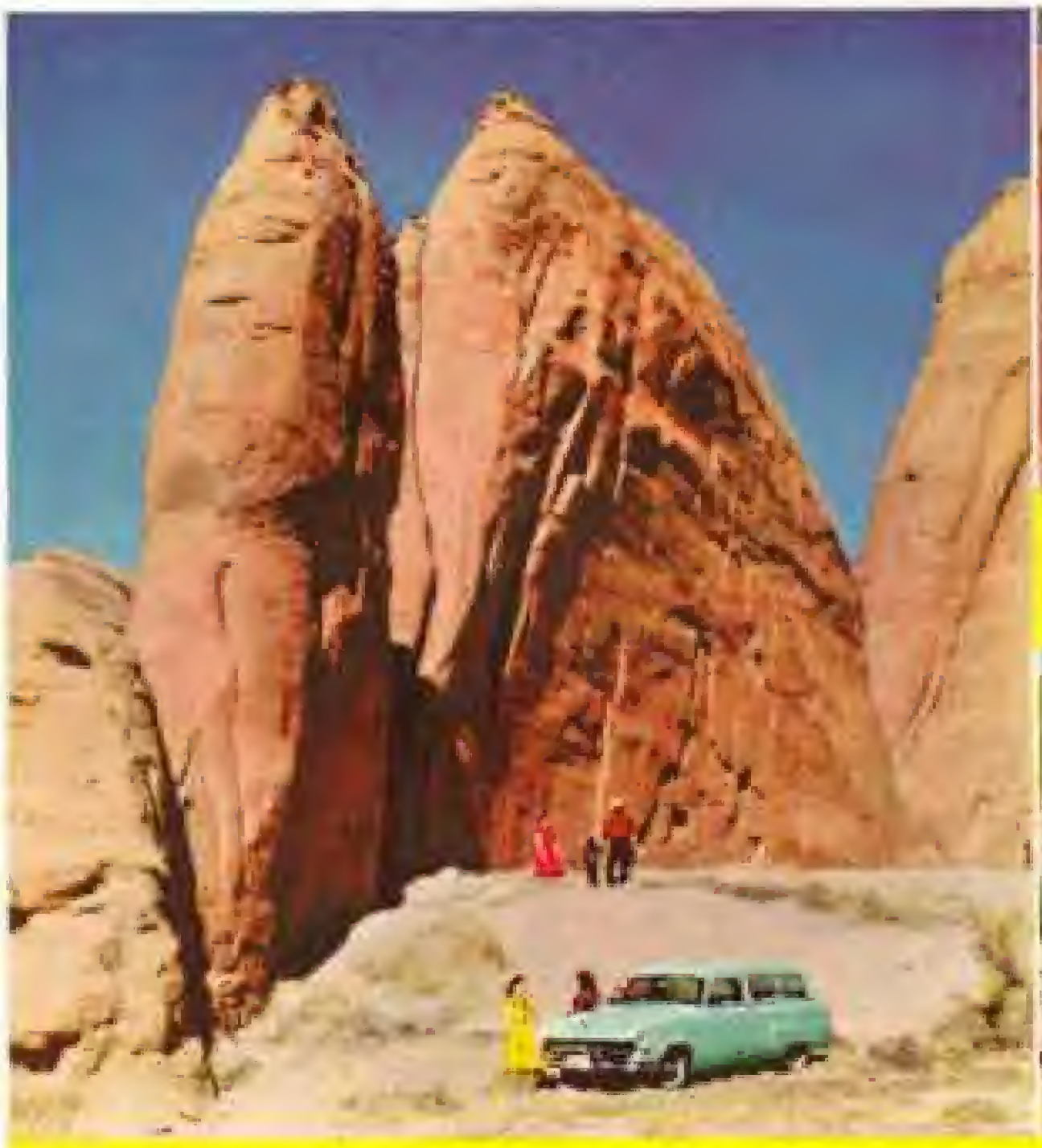

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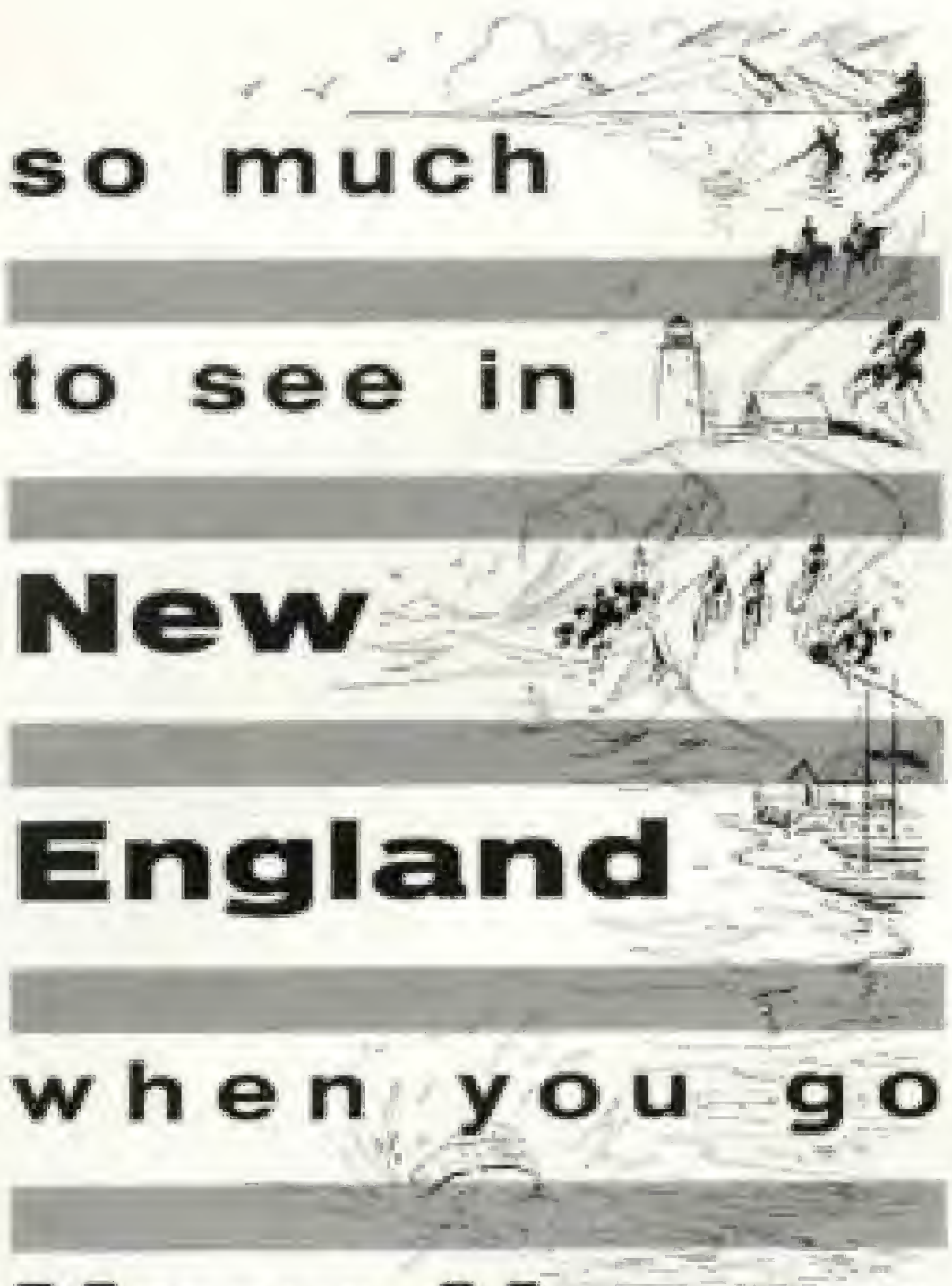

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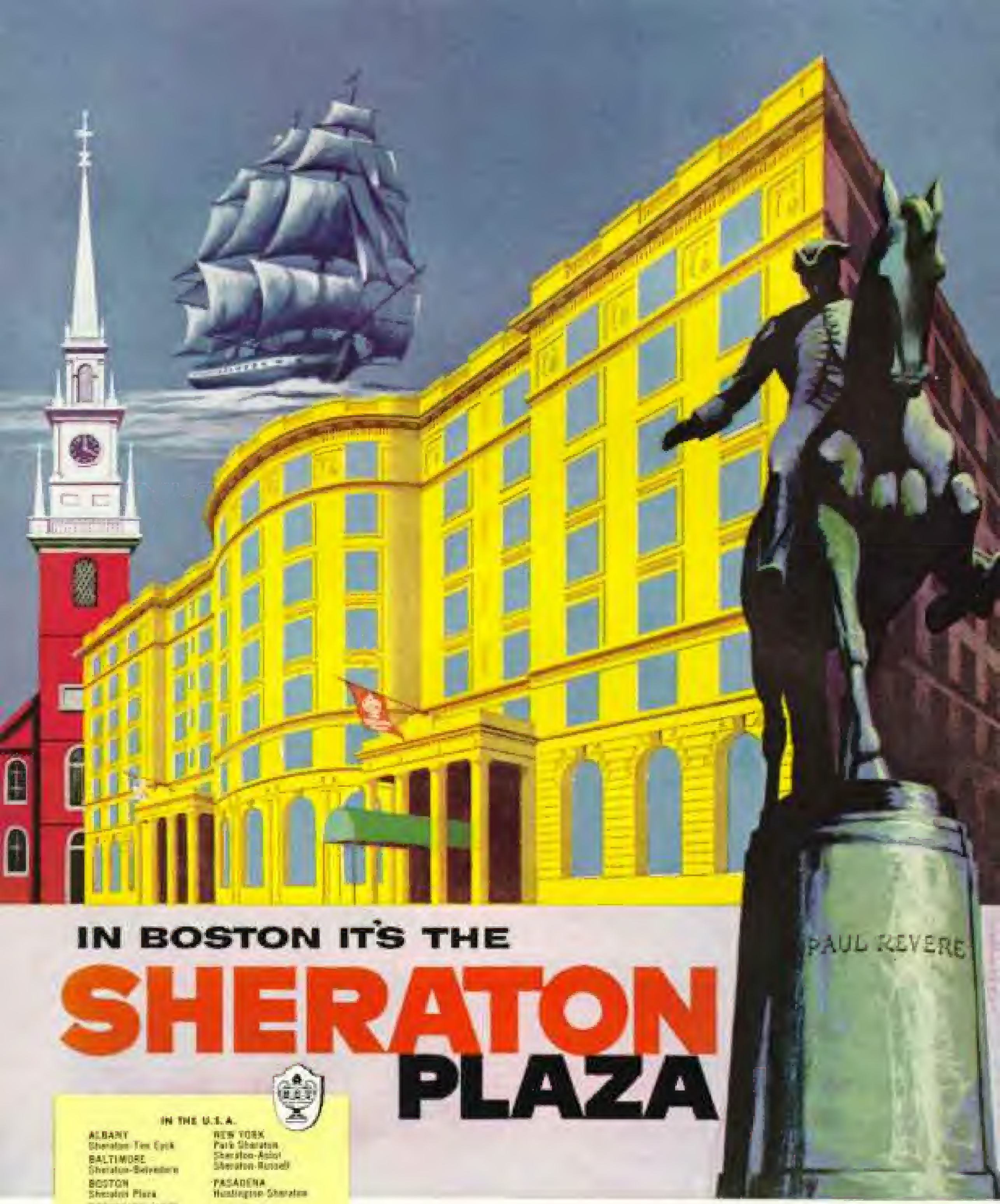

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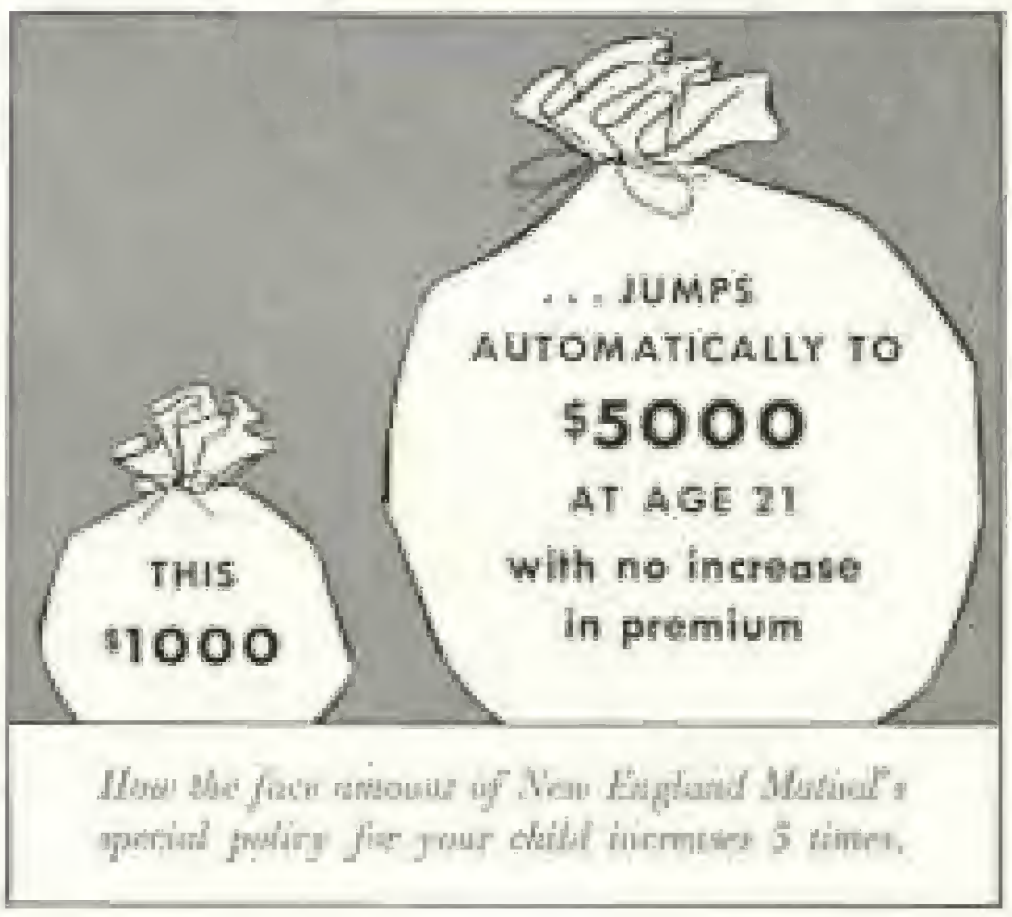

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* * * * *

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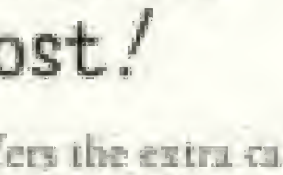

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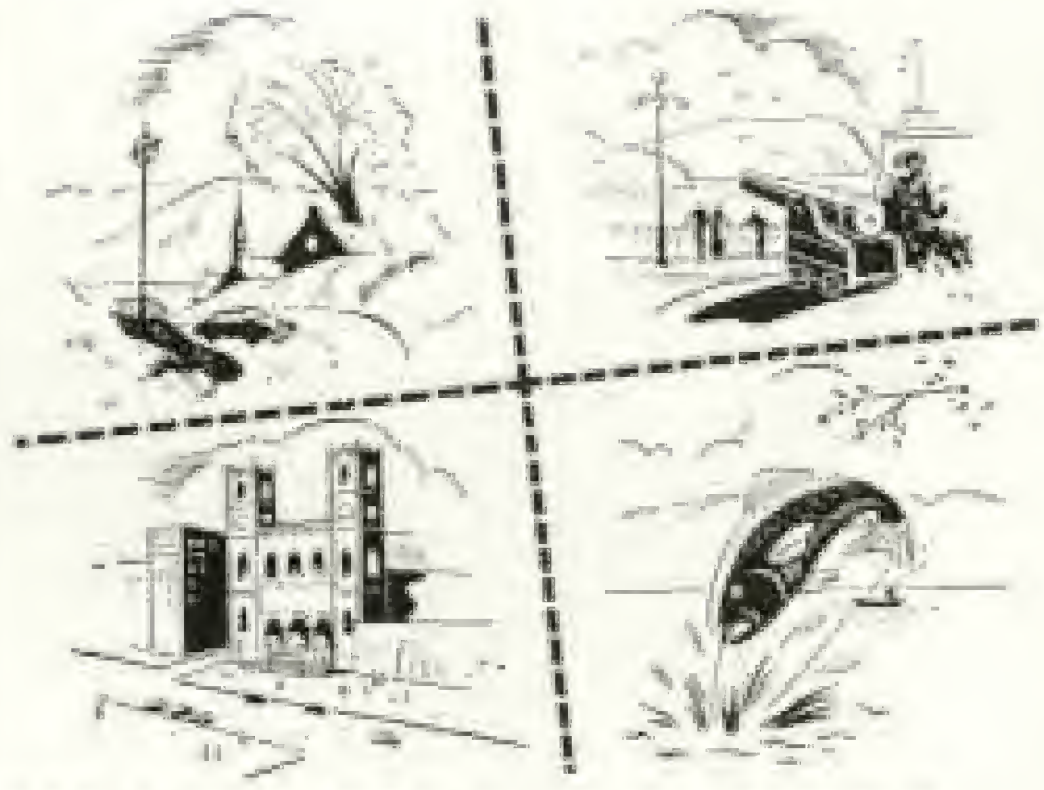

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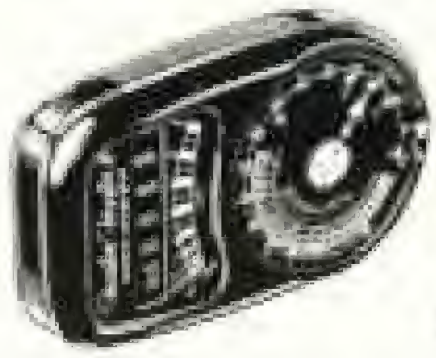

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"No, it isn't CANCER . . ."

People are beginning to realize that there is much needless worry about cancer. For example, the American Cancer Society reports that at a typical cancer clinic, where large numbers of people are examined, *only about one out of every 125 is found to have cancer.*

Thanks to medical progress, the spirit of hopelessness that once surrounded cancer has been replaced by rising optimism. This is based in part on the increased number of lives now being saved. Records of the American Cancer Society, for instance, show that skin cancer, discovered early and treated promptly and properly, is curable in 85 percent of the cases.

What developments hold great promise for the future? For one thing, there are the advances achieved in both diagnosis and treatment. Cancer of certain internal organs, for example, can now be detected by searching under the microscope for cancerous cells cast off into body fluids. This yields clues to so-called "silent cancers," or those which have not caused noticeable symptoms. It is in this stage that the disease is often curable.

One great hope of cancer research today is that drugs will be found to cure both localized and widely spread cancer. Already there are chemicals which can slow down . . . and even stop for awhile . . . the growth of some types of cancer cells. Today, however, only surgery and radiation offer hope of cure or control.

Cancer's Seven Warning Signals

1. Any sore that does not heal.
2. A lump or thickening in the breast or elsewhere.
3. Unusual bleeding or discharge.
4. Any change in a wart or mole.
5. Persistent indigestion or difficulty in swallowing.
6. Persistent hoarseness or cough.
7. Any change in normal bowel habits.

While the sweeping search of science goes on against cancer, everyone . . . especially those who are middle-aged and older . . . should take these two wise safeguards:

1. Learn the seven danger signals listed here that give early warning of the possibility of cancer. Remember, these signals are not sure signs of cancer.

2. Have periodic medical examinations. These are especially important because about 50 percent of all cancers occur in body sites that can be readily examined by the doctor.

Cancer still ranks second as a cause of death—but cancer is *not* hopeless. Even with today's weapons, we are . . . according to the American Cancer Society . . . saving the lives of 70,000 people each year from cancer.

Anne Fogarty, famous fashion designer, plans a De Soto sportswear

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VOL. CVII, No. 6 WASHINGTON JUNE, 1955

THE NATIONAL GEOGRAPHIC MAGAZINE

New England, a Modern Pilgrim's Pride

For New England Flavor, Mix Unequal Parts of Mountains and Sea, Old Schools and New Technology, Museums and Superhighways; Season with Yankee Independence

BY BEVERLEY M. BOWIE

National Geographic Magazine Staff

THE old gentleman on the bridge near Concord's battlefield poked his cane at the small boy's T-shirted ribs.

"You come from New England, son. Eh?"

Leaning farther over the rail, the boy dropped a twig onto the Concord's brown placid surface and watched it sail serenely toward a bed of weeds. "Nope," he said.

"Aren't you an American?"

Defensive, alert, the boy swung around. "Of course! Natch!"

"Then you come from New England," declared the old gentleman. "Maybe you were born out beyond the Divide or down along the Gulf. I wouldn't know. But you come from New England."

"What d'ya mean?"

"I mean we all started here. With the fight for this bridge. With that scrap on Lexington Green, up the road. With that tea party down in Boston harbor. And with the Pilgrim Fathers a long while before that. Governor Bradford, Roger Williams, John Adams, Paul Revere, Ethan Allen—they're all ancestors of yours, son. Mine, too." *

The old gentleman gave the boy a final friendly rap over the noggin with his cane and ambled off toward town. Thoughtfully the boy rubbed his head and turned to me.

"That guy," he said. "You think he was making sense?"

"Do you?" I countered.

"In a way. Yes. Yes, I reckon he was."

I wondered about it, driving back toward Boston. The U.S.A. started in a good many different places, and not all the names are New England names by a long shot. The late Dr. Douglas Southall Freeman, the noted Virginia historian, used to lament the tendency of some Yankee friends "to close the mouth of the Chesapeake Bay with Plymouth Rock."

In Old Towns a Nation's Infancy

Yet perhaps the best proof that the old gentleman of Concord was not far wrong lies in the fact that every year nearly three million Americans trek to New England (see the National Geographic Society's 10-color map of New England with descriptive notes, a supplement to this issue). Some arrive simply to hunt or fish or swim, but many more are seeking again, in green-lawned towns and weather-beaten fishing villages, communion with a common past, an old and well-loved heritage.

Do they find it? Does their image of ancestral New England correspond to its 20th-century face?

A goodly number of New Englanders, tired of having their homeland perpetually mistaken for a museum, would delight in saying

* See "Founders of New England," by Sir Evelyn Wrench, NATIONAL GEOGRAPHIC MAGAZINE, June, 1951.

↓ Fall Foliage Bowers a New Hampshire Covered Bridge

Clergymen a century ago deplored covered bridges as temptations to spoon in buggies; builders specified roofs to keep weather from wooden beams. Patent medicine manufacturers advertised on the rafters. Owners collected tolls and levied fines against speeding wagoners. This treasured specimen crosses the Pemigewasset River near the Flume in Franconia Notch State Reservation. Mount Liberty rises in the distance.

734

↑ The Cold Sea Pounds Maine's Rocky Shore

Coastal New England produced most of America's pioneer sailors, shipwrights, and fishermen. Yankee ships fashioned of Yankee timber brought home silks from China, codfish from the Grand Banks, and sperm oil from the Indian Ocean. Maine shipyards built the last cargo sailing ships to carry the Stars and Stripes abroad.

These summer visitors look seaward from Schoodic Point in Acadia National Park, most of which lies on near-by Mount Desert Island. A tall ketch and a workaday fishing boat stand in for Frenchman Bay, which Champlain explored in 1604.

➔ Page 735: Goldenrod covers a slope above Waterbury Reservoir in Vermont's Mount Mansfield State Forest. This is Green Mountain country, beloved by winter sports enthusiasts.

Re-lachromes by National Geographic Photographer B. Anthony Stewart

"No!" They would point out that New England is one of the most heavily industrialized areas in the United States; that Puritan Boston is half Roman Catholic; that in the six States exist large enclaves of French Canadians, Finns, Italians, Portuguese; and that as many signs advertise pizza pie as clam chowder. They might add that the typical Yankee adventurer is no longer a clipper captain or a farmer but an electronics engineer, and that big mill towns like Lowell and Fall River are in some ways more significant than the quaint villages around which artists and tourists swarm.

All true enough. But in 7,000 miles of motoring last summer I found to my own surprise that the outlander's image of New England holds up remarkably well. New England is still unbelievably Yankee, unique—and beautiful. Although its laboratories and universities and industries can and do provide startling glimpses of our economic future, it is still the most comprehensive picture we possess of the American past.

From Strings to Streetcars

One reason the picture is so comprehensive, of course, is that New Englanders never throw anything away, whether it's a covered bridge or an antimacassar. "Waste not, want not," as my Boston cousins say. Every proper Yankee house has an attic, and New England itself is in a sense the Nation's attic, bulging with odd and quaintly charming objects.

The objects in question don't have to be functional. I knew a lady in Vermont who kept a neat box labeled: "Pieces of string too small to use." In Branford, Connecticut, I discovered at the end of a weed-grown road an assemblage of old trolley cars. Up in Acworth, New Hampshire, I came upon a display of some 50,000 different buttons; a few hours away in Plymouth, N. H., I browsed among 6,000 models once hopefully made for U. S. patents, from the first Gatling gun to the first dish mop.

But how can anyone possibly take inventory of all that New England has to offer, whether it be proudly on display or tucked quietly into some curious corner?

Here are six States, 9,843,000 highly individual citizens living in 66,608 square miles of wonderfully varied scenery, ranging all the way from Maine's vast glacier-marked Aroostook County* (itself two-thirds as large as either New Hampshire or Vermont) to the tidy coves that notch the Connecticut shore. Here jostle uneasily a richly endowed colonial past, a bustling industrial present, and a technological future of great promise.

When I confided to Dorothy Canfield Fisher, first lady of Vermont letters, that I was going to cover New England as a whole in one article, she threw up her hands and exclaimed, "Why, up here, folks would say you were trying to cram a feather bed into a handbox!"

True. And yet it is only by seeing all of New England, in its extravagant diversity, that one can appreciate how much in common its several parts have. Certainly there are sharp differences between a quiet little harbor town like Castine, guarding the approaches to Maine's Penobscot River, and Rhode Island's congested mill city of Pawtucket; nor is it easy to equate Connecticut's suburban Fairfield County, pockmarked with swimming pools, with such Vermont hill villages as Bread Loaf, Goose Green, or Adamant. But the real test is this: when you head northeast across the New York State border, at almost any point, you know at once that you are in New England.

How do you know? If you come by automobile across the upstate line on Route 343, it may be the sight of Sharon's green-turfed common and a row of stately houses with the look of stranded clipper ships.

If you take the "steam cars" into Connecticut, it may be the sudden glimpse of Cos Cob's boat-jammed little harbor as your train rushes across the bridge. Even if you come by plane, dropping down on Boston's Logan International Airport, it'll be, as like as not, the view of men and boys on mud flats near the runway, grubbing for clams.

The unmistakable imprint of New England shows beneath all local peculiarities. Be-

* See "Aroostook County, Maine, Source of Potatoes," by Howell Walker, National Geographic Magazine, October, 1948.

Page 737

East Corinth, Vermont, Preserves the Likeness of New England's Past →

Rural New Englanders long ago abandoned hard-scrabble hilltop farms and built self-sufficient valley communities like East Corinth. A stark-white church fronts the main street. Here survives "continuous architecture"—houses attached to barns so livestock can be tended during snowy winters. Too steep for crops, outlying hills pasture dairy cattle, which outnumber humans in Vermont.

© National Geographic Society

Kodachrome by National Geographic Photographer B. Anthony Stewart

tween the proud sea captains' mansions of Wiscasset in Maine and the haughty façades of High Street in Newburyport, Massachusetts, or Hope Street in Bristol along Rhode Island's Narragansett Bay, there is kinship.

A casual visitor, supping in a tranquil preparatory-school village like Pomfret in Connecticut, and waking up in Massachusetts' Andover, might not be aware he had ever moved. Distinctive as Beacon Hill may be, there are dozens of urbane brick houses overlooking Providence that could be slipped unnoticed into this venerable sector of Boston.

Not, of course, that many Yankees will agree. Indeed, one of the things which most New Englanders have in common is their belief that they have nothing in common. Over in West Cornwall, Connecticut, I found that settlers from out-of-State, whether they hail from Canada, Florida, or Bavaria and have lived in town for one year or 20, are dismissed indiscriminately as "Vermonters."

On Martha's Vineyard I ran into a contractor who hesitated to bid on a house-remodeling job because he feared he would have to "import" labor. From where? From the town of West Tisbury, six miles away.

Such fine points are not for "foreigners" like me, unaccountably born in Virginia. As one who has merely lived intermittently among

739
Old Sturbridge Village Recaptures the Early American Scene

Sled-borne visitors jingle through history in this Massachusetts village, a living museum re-created to preserve the charm of days in the young Republic. Village Meetinghouse, one of many buildings moved here from various parts of New England, dates from 1832 (page 757).

→ Hot mulled cider and Yankee tunes spark a luncheon party at the Tavern on the Green.

National Geographic Photographer
B. Anthony Stewart

New Englanders since he was knee-high to a lobster pot, I am more struck by their similarities than by their differences. There *is* such a thing as the New England character, difficult as it may be to define.

The Paradoxical Yankee

It is, in the first place, a character built upon contradictions. The New Englander is rather proud of his reputation for wasting nothing, not even words. I remember a wayside billboard in Vermont advertising a locally ground flour. It read simply: "Costs more. Worth it." And yet I have met dozens of Yankees who could and would talk the tin ear off an iron dog.

Or take the famous New England parochialism. It's been immortalized by those two redoubtable Boston ladies, one of whom summed up her automobile trip to California by saying she had traveled "by way of Dedham," and the other who blandly corrected a visitor from Iowa, informing her that "In Boston, we pronounce it Ohio." Well and good; but you must square this insularity with the inscription I read on the statue of William Lloyd Garrison on Boston's Commonwealth Avenue: "My country is the world. My countrymen are all mankind."

Similarly with matters of convention. The "typical" Yankee is morally, economically, and sartorially strait-laced, devoted to old clubs, old hats, and old customs, and convinced that the highest praise which can be bestowed on a bank or a man or an idea is the adjective "sound." But how does this explain the rich output of New England eccentrics, from Thoreau in his cabin on Walden Pond to poetess Amy Lowell and her cigars?

What about piety? Surely, that must be

Americans Revere Plymouth Rock as the Pilgrims' Landing Stage

Tradition says the forefathers stepped from the *Mayflower's* small boat onto this glacial boulder. Not all historians agree. The Pilgrims themselves paid it no reverence, and their descendants considered the Rock an obstacle to waterfront improvement. "Rediscovered" just before the Revolution, the Rock served as a symbol to win enthusiasm for the war.

Attempts to move it broke the Rock. Souvenir hunters whittled it down considerably. Now the relic rests safely beneath a classic portico at tidewater.

The guide wears Pilgrim weekday costume in the russet brown and Lincoln green of the English countryside whence the forefathers came.

Stern Indian Suffers a Ticklish Indignity

For 50 years after the Pilgrims landed, the Wampanoag Indians and their allies restlessly honored a peace treaty negotiated with the white men by the sachem Massasoit. After the friendly chief died, his son Philip launched red men against settlers in the brutal King Philip's War of 1675.

Plimoth Plantation, a civic group, maintains beside the Rock a reproduction of the Pilgrims' first combination fort and meetinghouse. Within stands this statue in winter garb of deerskins. The armor resembles that worn by Myles Standish's formidable little Plymouth army.

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Modern Puritans Mix Homemade Soap, Not Witches' Brew, in Salem's Pioneer Village

Salem, scene of the witchcraft trials of 1692, became a foremost port of the youthful United States. Here Nathaniel Hawthorne was born, and here Roger Williams preached before he founded Rhode Island.

the very backbone of New England character. So it has been, too, but wonderfully bound up with the sinews of practicality. One of the oldest Yankee jokes says of the Pilgrim Fathers: "They fell first upon their knees, and then upon the aborigines."

Is there, then, nothing basic, nothing free from contradiction about this Yankee personality? I think there is. And you can see the symbol of it, any day in the week, atop the dome of Rhode Island's Statehouse (p. 777). It's a figure in bronze called the Independent Man.

Plymouth's First Grim Winter

There's your real New Englander—self-reliant, tough, nobody's fool and nobody's yes-man. And he's been here from the beginning. Go to Plymouth some Friday afternoon in August and see the inhabitants reenact the events of that first bitter winter in the New World (page 740). Listen again to William Bradford's words about that little band of "independent men"—and women:

"They had now no freinds to wellcome them, nor inns to entertaine or refresh their weatherbeaten bodys, no houses or much less townes to repaire too, to seeke for succoure."

You will find the same sturdy note resounding through the formation of governments by these new Americans and their descendants. Here is Ethan Allen announcing that his fellow Vermonters, setting up their own State, would "run this country in accordance with the laws of Almighty God and those of Connecticut—til we get better ones."

It was in the introduction of the town meeting, however, that New Englanders showed their particular genius for independence, coupled with responsibility. "Every tub should stand on its own bottom," these Yankees preached—and proceeded to practice. They carved up their landholdings into towns and gave each one virtually complete control over its own affairs, as determined in free and open assemblies of its qualified voters.

Thomas Jefferson called the town meetings "the wisest invention ever devised by the wit of man for the perfect exercise of self-government." Even today, 90 percent of all New England's corporate communities are still governed by such meetings.

Significantly, with this deep-rooted independence goes a roughhewn, instinctive tolerance. A neighbor can paint his barn the wrong color, believe that Bacon wrote Shakespeare, or vice versa, and root against the Boston Red Sox. Nobody will raise an eyebrow. In the time-honored phrase, "So long's he pays his taxes and keeps his fences up, he's as good as the next man."

This willingness to live and let live meets perhaps its strongest test in the Yankee's relations with his summer visitors, or, as they are known in some localities, "them summer complaints." It is not easy to escape inclusion in this suspect group. Robert Frost, the ruddy, white-thatched poet who has lived in Vermont for most of his 80 years and, to a world-wide audience, personifies its rugged virtues, told me that some of his neighbors still accuse him of being "summer people."

"They say to me, 'You turn off your water in October, don't you?' Well, I do. And turn it on again at Thanksgiving and Christmas. I spend more months of the year in Vermont than in any other State, and I own half a dozen little pieces of land up here, but 'You turn off your water in October'—that settles everything."

Latchstring's Out for "Furriners"

The quiet conflict between "natives" and "furriners" has changed a lot, though, and for the better.

When I was a boy down on Cape Cod, there used to be a sign posted near Brewster. It read: "No huntin. No fishin. No nothin."

Today, on the contrary, New England wants all the hunters and fishermen and people who just want to do "nothin" it can get.

And not purely for economic reasons, either. In fact, you'll find many a Yankee who takes a paternal interest in safeguarding visitors from their own spendthrift folly. I know of a fellow summering up at Menemsha on Martha's Vineyard who tried to buy a calking knife from old Carl Reed, then proprietor of the general store and post office. Reed looked at him suspiciously.

"Didn't I sell you a knife a year ago?"

"Matter of fact, you did."

"What'd you do with it?"

"Lost it."

"Humph. Well, I ain't sellin' you another. You'd just go and lose it. Tell you what. You can borrow mine."

One of the things that New England can offer you is the pleasure of not going anywhere in particular. Of course, if you're in a rush to get at those striped bass off Point

Judith in Rhode Island or to plunge into Maine's north woods after a deer, there are four-lane express roads that will whisk you to your destination. But if you have time, you can follow a dozen more modest byways with pleasure and profit.

Everyone has his own favorite scenic route. A good argument can be made out for the horseshoe formed by New Hampshire 16 and U. S. 2 and 3. This loop snakes north through New Hampshire's bright-blue lakes, past Chocorua and Conway, and threads its way through the notches and the misty forests girdling the Presidential Range. The craggy profile of the Old Man of the Mountains looms along it; and at Jackson, Franconia Notch, and Gilford aerial tramways stand ready to lift you up nearby peaks. You can drive your own car—or take a train—to the summit of Mount Washington (page 764).

Another brilliant tour traces the sandy hook of Cape Cod from Buzzards Bay to Provincetown. The limited-access U. S. Highway 6, cleaving the spine of this seagirt peninsula, offers sudden dazzling glimpses of beaches laced with surf, tawny marshes, and white spires thrust above tree-mantled village greens. But only by jogging along the slower coastal roads will the traveler learn anything of Sandwich's placid loveliness, Wianno's elegance, or Truro's haunting moorlike dunes.

743 National Geographic Photographer B. Anthony Stewart

Paul Revere Rides Forever Vigilant at Old North Church

The church's sawed-off steeple (beyond the flag) lost its spire when Hurricane Carol raked Boston last summer. School children saved pennies for its reconstruction, now under way. In 1775, lanterns in the belfry—"two if by sea"—sent Revere on the ride that sparked the American Revolution.

Piety and Patriotism Sustain New England's Youth on Its March to Manhood

From Indian wars to Korea, foursquare Yankee meetinghouses never failed to send forth their share of fighting Americans.

With the soldiers went their pastors, as is well known at 119-year-old Timothy Frost Methodist Episcopal Church in Thetford Center, Vermont (above). The Reverend George Lansing Fox, World War II hero, had Frost Church's pulpit before he died for his country.

With a son in uniform and a World War I decoration on his own breast, Mr. Fox was one of the four heroic chaplains who went down with the troopship *Dorchester*, torpedoed off Greenland in February, 1943. These men of different faiths gave their lifebelts to soldiers and stood praying together until the last.

← Every American schoolchild knows the "Spirit of '76" painted by Archibald M. Willard, Ohio artist and wagon decorator, and exhibited at the Philadelphia Centennial Exposition of 1876. Gen. J. H. Devereux, a railroad executive whose son posed as the drummer boy, presented the picture to Abbot Hall, Marblehead, Massachusetts.

Kodachromes by National Geographic Photographers B. Anthony Stewart (above) and Dave Littlebales

For a different kind of rural reward I would suggest a more ambitious journey—U. S. Route 7. This road takes off from Norwalk, Connecticut, on Long Island Sound, and strolls nearly due north for 300 miles to the Vermont-Canada borderline on Missisquoi Bay. In the opinion of many, it is the loveliest route of all.

At one stage it runs beside the broad shallow riffles of the Housatonic. On my last trip up it I slowed to watch a solitary fisherman, teetering on a midstream boulder, flick his line toward a trout pool. Farther up the river, where a wisp of smoke rose above a stand of spruce, I saw his wife airing a sleeping bag; his boy knelt at the water's edge tinkering with an improvised paddle wheel.

Above Cornwall Bridge the road emerges from the gentle hills and runs along past meadows studded with the gray stone outcroppings that delight landscape painters and plague New England farmers. It's picturesque, but the number of Connecticut men who earn their living from agriculture has, significantly, shrunk to some 3 percent of the State's population.

Inland Route to Berkshire Valleys

Over the line into Massachusetts the route enters the sleek valleys of the Berkshires.* In Great Barrington, Stockbridge, Lenox, and Pittsfield the big white houses sit behind wide lawns that seem to have been trimmed with electric razors. This is culture-conscious terrain. At near-by Tanglewood more than 135,000 people now flock in summer to the Berkshire Music Festival; at Jacob's Pillow, exponents of the modern dance interpret life for receptive audiences.

The long passage northward through Vermont's Green Mountains and across the fertile plateau that flanks Lake Champlain is rich in pleasant, idyllic views. The road arches over small busy streams. Cows hock-deep in clover gaze up with a look not merely content but positively smug. By late afternoon the western mountain walls glow with a soft purplish haze.

If there is one stretch more than another which remains in the motorist's mind, perhaps it is the "Pownal turn." You come suddenly upon it, riding the ridge road out of Williamstown toward Bennington, and there before you lies a conjunction of tidy hill-enfolded valleys with houses and churches set down within it like freshly painted toys. The enchantment of this view is no modern discovery. Pioneers moving into Vermont, they say, used to halt overnight here to feast their eyes on the promised land.

Route 7 continues north from Bennington, but I suggest you turn right instead on the Molly Stark Trail, head over Hogback Mountain, and cut left for Newfane. Why? So that you can have lunch at the Newfane county jail.

Lunch in Newfane's Lockup

Actually, it is the Windham County Hotel and jail, a century-old two-headed hostelry on a pleasant green, which serves paying guests at one end of the building and prisoners at the other. Food for both classes of customers is prepared in the same kitchen, and both seem to appreciate it.

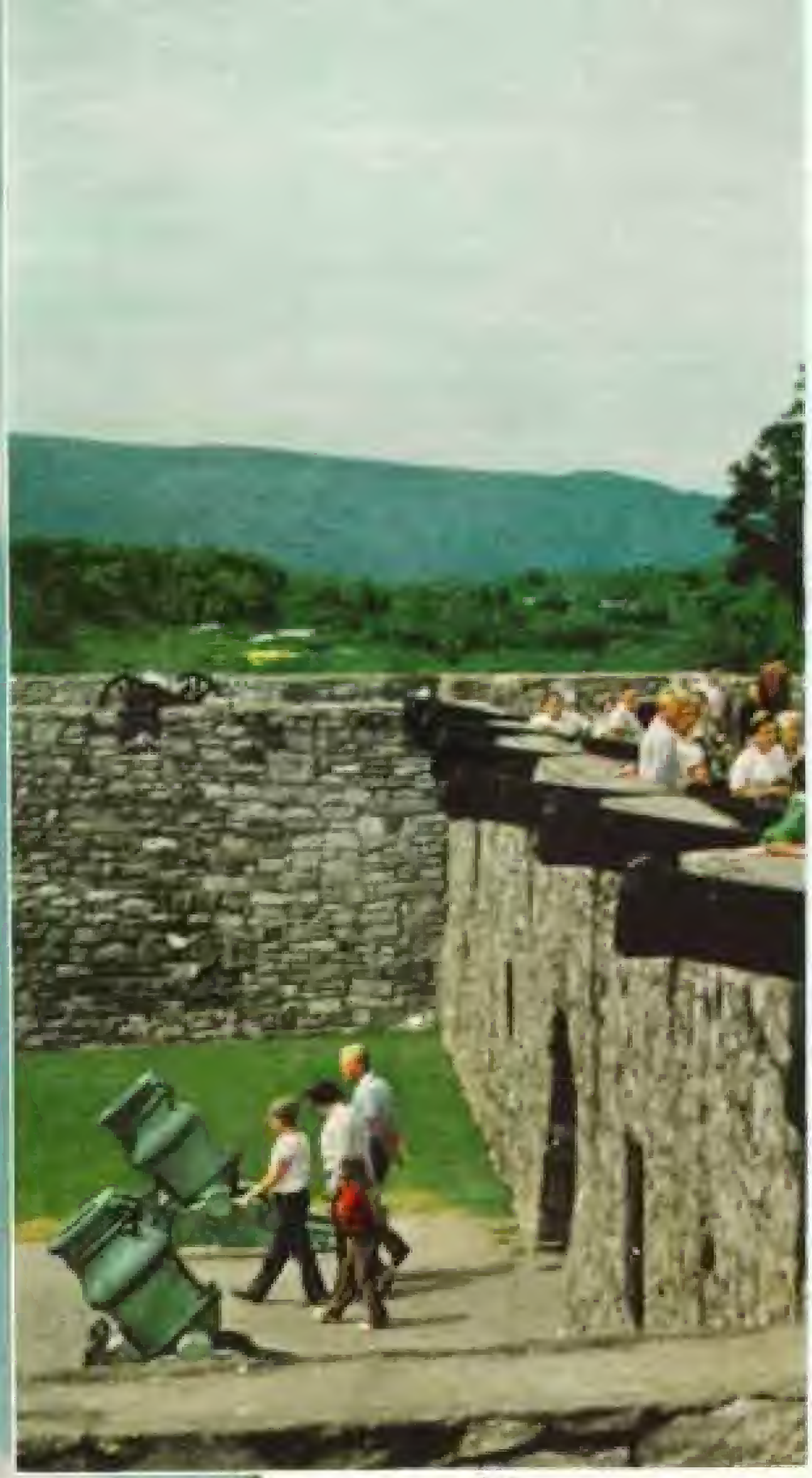
On the jail's register—which is carefully kept separate from the hotel's—you can find one signature that appears more than 80 times. Another prisoner, his sentence completed, brought his bride back to the hotel for their honeymoon.

You do not, however, have to go to jail to dine well in New England. I ate my first snails in Maine, last summer, at Severance Lodge on Kezar Lake, along with lobster Newburg on pancakes, meringue glacée, and Turkish coffee.

Anyone who thinks of Yankee food as consisting wholly of beans, brown bread, codfish cakes, and boiled potatoes should study Harold Severance's menus; or, better still, stay long enough to sample some of these items: charcoal-grilled ham with strawberry sauce; a wedge from three layers of 15-inch-wide flapjacks spread with maple butter and topped with whipped cream; a chunk from a 70-pound, three-year-old brandied Cheddar—and a spoon of Swedish *glögg* for his coffee.

Another elegant cottage colony which does well by the inner man is the Basin Harbor Club on Lake Champlain. I found my attention seriously divided, however, between the excellent food and mine host, Allen Penfield Beach. Resplendent in a magenta beret, red shirt, western clip tie, slacks, and rimless glasses, Mr. Beach regaled me with stories of the region's past. For instance, of Champlain's introducing firearms to the Iroquois by shooting three of their chiefs with his

* See "Mountains Top Off New England," by F. Barrows Colton, National Geographic Magazine, May, 1951.



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Ticonderoga's Guns: Ethan Allen Caught Them Napping

Ethan Allen's "Green Mountain Boys" took the fort by stealth in 1775. Now a museum, it stands on the New York shore of Lake Champlain.

Howe's British troops captured Bunker Hill on June 17, 1775, but at such cost that the Colonies dared continue the Revolution. This 220-foot obelisk of Quincy granite marks the battlefield in Boston.

Page 747: Oliver Wendell Holmes in 1830 saved the famous frigate *Constitution* from the shipbreakers with his ringing poem *Old Ironsides*. Undefeated in her long career, she now calls Boston Naval Shipyard her home port.

CONSTITUTION

748 Charles W. Bush

Tormented by Storm, the Sea Explodes in Fury at Winthrop, Massachusetts

Plagued by two major storms last year, New Englanders ruefully wondered if their land was "hurricane-prone." The big winds, Carol and Edna, took 81 lives and cost New England an estimated $500,000,000.

arquebus (gaining the French the enmity of a great tribe); and of Benedict Arnold's amateur navy and its exploits.

In other parts of New England you will find food and history equally inseparable. At Locke-Ober's and Durgin-Park's in Boston, at Houiss' Oyster House in Hartford, at the Old Meeting House Inn in Little Compton, Rhode Island, at Twombly's Tavern in Peterborough, New Hampshire, and at a score of others just as celebrated, you will dissect your lobsters or your frog legs in an atmosphere of inherited respect for the solid pleasures of the palate.

The inns of New England, indeed, have a quirky character all their own. I drove into Peterborough about 11 o'clock one night and decided to put up at the Tavern. Carrying my bag in to the desk in the parlor, I found myself alone. Spread out on the blotter, however, was an assortment of keys. Knowing the Twombly tradition, I chose one and retired.

"We've had only one man take a room and scoot off in the morning without paying," the proprietor informed me next day. "Sometimes, though, people just leave a check with a note saying, if it isn't enough, to drop them a line at home. One fellow paid enough to cover not only his room but a predawn snack; said he'd helped himself to some ham in the icebox."

The Wayside Inn at South Sudbury, Massachusetts, was opened to colonial travelers in 1686 as How's Tavern. Honored by Long-

(Continued on page 737)

Mystic, Connecticut, Preserves Memories of Sail's Day of Glory

➔ Sealers, whalers, and clippers once sailed for the seven seas from Mystic shipyards and wharves. Today sailormen best know the little port as home of the Marine Historical Association's maritime museum. Here in restoration lives a New England seaport of 100 years ago, complete with ropewalk and shipsmith's shop, counting house and sail loft. At the wharves lie ships of the past—the whaler *Charles W. Morgan*, the early coasting schooner *Australia*, and the full-rigged *Joseph Conrad* (visible through window).

John Muise, a shipwright before he joined the museum staff, works on a square-rigged American cargo carrier with the single topsails and long steeving jib boom common in the early 19th century.

➔ Muise restores a figurehead probably from a British merchantman built in the 1850's. Wall posters advertise a pre-Revolution spermaceti candlemaker and ship's chandler at Newport, Rhode Island.

Kodachromes by National Geographic Photographer J. Baylor Roberts

↑ **Martha's Vineyard: Crumbling Cliffs Dwarf an Angler**

Indians whose ancestors helped New England whalemen at their trade live on this Massachusetts island. A disused Coast Guard lifeboat station crowns the clay bluffs of Gay Head, which Daniel Webster once likened to a stilled Niagara.

↓ **Wickford: Russet-sailed Cowhorn Drives for Open Water**

Paule Loring, Rhode Island artist, steers for Narragansett Bay in his reproduction of an old Block Island fishing boat. Lincoln Vaughan's *Black Pearl*, a modern yacht styled after old trading brigantines, lies at her wharf.

The Colors Crackle in a Racing Breeze at Marblehead

Settled by English Channel fishermen about 1629, Marblehead became an important Massachusetts fishing town. Whittier's "Skipper Ireson," tarred and feathered by village women for abandoning a shipwrecked fishing crew, called it home port.

Today fine summer homes crowd to its rocky strand. Its famous yacht clubs annually sponsor Marblehead Race Week, one of the East's leading sailing events.

Gathered last August for the regatta's 65th year, a fleet of more than 500 sail crowded the sparkling blue water. A rakish International 210-class racer knifes toward the Corinthian Yacht Club wharf. Marblehead Neck is at left, the town on the right.

✦ Small Fry Skippers Jockey for the Start

The Camden (Maine) Yacht Club teaches its children to sail in these 9′ 8″ Turnabouts. Hurricane Carol wrecked some of the dinghies last summer, but parents restored the 20-boat fleet.

↑ A Nickel Fetches an Egg and a Cackle from a Coin Machine of Grandpa's Day

In their nonprofit museum at Shelburne, Vermont, Mr. and Mrs. J. Watson Webb have assembled Americana ranging from this 19th-century vending hen to gems of New England architecture.

↓ These windup toys fascinated children of another generation. Santa Claus and black-robed lawyer can wave their arms. A monkey never quite escapes the chef's saucepan.

Country Store at Shelburne Museum Stocks Memories of a Vanishing Way of Life

Shelves display spices, extracts, and teas in brands few modern housewives would recognize. A horse collar and oil lamp hang from the rafters. Behind the pot-bellied stove are a post office and barber shop.


ROCK
AGES
QUAR
BUC

fellow in his *Tales* and restored by Henry Ford, the inn with its paneled sitting rooms, dining nooks, taprooms, and low-eaved bedrooms is still living up to the dictum of Dr. Samuel Johnson: "There is nothing which has yet been contrived by man by which so much happiness is produced as by a good tavern or inn."

I was lucky enough to have stayed at the Wayside just after Hurricane Carol. Unscathed but cut off from power, the inn was thrown back several centuries overnight. I had strolled up before supper past the stark-white church to the gristmill with its great thundering wheel and returned in the twilight along a dusty road.

Across the hayfields I saw the inn as it must once have looked to Washington when he passed this way to take command of the Continental Army: a candle, winking softly, lit every window, and the whole many-dormered building put forth a rosy welcome.

After dinner I began to understand why our forefathers were so addicted to the philosophy of early-to-bed and early-to-rise. Candlelight does not encourage long reading. One by one the guests rubbed their eyes and —there being no Landlord or Sicilian or Musician to spin stories to us of Paul Revere and King Olaf—took their tapers and trudged upstairs to sleep.

Through its musket-hung fireplaces and old pine settles, its pewter and its brass, the Wayside Inn tells a good deal about early New England. But if you want to get your history on a larger scale, hie you to such elaborate exhibits as Old Sturbridge Village, Mystic Seaport, the Saugus ironworks, Slater Mill, or Shelburne Museum.

On my first visit, striding briskly through Old Sturbridge and resisting the temptation to stop and look, I took an hour and a quarter simply to cover the grounds. Here is a complete New England village of the year 1800 spread beside the Quinebaug River on some 200 acres, 60 miles southwest of Boston. Its 35 buildings include everything from a cider mill to an herb barn, from a spectacle shop to a printing office, and house the tools, furniture, toys, and homespun textiles that would once have been made or used there.

Venison and Cider at Old Sturbridge

I saw it in summer, when sheep nibbled on the village common, and I saw it again in midwinter, when my wife and I spent a "Yankee winter week end" at the near-by Publick House.

On scores of ski slopes to the north, from Big Bromley in Vermont to Pleasant Mountain in Maine, countless young creatures in blunt boots and parkas were happily gliding down snowy slopes on trails bearing such cheerful names as Nose Dive Run and Suicide Six. Our objective was more sedate: to savor the pleasures of a snowy countryside without getting too much of it down our necks.

Accordingly, we sipped syllabub in good company before a crackling fire, took a well-muffled sleigh ride behind two spirited Morgans through the village, dined upon venison and bear pie, pheasant, mulled cider, and sundry other delicacies, and watched Old Sturbridge artisans molding pottery, dipping candles, weaving, and making silver—a full but not fatal week end (page 738).

New England's history is tied at least as much to the mast as to the plow. For a long look at its maritime past, I don't see how you can do better than at Connecticut's Mystic Seaport. Here is a vivid, comprehensive, and authoritative re-creation of an early American port (page 749).

The focal point and showpiece of the port is the *Charles W. Morgan*. This three-masted black-hulled whaler roamed the seas for 80 years, made 37 voyages, earned its owners a good $2,000,000, and caught more whales than any ship of her class. She lies now at her last berth, but still fitted out with whaling gear to show visitors how it was done.

I went aboard her with an expert pilot at my elbow, one of several graduate students in oceanography acting as guides in return for their use of the museum's research facilities. From stem to stern we ransacked the stout old ship, studying the harpoons and spades and lances, the cooper's anvil, the blubber room, the tryworks for boiling oil,

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Vermont Quarrier Sets Out for Work 300 Feet Below

Quarrying has continued around Barre since the War of 1812, but so deep are the granite veins that the supply seems good for generations to come. To split off blocks for its nationally known memorials, Rock of Ages Corporation carefully fires blasting powder in long holes drilled along the natural rock grain (extreme left). Here helmeted visitors watch operations from a bucket like that used by workmen to descend into the quarry depths.

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Kodachrome by National Geographic Photographer
B. Anthony Stewart

the sailors' cramped quarters in the forecastle, the surgeon's tools, even the blubber pots on deck in which, on the day the whaler at last turned her bowsprit toward home, the captain's wife would fry doughnuts in whale fat.

At a special museum for children, scaled to their size and interests, I barely suppressed an impulse to mount their model bridge, twirl the wheel, and clamber up the ratlines.

Near by lies the square-rigger *Joseph Conrad*, built in Copenhagen in 1882. About the size of Captain Bligh's small *Bounty*, the sturdy ship sailed round the world with a schoolboy crew in the 1930's. Her captain, Alan Villiers, described the notable voyage in the February, 1937, National Geographic Magazine.

Shelburne's Saga of the Side-wheelers

Not all New England's ship lore springs from the sea. There is another, and very pungent, tradition that centers around the gay, lofty side-wheelers of Lake Champlain—the gold-fretted, smoke-plumed floating palaces that thrashed from Whitehall, New York, to St. Johns, in lower Quebec, along the green flank of Vermont, the joy of small boys and the admiration of their elders.

The last of them, the 220-foot *Ticonderoga*, started her final voyage this past winter. It was certainly her oddest, for it was to last months, take her two miles overland on railway trucks, and leave her high and dry at the Shelburne Museum, Shelburne, Vermont (below and opposite).

The *Ti* is certainly the largest, though not necessarily the most extraordinary, relic at Shelburne. For assembled here through the brisk genius of Mr. and Mrs. J. Watson Webb are some truly eye-opening collections, numbering more than 10,000 items (page 754).

In the 1783 Stage Coach Inn are displayed magnificent examples of American folk art, from weather vanes and figureheads to tavern signs and duck decoys. In a cavernous horseshoe barn made of 60-foot hand-hewn timbers sit carriages, surreys, broughams, delicate little sleighs, coaches lined with silk, muscle-

Brent Gould

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An Old Side-wheeler Rides the Rails on Her Last Journey

Launched in 1906, *Ticonderoga* spent her youth in gay excursions and workaday freighting on Lake Champlain. The rise of the automobile ended the paddle-boat era in the United States, but *Ti* sailed on until 1953.

←The ship was towed from the lake (far right) into this specially dredged basin, which was then walled up. Water is here being pumped in to lift the vessel onto the railway tracks at left.

→Here on wheels, with paddles removed, she rides to a dry-land home at the Shelburne Museum, two miles away.

Pulled by truck and winch, the 893-ton *Ti* moves on a specially laid track 450 feet long. After each run the track is relaid for the next leg.

powered fire engines—almost anything that good Vermont horses could pull on wheels or runners. Elsewhere are rich outlays of pewter, glass, china, silver, quilts, colonial furniture, hats, and headgear.

Children can goggle at hundreds of toy trains, boats, and hook-and-ladders, and at roomfuls of dolls and dollhouses. They can climb a full-scale lighthouse and shop in an old-fashioned country store.

An Industry Smuggled by Memory

Most Americans have been conditioned to accept old warming pans, old houses, and old boats as picturesque. Now they're being asked to gape respectfully at old textile machinery and an old ironworks.

With good reason. For at Slater Mill in Pawtucket, Rhode Island, and at Saugus, Massachusetts, occurred two brave little ventures that helped to launch the industrial revolution in the United States.

Samuel Slater, a master mechanic of Derbyshire, England, founded the cotton-spinning industry in New England by a feat of sheer memory. Because royal decrees forbade the export of English machines and English designs, Slater memorized details of the Arkwright spinning process and smuggled them out of Britain—in his head. Teaming up with three other men, he built in 1793 the colony's first water-powered textile mill, which still stands, on the bank of the Blackstone.

I rummaged through it last summer as it was being restored under the direction of young curator Daniel Tower.

"In a year or two," Tower told me, pointing to the great oak posts and beams on the second floor, "we ought to have a typical old battery of spinning machines operating here. And downstairs we'll be able to trace for you the evolution of the machines themselves, right back to a 1512 sketch from Leonardo da Vinci's notebooks. Extraordinary man, Leonardo . . ."

He was, and would doubtless have been as interested as I in New England's first colonial ironworks, restored at Saugus by the First Iron Works Association, Inc., and financed by the American iron and steel industry for more than $1,500,000.

A modern blast furnace turns out some 1,200 tons of iron a day, and little Saugus, humping itself, could achieve only one. Yet for the year 1648, in the New World, it was an industrial prodigy.

Now you can see some of the works in motion again at Saugus. Huge water wheels turn ponderously, raising the barrel-thick hammer beam and dropping the quarter-ton head once again onto the massive anvil. In a sprightly museum on the grounds, exhibits, slides, and graphic displays tell the full story of the old Saugus ironworks—how it was founded, how it operated so successfully for so many years, and how it declined and fell into ruin.

A casual visitor to most parts of New England would quickly gain the impression that history stopped around 1800 and that subsequent events are hardly respectable enough to merit recognition. Houses, as a rule, announce their age with wrought-iron numerals only if the first two digits are 1 and 7.

Not so in Newport, Rhode Island. Here is one town whose colonial youth, as gay and glamorous as any, has been completely overshadowed by its 19th- and 20th-century maturity. For on the neck of this island at the throat of Narragansett Bay there arose in the space of a few decades such a constellation of mansions and summer palaces as has never been duplicated anywhere in the United States.

This was the era when one Newport "cottager," John Jacob Astor, could remark blandly that "a man with a million dollars is as well off as if he were rich"; when 50 guests at one dinner table were given little silver pails and shovels and urged to dig in the sand-covered centerpiece for diamonds, sapphires, rubies, and emeralds; when William Fahnestock decked his orchard with artificial fruit of 14-carat gold.

Echoes of Newport's Past

I spent a nostalgic afternoon in one of the elaborate châteaux built by men like these. Weeds grew in its driveway, brambles smothered the rose garden, a class in sculpture occupied the solarium. In the oval foyer a friend of mine, who rented a room upstairs, played Austrian folk tunes on his fiddle to the accompaniment of an old piano.

As the plaintive music drifted upward, I wandered through the dusty drawing rooms until I came to one which, I realized too late, the elderly owner still used. By the massive fireplace in the deserted study was laid out a huge tea tray with cups and cakes enough for a score of guests. I tiptoed back.

(Continued on page 769)

Kodachrome by National Geographic Photographer B. Anthony Stewart

Autumn's Red Tints Signal the Hunting Season in New Hampshire

Grouse, pheasant, and deer lure hunters to the State's lake regions. Distant Mount Chocorua bears the name of a legendary Indian chief killed at its summit. Ralph G. Carpenter, 2d. (right) is State Fish and Game Director.

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Golden Hardwoods Frame Swift River, a New Hampshire Trout Stream

763 Kodachrome by National Geographic Photographer B. Anthony Stewart

Sunny Days and Crisp Nights Fire New England's Autumnal Show

A Jolly Train Puffs Up Mount Washington, Crown of New England

Canada, the Atlantic Ocean, and four States roll into view from the summit of 6,288-foot Mount Washington in New Hampshire. On this highest point of the northeastern United States lives a year-round crew of weathermen. They recorded the greatest gust of wind ever measured on earth—231 miles an hour, in April, 1934. Here scientists test jet engines in savage cold.

To transport visitors topside, a businessman built the first mountain-climbing cog railroad in the world. Here one of the road's trains makes the three-mile run. Mount Clay rises beyond the ravine.

Page 764, lower: When climbing, *Great Gulf* pushes the passenger car. The locomotive's boiler lies nose down to ride level on the slope.

Old Peppersass, now a museum piece at the base station, opened the railroad's service in 1869.

Reclamation by National Geographic
Photographer B. Anthony Stewart

Snow Falling in New Hampshire → Lures Ski Fans to North Conway

Although Europeans have used the ski for transportation since ancient times, skiing for recreation was born in Norway less than 100 years ago.

The sport took root in the eastern United States in the late 1920's. New England's first ski train left Boston for New Hampshire in 1931. The phenomenal "snow winter" of 1933–34 spawned throngs of recruits, whose enthusiasm infected thousands in the following winters.

Ski resorts mushroomed to feed and bed the multitudes who turned out from the cities for week ends on snowy slopes. European ski instructors arrived. Lifts of all varieties were constructed to hoist sportsmen to the mountaintops. Last winter New Hampshire alone had lifts capable of hauling 50,000 skiers an hour.

These happy addicts, who proudly call themselves "ski bums," boarded the special train at Boston before dawn. They come dressed for action, their luggage skis and poles. The hay-filled, horse-drawn pung, which will deliver them to ski slopes near North Conway, rides on rubber tires and runners.

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← Bunks Call After a Day of Racing on Snow

New England ski resorts range from luxury hotels (massive fireplaces, Great Danes, Austrian waiters, $60 a day) to dormitories (no heat, bunk beds, family-style meals, $1 a night). One winter Woodstock, Vermont, lodged skiers overnight in its jail.

These girls choose dormitory-style lodgings for a week end at Jackson, New Hampshire.

"If You Can Walk, → You Can Ski," They Say

Page 767: Arthur Doucette, a professional on Black Mountain, New Hampshire, shows a beginners' class how to make a turn on skis. Mount Washington's snowy cap reflects the sun's floodlight.

Kodachromes by National Geographic Photographer Robert F. Sisson

"Your host must be expecting visitors," I said. "Will our music disturb him?"

My friend removed his bow from the strings and glanced at me in surprise. "Visitors? Oh, you mean the tray. The tray is laid there every afternoon. But it is a little sad; no one ever comes."

People do still come back to Newport, however. Though quite a few of the enormous houses have been boarded up or converted to institutional use under the impact of taxes, enough remain in merry hands to make the stroll along the three-mile Cliff Walk and the auto tour on Ocean Drive a unique experience. If nothing remained, in fact, but the Vanderbilts' 70-room cottage, "The Breakers," it would be worth the trip (page 795).

Twin citadels of Newport society have long been the Casino and Bailey's Beach. A shallow crescent of cabanas grouped around a central lounge, the Spouting Rock Beach Association (as Bailey's is officially termed) has perhaps the most exclusive membership and the least impressive swimming of any socially minded club in the United States. The surf is excellent, but the beach is gray, and the water is often dense with seaweed.

Not many members braved the seaweed the afternoon I chanced to swim there, but the lifeguards paced the shore anxiously all the same, peering out to sea.

"Theoretically, no one is supposed to swim out beyond the raft," one of them explained to me. "But a lot of the old bucks forget they aren't still 21. They just plunge in and paddle out till we can hardly see 'em. Makes a fellow nervous."

I thought back to the late Herman Oelrichs, who used to march down into the water at Bailey's with an inflated mattress; a watertight lunch pail, flask, and novel, and float serenely for hours.

There were other picturesque bathers at Bailey's. Mrs. O. H. P. Belmont took to the water bearing a green parasol; Mr. James Van Alen, Sr., sported a straw hat and a monocle.

Ashore, Bailey's accommodations are informal; its cafeteria, however, where members walk up the line bearing plastic trays, must surely be one of the few in this country that serve potage parisienne, filet mignon, and galantine of capon for lunch.

The most invigorating shots-in-the-arm for old Newport have come from its other venerable institution, the Casino, whose president is enterprising "Jimmy" Van Alen. Himself a tennis player and composer, Van Alen has put fresh life into Newport's annual tennis tournament and helped encourage two music festivals, one jazz, one classical.

Festivals Offer Bach and Blues

The Newport Lawn Tennis Tournament goes back to 1881, when the first national championship was played. But it had begun to slip in popularity, and voices were raised urging sale of the Casino and its courts. Aroused, Van Alen in 1951 shifted the sacred boxes and marquees to give the $2 ticket fans a better view of the matches, arranged congenial entertainment for the competitors, and has been rewarded with such rousing contests that the tournament's future seems assured.

As for the festivals, they had Newport jammed with thousands of visitors. From one jamboree to the other, there was a radical shift of musical diet, "Muskrat Ramble" being succeeded by the austere "Concertino in Classic Style." But the gray-shingled eaves of the Casino shook with applause equally enthusiastic, equally auspicious for similar concerts in summers to come.

Newport had hardly ceased vibrating when the hurricanes of 1954 ripped into New England. Shingles fluttered like playing cards from the Casino roof; the waves rushed without so much as an introduction into the most patrician cabanas at Bailey's. All along the coast, boats took leave of their moorings and sailed inland, grounding calmly on lawns that had never known a drop of salt.

The day before Carol blew in, I attended a clambake at Point Judith, Rhode Island, for contestants in the grand U. S. Atlantic Tuna Tournament. We sat on benches in the warm sunshine and sipped our chowder, congratulating ourselves on the weather. By next morning almost a quarter of the tuna fleet's power cruisers lay sunk at their docks.

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← Skiers Thread a Lacy Wonderworld on Spruce Peak near Stowe, Vermont

Developers of Spruce Peak carved Sterling Run ski slope from virgin forest. Skiers drop 1,700 feet on the two-mile corkscrew, described as easy for beginners, interesting for experts. At the run's end a new double-chair lift waits to whisk the skiers back to the mountaintop in 12 minutes.

In the days that followed I toured widely through the stricken areas. Suffering there was, with 60 lives lost and property damage running about $450,000,000. But no one could fail to note among New Englanders an odd sense of exhilaration. Even as they hacked at the fallen trees, strung up the sprawling power lines, and shoveled the muck from the cellars, they spoke of the weather with a rueful but definite pride (page 748).

"Fair to middling blow, that was. Kind of storm a man can get his teeth into. That fellow Mark Twain—what was it he said about our weather? 'There is only one thing certain about it: you are certain there is going to be plenty of it.' Well, this was plenty."

Even in solid metropolitan Boston, a bastion of brick, the hurricane had made itself felt. Trees were crisscrossed down all along Beacon Street and Commonwealth Avenue, the Common was a tangle of branches, and the steeple of Paul Revere's Old North Church had toppled into the little square below (page 743).

But Bostonians took it in stride. After all, they had been through far worse disasters. The Puritan prelate, Cotton Mather, early observed that "Never was any town under the cope of Heaven more liable to be laid in ashes, either through the carelessness or the wickedness of them that sleep in it." Since Bostonians are not notoriously wicked, they must have been somewhat careless. At any rate, five great fires have seared the city since its founding in 1630.

From the beginning Boston has been a town not so much loved as revered, a kind of urban personification of rectitude. John Adams put it quite plainly:

"The morals of our people," he said, "are much better; their manners are more polite and agreeable; they are purer English; our language is better, our taste is better, our persons are handsomer; our spirit is greater, our laws are wiser, our religion is superior, our education is better."

Bostonians of subsequent generations would not be so blunt. Their feelings would perhaps be more neatly expressed by the lady who was asked if she liked Boston. "Like it?" she replied in a puzzled tone. "I never thought of it that way. Liking Boston is like saluting the flag."

The Flavor of Boston

This Boston which its citizens so readily salute, what is it? A great port, of course. A complex of industries serving New England and the area's own 2,370,000 inhabitants. A center for scientific research, medical training, education in the liberal arts (page 772).

All these. But also a composite of more intimate things. Boston is Friday afternoons at the Symphony, iron foot scrapers and purple windows on Beacon Hill, aging bellhops in soft-carpeted old hotels, swan boats sedately cruising the pale waters of the Public Garden, ladies in country tweeds and sensible shoes browsing among the English tea biscuits and chutney jars at S. S. Pierce's, the gold of the Statehouse dome as seen across the sail-flecked tidal basin of the Charles.

A gull-haunted city, Boston. An onshore breeze wet from the sea brings the graceful birds wheeling over the rooftops, alighting on the Common, crying hoarsely above the noise of the traffic. The tall, blue-eyed men striding the crowded streets of the financial center look up and sniff the wind and think of boats at Marblehead and Duxbury and Wiamo, and turn through revolving doors into an alien world of steel and glass.

A book-haunted city, too. Sometimes Boston bans the books; far more often it publishes and nurtures them; but whether banning or buying, it pays tribute to their power. One visible symbol of this respect is the Boston Athenæum, a private library.

Few organizations in the world possess a more distinguished and select membership than this serene old institution at 10½ Beacon Street. The plaque in its lobby makes gently clear its function: "Here remains a retreat for those who would enjoy the humanity of books."

And a retreat it is. A monastic silence

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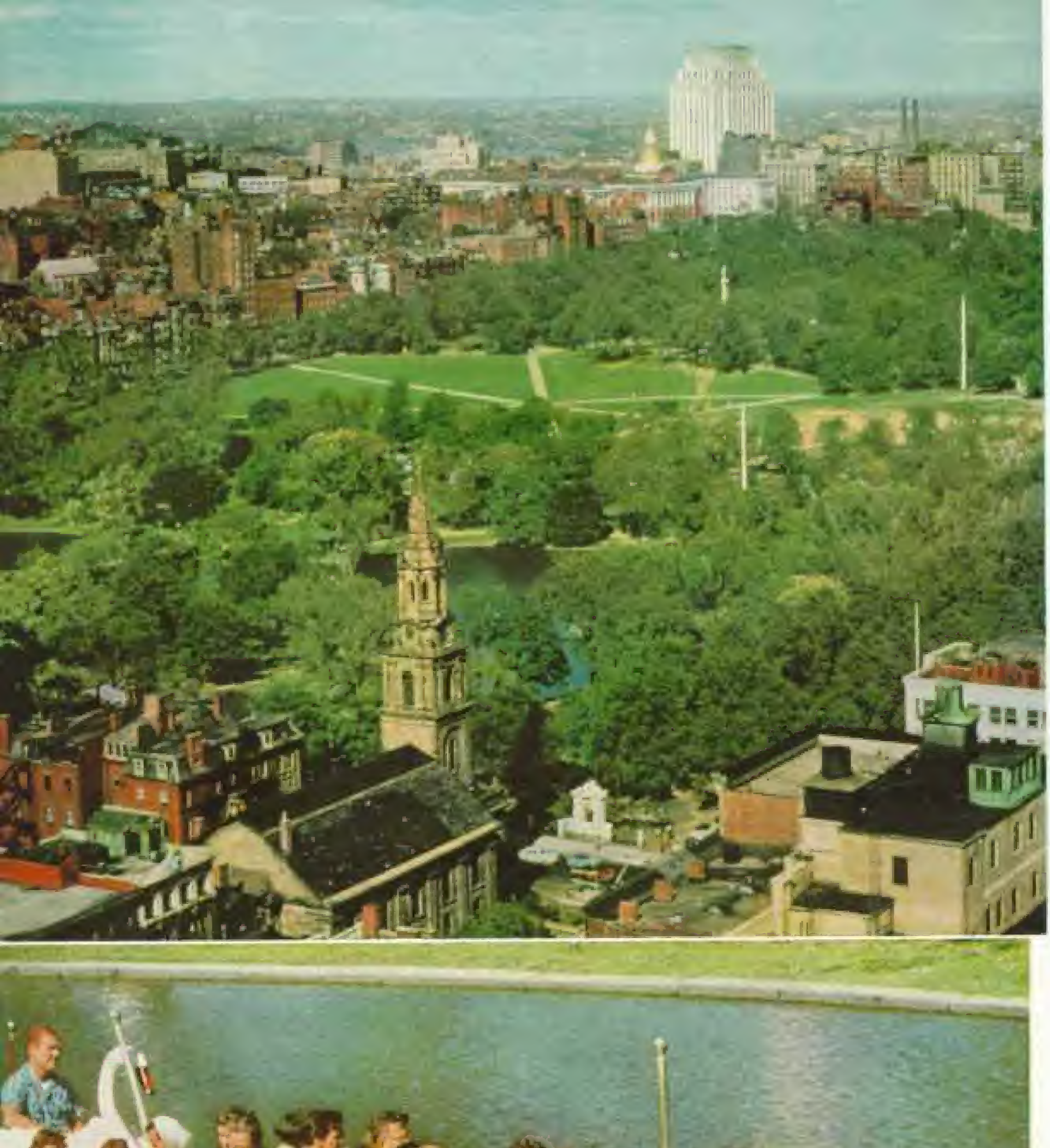
← **World's First Atom-powered Vessel: Flags Drape *Nautilus* at Launching**

As large as many a destroyer, U.S.S. *Nautilus* runs on a tiny amount of uranium 235. The "impossible engine," as the atomic power plant was first called, will permit the ship to cruise submerged around the world without resurfacing or refueling. *Nautilus* has a higher sustained speed than any other submarine except its fictional namesake, Captain Nemo's craft in *Twenty Thousand Leagues Under the Sea*.

Here at Groton, Connecticut, photographers train cameras on Mrs. Dwight D. Eisenhower, the ship's sponsor. Standing beside the First Lady is John Jay Hopkins, president of General Dynamics Corporation, whose Electric Boat Division built *Nautilus*.



← Boston Spreads Out from the Hub of Its Historic Common

More than 300 years ago Boston bought the 48-acre Common for $150 and set it to use as a pasture. Home-trekking bovines carved out many of the town's streets. Later the greensward served for executions, then as drill field for British and Revolutionary troops alike.

Today an oasis amid concrete and steel, the park harbors picnickers and pigeons, organizers and orators, loafers and lovers. Here the golden Statehouse dome gleams near the hulking Suffolk County Courthouse. Customs House tower breaks the skyline on the right.

Page 772, lower: A swan boat propelled by pedals tours the pond in the Public Garden adjoining the Common.

↓ Gardens of the World Supply Spice and Herb to Cheney's Drug Shop

To fill a cough syrup order, botanist Cyril Wetherall grinds a cylinder of dragon's blood, resin from the fruit of an East Indian palm. His Boston firm handles frankincense from India and myrrh from Africa, among other exotic products.

Windows look out on the Customs House (left) and historic Faneuil Hall.

grips its lofty rooms; scholars ensconced by windows giving onto the Granary Burying Ground seem scarcely more animate than the marble busts in near-by niches. When I sneezed there, setting the wild echoes flying, I felt as if I had dropped 10 ash cans in a cloister. Conviviality at the Athenaeum breaks out only with tea at 4 o'clock.

Not far from the Athenaeum stands the Old Corner Bookstore. I can never pass it now without thinking of the story Robert Frost told me as we were driving through the Vermont rain one night. He had been only 17, he said, a bobbin-cart pusher in the textile mills at Lawrence, when he rode to Boston on the train. Stopping at the Old Corner, he picked up a copy of Francis Thompson's *The Hound of Heaven*.

From the first onrushing line—"I fled Him, down the nights and down the days"—young Frost was caught, bemused. In his pockets he had only enough money for his return ticket. He pulled it out, paid for the book—and walked the 25 miles back to Lawrence, reading it over and over.

"If I could meet that poem again for the first time, I'd walk the same miles and find them easy underfoot," said Frost.

Central Artery to Keep Traffic Flowing

"A pedestrian," wrote David McCord, an adopted Bostonian, "is a man in danger of his life; a walker is a man in possession of his soul." There are plenty of pedestrians in Boston, but an uncommon lot of walkers, too. Men who could command a dozen Cadillacs prefer, even at 70 and 80, to stride briskly down the city's leafy avenues and tortuous side streets to their offices, and you will find their wives sailing across the Common on any afternoon as purposefully as the figurehead on a clipper ship.

The motorist in central Boston, on the other hand, has always led a life of horn-tooting frustration, condemned to a maze of alleys and tar-paved cowpaths never designed for the age of the auto. Some relief came to him with the building of the Storrow Memorial Drive. More will come with the partial completion of the John F. Fitzgerald Expressway, the Central Artery.

This massive $110,000,000 elevated highway has already linked Chelsea and Charlestown with intown Boston, cleaving a broad route through the North End's congested warehouse and market sectors. A branch connects with Logan International Airport through Sumner Tunnel. Plans call for the highway to tunnel past South Station, vault the freight yards, and tie in with a new expressway leading south.

Greater Boston contains six times as many people as the whole State of Vermont. So far as that goes, there are more cows than people in Vermont anyhow—which doesn't worry the Vermonters. Many of them prefer cows.

Some of the folks in the hinterland, of course, profess surprise that the cows have prospered as well as they have, considering the number of hunters that come up from the city in the fall. Those, however, who do not bag Holsteins or each other have a fair crack at some of the best game in the United States, from ruffed grouse and duck to deer and bear.

Thriving Deer and Airborne Trout

"There are probably 10 times as many deer in the State of Maine today as when the first settlers came," L. L. Bean, proprietor of the famous sporting goods store in Freeport, told me. "More cleared land, I guess, that's going back to brush again. Fifteen years ago our annual deer kill was only about 22,000. In 1954 it was around 37,000.

"Who's pulling the triggers? Well, it sure used to be a stag affair, in more ways than one. In the old days, if a woman had come in here and bought a fly rod, I'd have fallen over. If she'd asked for a pair of hunting boots, I'd have died. Not any more. We've already opened a woman's department in the store, and next year we're enlarging it."

I flew over some of New England's best hunting and fishing territory in late September with pilot warden George Townsend. Taking off from Rangeley Lake in Townsend's light floatplane, we chased deer along the south branch of the Dead River, skimmed over a clearing where bears had trampled the oats, and droned past the 29 square miles filled in 1950 to make Flagstaff Lake. In one cove a barn still sat inundated almost to the eaves.

As far as I could see, from Mooselookmeguntic northeast toward 35-mile-long Moosehead Lake, the autumnal woods spread out in a vast canvas, tufted with flaming maples and dark spruce. Beaver lodges threw gray shadows across streams high up on the ridges; moose trails scored the low-lying bogs.

↑ Fiery Rings at an Atom Show Swing Around a Glowing Nucleus

Boston's Museum of Science enchants youngsters with an invitation to roam at will, push buttons, touch anything. This model shows the composition of an atom. Red bands represent electrons revolving about protons and neutrons (blue and greenish lights). The demonstration comes to a climax with a blinding flash and deafening crash, simulating a nuclear explosion.

↓ Bobbing Beach Ball Proves That a Wave Does Not Move Much Water

Instructor Peter S. Eagleson, in the Hydrodynamics Laboratory of the Massachusetts Institute of Technology, illustrates that a wave is a disturbance in water rather than a displacement. The ball rises and falls but does not follow the wave. Three feet deep and 100 feet long, the glass channel facilitates a study of beach erosion.

We circled Pierce Pond, set the Piper down in a brief flurry of spray, and taxied over past Perry's Camp to a beach where three other Air Warden Service planes were moored. A tank truck had pulled out of the woods, and the wardens, in blue dark-striped pants, scarlet Mackinaws, and ski caps, were ladling buckets of fingerlings from the truck to some tanks rigged in their planes.

We loaded up and took off.

"Good day for stocking," George declared. "You go up on a rough day, with lots of bumps and air pockets, and the first thing you know the fish all get airsick; then you hit a downdraft and half the tank sloshes down the back of your neck."

Over the Kennebago River's Long Pond we went into a shallow glide. Despite its name, the pond was too short to land on; we came in at about 50 feet, and I reached back and pulled the plug. Swirling out of the tank and down through an elbow length of stovepipe went 3,000 fish in a fine mist. Half a dozen caught in a crack didn't make the exit till we were over the woods again.

"They'll just have to walk back," said George.

Fish Rain on Maine Lakes

For hours we ferried the fish from the State hatchery's truck to their new homes in the scores of lakes that dot this north woods area of Maine. By 3 o'clock some 48,000 (including many 6- to 8-inch mature trout) had begun life anew, and we felt justified in trying to hook some of their elder cousins.

Flying back to Rangeley, we drove up to a little-frequented stretch of the Kennebago River. A brawling, deafening stream walled in by grave, silvery spruce and slim birch trees, it contained plenty of pools, well known to George, from which salmon rose with a rush to our lures and trout, less demonstrative, struck and dug in with a quick tautening of the line.

We fished that day and the next. Sportsmen I had met that summer had complained that New England's fish were becoming too well educated. Fortunately, however, I was in the company of a professor who knew most of the students' puerile tricks.

When I drove from Rangeley to Cambridge, the first apprehensive Harvard freshmen were unpacking trunks. So were several thousand similar youths in New England's 600 other colleges, universities, and preparatory schools. Harvard is older and richer than any of her sister academies, larger than most,

but perhaps typical of them all. For, as her song proclaims, she was and is a

> ... relic and type of our ancestors' worth,
> That has long kept their memory warm,
> First flow'r of their wilderness!
> Star of their night!
> Calm rising thro' change and thro' storm.

Not that our ancestors always appreciated her, you understand. Ben Franklin remarked testily that at Harvard young men learned hardly more than to "enter a Room genteely"

For "God's Merciful Providence" to a Refugee, the Capital of Rhode Island Was Named

The Independent Man, a bronze figure atop the marble-domed capitol, represents the spirit of freedom which led Roger Williams to found Providence in 1636 as "a shelter for persons distressed for conscience."

and that they emerged "after Abundance of Trouble and Charge, as great Blockheads as ever." And Edward Holyoke, who presided over the young and obstreperous scholars between 1737 and 1769, declared that "If any man wishes to be humbled and mortified, let him become president of Harvard College."

Modern Harvard, looking back on her beginnings in a cow pasture near the Charles in 1636, may be hard pressed to see any resemblance. The seven gentlemen who make up the Corporation, oldest of its kind in the United States, preside over more than 10,000 students, some 5,000 teachers and

fellows (among them, six Nobel Prize winners), a $350,000,000 endowment, 170 buildings, nine distinct faculties, and libraries holding nearly 6,000,000 volumes—the largest stock of any university in the United States and perhaps the world.

An even greater change, perhaps, has been Harvard's virtual marriage to near-by Radcliffe College. Before World War II, Harvard professors supplemented their incomes and experience by teaching duplicate courses to Radcliffe girls. Now Harvard's own classrooms are open to Radcliffe, and buttons and bows are seen in the once sacred precincts of the daily *Harvard Crimson*.

Through all this multiplication of brick and shift in clientele, Harvard has remained true to her tradition of stubborn intellectuality. She puts more than 400 men on her football fields in 11 uniformed teams each fall, and her varsity won the Big Three championship last year. But you will probably learn more about her character by examining a certain rounded stone corner of Cloverly Hall on Mt. Auburn Street.

On this impromptu billboard Harvard students have been accustomed to chalk inscriptions. Not an exhortation to "Beat Yale!" Instead, such declarations as "Heloise loves Abelard" or "Henry Tudor is insatiable!" At first, these statements appeared in English. Then one night the stern decree was lettered upon the wall: *Non hoc muro linguam vernaculam scribere licet* ("No writing on this wall in the vernacular tongue"). Henceforth the manifestoes appeared in Hebrew, Chinese, Greek, Gaelic, German, and Latin.

An old American joke is the adage that "You can always tell a Harvard man, but you can't tell him much." Neither part of this statement happens to be correct. The more significant fact is that the best quips about Harvard have invariably been coined by Harvard men themselves.

It was former President Abbott Lawrence Lowell who observed that "It is no wonder Harvard is such a great institution: the freshmen bring so much knowledge with them when they arrive, and the seniors take so little away." And it was a Harvard professor, badgered into defining his role, who growled: "Sir, I take it to be the casting of artificial pearls before genuine swine!"

Harvard can afford such genial self-depreciation, for there is not really much doubt in her mind or in the world's that she has consistently lived up to the purposes of her founders—namely, "to advance *Learning* and perpetuate it to Posterity."

Harvard's Broad Objectives

Her new 48-year-old president, Nathan Marsh Pusey, a calm, firm, deeply religious scholar and administrator, has broadened those objectives. "It is our task," he said, "not to produce 'safe' men, in whom our safety can never in any case lie, but to keep alive in young people the courage to dare to seek the truth, to be free: to establish in them a compelling desire to live greatly and magnanimously, and to give them the knowledge and awareness, the faith and the trained facility to get on with the job."

The job that New England herself is now trying to do on her own economy has called upon a good measure of that courage, faith, and trained facility. For to many an outlander it has become axiomatic for years that "New England is through." The impression has been created that every textile mill in the area has either fallen into ruins or bundled its machinery and executives onto flatcars and fled to the South.

It didn't look that way to me when I cruised by helicopter over Hartford, U. S. insurance capital, and the busy towns that dot the neat adjacent countryside. We took off from the "heliport" in front of Pratt & Whitney Aircraft's jet-engine plant, peered down on its more than 4,000,000 square feet of machine shops, laboratories, furnaces, design rooms, and test stands, hovered at treetop level over Hamilton Standard's vast new supersonic propeller factory at Windsor Locks, and cruised along the factory-lined Connecticut, with the blue onion dome of Colt's Manufacturing Company glinting upriver.

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← A Rainbow Globe Envelops Visitors in Christian Science Publishing House

The Mappamundi, world's largest global map, symbolizes the international activity of the Boston-born Church of Christ, Scientist. The publishing house in Back Bay annually sends to more than 40 countries some 80 million pieces of literature, including the *Christian Science Monitor*.

To make this sphere, 608 panels of colored glass were set in a bronze frame 95 feet in circumference. Bronze clocks along the Equator tell time all over the world. Boundaries are those of 20 years ago.

↑ Crowds Packing Train, Boats, and Shore Cheer Harvard and Yale Crews

The first Harvard-Yale Regatta in 1852 inaugurated United States intercollegiate competition.

Here in last year's four-mile row on the Thames River, New London, Connecticut, the Yale crew pulls away from the Harvard shell as it shoots for the square target on the railroad bridge. Flag marks finish line. Straining oarsmen end the race amid a spasm of whistles, cowbells, sirens, and fireworks.

A trainload of fans that followed the crews along the shore sees the finish from the bridge.

← Stuffed Heron, Decked in a Tie, Eyes *Harvard Lampoon* Editors at Work

Oldest existing American college humor magazine, the *Lampoon* was born in January, 1876, when three students invited friends to their rooms to "start a College *Punch*." Those invited thought a party was in prospect and happily showed up.

With few exceptions, the magazine has come out every month since, despite fractured deadlines and a parade of staff pranks such as stealing the "sacred cod" from the Massachusetts Statehouse.

Turning the tables on Lampooners a few years ago, *Harvard Crimson* staff members tickled the *Lampoon*'s copper this from atop its building and presented it to an incoming foreign ambassador.

Through the years *Lampoon* has provided a showcase for such Harvard students as M. D. Follansbee, '92, who wrote:

I like to quote the fragrant lines of Keats,
And often I am caught by Shelley's tone,
And yet for clever thoughts and quaint conceits
Give me some little lyric of my own.

Among *Lampoon* editors whose later writings have brought fame are George Santayana, John P. Marquand, Robert E. Sherwood, and Robert Benchley.

Here in the Great Hall of the Lampoon Building, President Peter H. C. Williams reads before an Elizabethan mantelpiece. Other artistic bits include a Dutch musical clock with pagodalike roof, a collection of brass plates, and a stuffed eagle.

"Incredible clutter," one former editor said.

Kodachromes by National Geographic Photographers Robert F. Sisson (above) and B. Anthony Stewart

Still a bit groggy from all I had seen, I chatted a moment with Paul Fisher of United Aircraft Corporation (which controls both Pratt & Whitney and Hamilton Standard). He waved a hand toward the acres of squat humming buildings behind us.

"I can take you through the assembly line," he said. "But you must understand this: we figure the minute we have a production engine, it's technically obsolescent. Improved ones are behind it on the drawing boards."

It didn't sound much like "stagnant New England."

"Growth" Industries Boost New England

I assumed, however, that a better acquaintance with the whole economic picture would re-establish my gloom. "Not by a long shot," said young George Ellis of the Federal Reserve Bank of Boston, who, with Arthur Bright, Jr., has directed the research and editing of the National Planning Association's monumental study, *The Economic State of New England*.

"Certainly, we've lost jobs—110,000 in textiles alone in the last four years. But we've picked up many more in the new 'growth' industries, such as electronics and the metalworking field, and in service occupations. Our New England economy is no weaker and no stronger than the national economy as a whole. The only reason it doesn't look as if we're 'progressing' as rapidly as some other sectors of the country is that we were already thoroughly industrialized as early as 1910. But go see Bill Sullivan. Maybe he'll give you a different slant on our problem child, textiles."

He did. A spokesman for the National Association of Cotton Manufacturers, Sullivan turned out to be a rock-jawed, crew-cut young Harvard graduate with a scholar's spectacles and a fullback's build.

"The mills that are left in New England have really put money back into their plants."

Wide World

Muscles Bulge ➔ at a Yankee Firemen's Contest

Page 783: Last August the 58th Annual Muster of the New England States Veteran Firemen's League convened at East Greenwich, Rhode Island. Using equipment long retired from active service, 16 teams vied to see which could pump the longest stream of water.

Lower: Volunteers of Eagle No. 3 Engine, Merrimac, Massachusetts, strain at the "handrub." Half the men bear down on the long pump handle in foreground; the other half (against the fence) pull up. Engine rests on a macadam-covered reservoir. One teammate anchors a wheel.

Upper: "Pipe" holders from Hancock Engine, Ashburnham, Massachusetts, shoot for measuring. Rules allow 15 minutes for a team to get set up, pump pressure, and fire. Champion team sent a spray 235 feet.

➔ Kitty takes the pole in slide at a Boston firehouse.


Marblehead

he said. "Over $200,000,000 since the war in modernizing. With the kind of competition we have, the inefficient mills have gone to the wall. Cotton and rayon mills provide about 60,000 jobs and all textiles about 170,000 jobs for New Englanders. It is an important industry, and we plan to keep it in New England."

But what had happened, I wondered, to New England towns where the mills had already gone under? For an answer I went to John Griefen, deputy commissioner of Massachusetts' Department of Commerce.

How One Town Fought Back

"Well, I could tell you about the remarkable recoveries staged by towns like Manchester, Nashua, and Keene in New Hampshire. But I know our own North Dighton story better.

"At the tail end of 1952, the Mt. Hope Finishing Company's plant in North Dighton threw in the towel—800 people out of work. It could have been the start of a new ghost town, I guess. But it wasn't. In the last two years four major companies have moved in to take over Mt. Hope's site—a big machine shop, a manufacturer of aircraft 'skins,' an electronics firm, and an aluminum fabricating plant. Instead of 800 jobs at North Dighton, all in one company, we will have more than 3,000, spread over well-diversified industries. Not bad."

Griefen's colleague, Bob Scott, laughed. "The people who sell New England short say we have only two natural resources up here: fish and brains. I'm not so sure about the fish, but I know they're underestimating the brains."

Matter of fact, New England has found a way of applying one to the other: to crack open a new market for seafood, her scientists have introduced fishsticks. These precooked, frozen slivers of fish need only to be sizzled in butter and served. So popular have they become, almost overnight, that Gloucester has had a small boom, with 350 jobs added.

Here are a few samples of ideas at work in New England. A young man named Wayne O. Stevens arrives in Buckfield, Maine, in 1945, his capital one tool kit, his means of conveying it, a toboggan. He borrows money, buys a run-down factory, stumbles on the notion of making bows and arrows modeled on the weapons of comic-strip characters like Prince Valiant and Little Beaver. Last year he sells his millionth bow-and-arrow set and buys a Jaguar to replace the toboggan.

Over in the village of Riverton, Connecticut, another young man parlays a different idea into a thriving business. John F. Kenney leaves his shoe firm in West Hartford one day in 1946 to fish the west branch of the Farmington River. Working his way upstream to Riverton, he comes to a ramshackle brick factory. Since the trout aren't biting, he investigates the mill, finds it was where Lambert Hitchcock originated the famous Hitchcock chair in the early 1800's.

A wonderful old chair, he muses. Why shouldn't it be built here again?

Kenney goes back to Hartford, returns with his friend, Dick Coombs. "For two years," he says, "we had no heat, no lights, no running water, and not much money! We began falling through the old floors so often we had to replace 'em."

By late 1948, after ferreting out authentic Hitchcock models, securing patent rights to Lambert's well-known stenciled signature, devising new tools, and restoring the factory, Kenney and his partner were ready to ship out their first few products.

So lovingly made are these chairs, their gold, green, and yellow stenciling soft against the gleaming black hardwood, that orders flock in. Now Kenney is turning out slightly more each year than Lambert Hitchcock used to in his heyday—some 15,000—and is heading toward a million-dollar annual output.

A New Animal for Vermont?

On a farm below Camels Hump mountain, near Huntington Center, Vermont, another New Englander is trying out an idea, perhaps the strangest of all. With the encouragement of Arctic explorer Vilhjalmur Stefansson, John Teal and the Institute of Northern Agricultural Research are attempting the domestication of a new species of wild animal for agricultural use. Teal has brought down from Canada's Northwest Territories three musk-ox calves, two females and a bull.

I saw them penned in his pasture behind heavy fencing. They munched willow leaves, lapped up condensed milk, and sported about on sturdy white-stockinged legs.

"When they grow up, they'll hit about 800 pounds," said Ed Salvas, Teal's neighbor and assistant. "They make excellent meat, but it's their wool we're interested in. We think

(Continued on page 795)

Sandwich Glass Sparkles in the Window of a Cape Cod Antique Shop

Sandwich, Massachusetts, glassmaking center in the 19th century, turned out both cheap and quality ware. The canary-yellow lamps burned whale oil. A Sandwich vase in deep amethyst (center, second shelf) is rare today.

Bargain Hunters Wear Poker Faces ➔ at a Household Auction in Maine

The author describes thrifty New England as "the Nation's attic, bulging with long-lost, odd, and quaintly charming objects." Before the century turned, Yankees discovered that attic contents were valuable and have been selling them ever since.

At North Falmouth, Maine, the red flag denotes a private auction of house furnishings. Actress Bette Davis, in yellow blouse, stands in the rear row.

From a Clinton, Connecticut, shop a customer carries an iron hitching post like those used late in the last century. Many antique collectors disdain such products of the Nation's early machine age, particularly things turned out in molds that could make unlimited duplications. Their definition of antiques, backed by United States tariff regulations, includes only objects made before 1830, when most manufacture was by hand. As time passes, the definition relaxes: vintage automobiles, for example, today have some status as antiques.

Gilded Eagle Looks ➔ Like a Sure Sale

Page 787: An antique dealer rarely grows wealthy, but he leads a placid life. Russell Sargent (left), owner of the Ships Wheel at East Dennis, Massachusetts, was an educator for 25 years before turning his hobby into a business.

The Sargent shop stresses relics of sailing ships, like old sextants and this streamlined eagle, originally carved to decorate a ship's cabin.

Close by stood Shiverick's yard, which turned out several clipper ships, including *Belle of the West* and *Kit Carson*.

Kodachromes by National Geographic Photographers B. Anthony Stewart (above) and Bates Littlehales

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Crusty Lobster Turns to Ambrosia in the Cook Pot

More than 8,000 Maine fishermen annually catch a quarter billion pounds of seafood. The State's lobstermen alone may take a yearly $8,000,000 worth of *Homarus americanus*, clawed lobster of the North Atlantic. They use baited traps, not diving gear like the amateur lobsterman at lower right. Folks eat lobster anywhere, as witness the couple picnicking beside Portland Head Light (above).

◀ Page 788, above: Cooks hoist boiled crustaceans from a huge vat to feed crowds at the Maine Seafoods Festival in Rockland.

Lower: Virginia Ellis, the festival's "Miss Maine Sea Goddess of 1954," donned an apron before tackling her hard-shelled lunch. The pirate waiter is a local printer and amateur actor.

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↑ Summer Days Lure Girl Campers to Maine

Scent of balsam woods and sizzling bacon, shock of the plunge into blue lake water, feel of gray boulders under sneaker-clad feet—no memories are more poignant than those of a childhood camp in New England.

Here girls of Camp Sebago Wohelo on Sebago Lake cook an outdoor breakfast.

→ Diana Rodgers rubbed salt on her chin to coax this sticky kiss from a fawn. Wohelo kept the pet under special permit during the summer months.

← Page 790. Campers await a breeze for Fiberglas Tech dinghies like those used by colleges for racing.

Kodachrome by National Geographic Photographer B. Anthony Stewart

Pat Benner of Cherryfield, Maine, Combs "Blueberry Barrens" for Pie Makings

New England sanctions blueberry pie for breakfast. Washington County grows the berries on thousands of acres pruned with fire every third year. With this rake, a worker can harvest four or five bushels a day.

it's the best in the world: light, fine, soft, doesn't shrink. Something like cashmere in quality. A mature ox will yield several times as much as one sheep.

"Big problem is to build up a herd. Up north, they nurse their calves a full year into the following spring. We hope that by taking their calves away earlier and weaning them, we can get them to breed annually."

"And you think you can tame them?"

"They're the tamest animals on the farm. We can feed them by hand, and they love to be petted and played with. Their chief economic value is that they yield a commercially important product and never seek shelter, even in freezing weather.

"Our hope eventually is to domesticate them by crossbreeding."

MIT Sparks New England's Drive

Research on the hoof, you might call it—informal, but imbued with the same inquiring spirit that animates that powerhouse of New England technology, "Research Row," the complex cluster of laboratories, offices, shops, and classrooms lining the Charles across from Boston. Gen. William H. Blanchard, deputy director of operations of the Strategic Air Command, has called this area the greatest concentration of scientific minds and equipment in the world.

Dominating this idea mill are the severe gray buildings of the Massachusetts Institute of Technology. Here, during World War II, a staff of 6,000 on a $44,000,000 budget developed 150 different applications of radar and worked on gun sights, heat-homing bombs, and various other fearsome gadgets as well. Now its nuclear engineers are getting a million-dollar atomic reactor to play with for peaceful purposes.

MIT is one ivory tower wired for instantaneous two-way electronic communication with the outside world. Under its Industrial Liaison Program, some 70 major American companies (headed by such titans as Standard Oil Company of New Jersey, General Motors Corporation, General Electric Company, and United States Steel Corporation) make sizable grants for research. In return, their representatives visit laboratories of special interest, attend seminars, and receive preprints of papers on work in progress. For the institute it has meant not only a prop under the budget but acquaintance with a vast array of problems outside its immediate ken.

"MIT is an international institution," Dean C. Richard Soderberg, a ruddy, silver-haired, massive gentleman, said to me one day. "And that's why it can be especially useful to New England. We focus here so much of the world's creative thinking in a dozen allied fields" (pages 775 and 796).

"But how much of it remains here?" I asked. "Aren't your graduates drained off to all parts of the globe?"

"They get around, sure. All year long we have some 375 companies bidding for an annual crop of about 1,100 students. But sooner or later a surprising number of those graduates make their way back to New England. And the faculty—well, you know how enmeshed many of them are in enterprises right here."

I did. I remembered professors who served on the boards of companies like Ultrasonics, American Research and Development, Nuclear Metals, High Voltage Engineering, and National Research. I had heard them talk of the emergence in New England of a fresh economic pattern.

They foresaw no raw, grandiose, extractive industries, leveling the old villages. Rather, they predicted the unobtrusive appearance of ever more small, neatly designed plants utilizing new processes in electronics, nuclear power, chemistry. Instead of the "dark Satanic mills" and hordes of semiskilled workers of an older era, they looked toward diversified, flexible enterprises devoting a high proportion of their energies to forward-looking research. For New England it would mean a new security founded on a dynamic use of all science can offer.

Beauty Can Be an Economic Asset

"Scratch a new industry in New England and you're pretty sure to find at least one Tech man behind it, maybe two," said Soderberg with a grin. "Why do they start their enterprises up here? Partly because this is a great market for talented technicians. Partly because they need to be close to the place where the ideas are popping. But partly, too, because they like to live here.

"You can call it the beauty of the New England scene. But that beauty is no accident. It's an expression of the values of the people themselves. And our graduates respond to it, more deeply than they are always aware. I tell you this: a way of life that attracts so many thoughtful, productive

persons—that can be an area's most precious natural resource."

A few years back a major aviation company shifted its operations from the crowded Atlantic seaboard to the wide-open spaces of the Southwest. The manufacturing units stayed there. But it had to move 200 of its design engineers back to New England: it couldn't hold some of its best but homesick scientists, nor recruit others.

General Electric has research and development laboratories scattered through New England: among others, a whole group in Lynn, Massachusetts, located handily just a few miles from MIT, and its famous High Voltage Laboratory in Pittsfield.*

Some scientists and businessmen fall for New England on first sight; with others, it's an affair in slow crescendo. In the Statehouse at Concord, young Governor Hugh Gregg of New Hampshire explained to me the typical cycle as he saw it.

"You Can't Blow Your Stack . . ."

"A man comes up here by himself for a couple of weeks, hunting or fishing. The next summer he brings the family for a month. Following year he rents a place for the whole season and begins to look for a house. Next year he buys it. Before you know it, he's moved up here, lock, stock, and barrel—and brought his business with him."

I had seen it happen with *High Fidelity*, the magazine for devotees of excruciatingly good music reproduction. There's no reason for such a publication to be edited in Great Barrington, Massachusetts, 100 miles from the center of the record industry in New York—no reason but that its founders wanted to live up there.

"One by one," said managing editor Roy H. Hoopes, Jr., "we've absorbed refugees from the city—a Sears, Roebuck and Company executive, two news magazine editors, an advertising salesman, an advertising agency artist—and more, I suppose, to come. We took over a huge old house, and now we're busting out of it.

"Our circulation is up tenfold, and our Pittsfield printer has had to move into a new building, buy new presses, and acquire new headaches. Sounds hectic, and it would be, on Madison Avenue. But you can't blow your stack in the Berkshires. Wouldn't seem in keeping, somehow."

Some take to the hills, some to the sea. Lincoln Vaughan started his business career in Wall Street, but when I saw him, his eyes glinting from beneath an old swordfisherman's cap, he was standing in his own little shipyard in Wickford, Rhode Island.

"You see," he said quietly, "I'd messed around boats all my life and, since I'd thought of nothing else from morn till night, figured as how I might just as well get into the game all over. Sort of capitalize on my hobby.

"This dock—it used to be the embarkation point for Newport folks, you know. Tracks ran down onto it from Wickford Junction. Dowagers would step out of the parlor car onto a red-velvet carpet and trip over to the *General*. Lovely old boat. Ferried them over the bay to their summer homes. But modern transportation killed all that."

I looked behind Vaughan to the trim brigantine, *Black Pearl*, which now occupied the *General's* berth. Vaughan followed my gaze.

"Always dreamed of having a square-rigger of my own," he said. "Began the *Pearl* before the war. Then we got pretty busy here, building subchasers for Uncle Sam and M.L. patrol boats for the British. Took us five years of fill-in work in the winters to finish her" (page 751).

"Ever regretted leaving Wall Street?"

"Ha!" A couple of powerboats glided up the channel towards Vaughan's wharf. He hailed them, shook hands with me hurriedly, and strode off toward his fuel pumps. He seemed a not too discontented man.

The Man Who Rolled in Gold

It could be, in fact, that the economic philosophy of New England has undergone something of a change. Up the bay from Wickford lies Bristol, and in Bristol there stands a house in which Capt. James De Wolf allegedly one day heaped the floor with gold coins captured by his privateers and then lay down in them. Said he: "I always meant to roll in wealth."

I couldn't help contrasting this candid avarice with the attitude of a modern New Englander who could, if he cared to, duplicate De Wolf's feat. At 46, boyish-looking Dr. Edwin H. Land, inventor of the Land Polaroid camera with the "built-in darkroom," heads a Cambridge, Massachusetts, company that is mushrooming so fast he can hardly keep track of it. Out in Waltham three big

* See "Lightning in Action," by F. Barrows Colton, National Geographic Magazine, June, 1950

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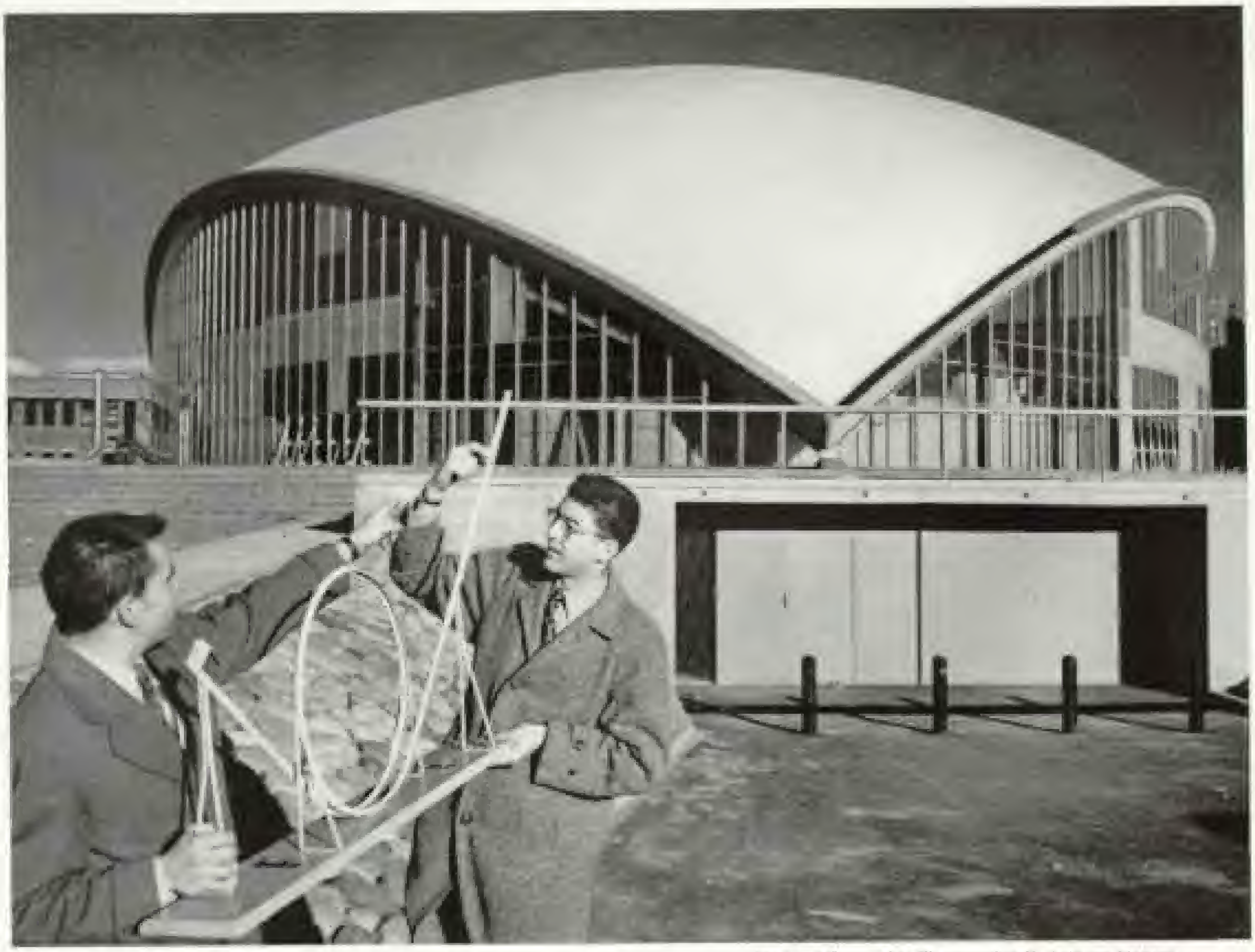
National Geographic Photographers B. Anthony Stewart and Donald McBain

Renaissance Princes Dined in No Greater Splendor than Guests at "The Breakers"

In the 1890's Cornelius Vanderbilt commissioned a new summer "cottage" built at fashionable Newport, Rhode Island (pp. 760, 769). Two years later, an Italian palace of 70 rooms emerged on a cliff commanding the sea. Here in the dining room, now open to the public, crystal sconces hang on red alabaster columns; chandeliers drop from a ceiling painting of "Aurora at Dawn." Fixtures were built to light with gas or electricity. Extended, the table seats 34



National Geographic Photographer B. Anthony Stewart

Domed Roof on Kresge Auditorium "Breathes" with Each Shift in Temperature

This triangular cap of concrete on a new hall at the Massachusetts Institute of Technology expands and contracts as weather varies. The roof rests on steel bearings at the triangle points; metal slip joints along the window frames permit movement up to four inches. Rubber cushions the dome at contact with interior walls. Doors open onto the stage of a small theater beneath the main auditorium (pages 775, 791).

These MIT students demonstrate that friction, gravity, and centrifugal force hold the ball on the track.

new modern buildings are on their way up to house most of the $76,000,000 operation.

Yet to Land these are only some of the indices of success. He's equally interested in how creative the whole industrial process can be made.

"About half of our people are working on tomorrow, not today, thinking and planning instead of just churning out what's already been conceived. Problem is the other 50 percent.

"One way is to make their working conditions more pleasant—you know, music and coffee and sympathetic attention. A second-rate solution, I think.

"We still have sizable pockets of drudgery in our operation. Our real aim is to eliminate them. In a scientific age, working for and with each other should be, must be, an exciting, rewarding experience. Perhaps: after all, it'll be old New England that will show it *can* be."

Perhaps it will. There is something here to build on: a respect for honest craftsmanship, a scorn of ostentation, a sense of responsibility for the common welfare. These qualities are New England's heritage; upon them she can erect a satisfying future.

Toast to an Intrepid Lady

Her early settlers, mindful of the sin of pride, taught their children that "Praise to the face is open disgrace." I have no desire to disgrace New England. Yet, as an outlander, I must record what I so often felt in these recent months of getting to know her once again—so gray in years, so green in spirit. In John Donne's words:

> No Spring, nor Summer Beauty hath such grace,
> As I have seen in one Autumnall face.

Glass Menageries of the Sea

A Jellyfish May Be a Poisonous Monster with 100-foot Tentacles—or a Fragile, Pink-petaled Rose Growing in a Tide Pool

By Paul A. Zahl

With Illustrations from Photographs by the Author

"WELL, well, Inspector, I often ventured to chaff you gentlemen of the police force, but *Cyanea capillata* very nearly avenged Scotland Yard."

These are the words of Sherlock Holmes in the concluding lines of *The Adventure of the Lion's Mane*, by Sir Arthur Conan Doyle.

As the story goes, Holmes was strolling along a rocky beach in England one day following a severe storm, when he came upon a dying man whose last agonized words were "lion's mane." Holmes had no idea what these words meant but believed the man to have been the victim of a homicidal flogging, for there were ugly welts on his back that looked as if they had been inflicted by a cat-o'-nine-tails. Several people were immediately suspected of the murder, but somehow Holmes could not forget those last words of the dying man.

Sherlock Detects a Jellyfish

Holmes was about to commit the monumental blunder of accusing an innocent man, when with sudden inspiration he rushed to his quarters, located a book on natural history, and discovered that "lion's mane" is synonymous with a species of giant oceanic jellyfish of the genus *Cyanea*. The victim had not been flogged at all, but while bathing in an innocent-looking tide pool had accidentally tangled with the poisonous tentacles of a living *Cyanea* washed in by the storm.

Holmes might have made an investigational faux pas that would indeed have "avenged Scotland Yard" for all the earlier joshing the British constabulary had suffered through his fictional exploits.

One summer day not long ago Princeton student David Fulmer and I went looking for shore specimens near Fortunes Rocks on the Maine coast. Unlike Holmes, we found no agonized victim. But while walking through the pools and lagoons left by an ebbing tide, we came upon a jellylike mass of yellow-red material about the size of a first baseman's mitt, floating there in the shallow water—the lion's mane itself. It did not move, and its tentacles seemed to be missing, probably torn off by the battering surf.

Thus disarmed, it should be harmless. I asked Dave to maneuver the slimy mass close to the surface so I could get a picture (page 800). This he did with his bare hands, and we continued our walk.

Suddenly Dave stopped and turned to me: "Did you say that jellyfish was dead?" He was now rubbing his hands briskly. The pain, actually not excruciating, was gone within half an hour; but there was no doubt in our minds, especially in Dave's, that there had been active stinging cells on the surface tissues of the lion's mane. Had the creature been alive and in possession of its full complement of poison-laden tentacles, Dave's reaction would certainly have been less casual.

I was able to identify that lump of jelly on sight because of a previous acquaintance with the lion's mane elsewhere along the New England coast. Two months earlier, in May, I had visited Woods Hole, Massachusetts, for the specific purpose of studying this and other jellyfish species.

During the winter I had been in correspondence with Mr. James McInnis, manager of the supply department of the world-famous Marine Biological Laboratory there. The lion's mane, or great pink jellyfish, is usually seen in waters south of Cape Cod in early spring, he had said, and often vanishes as abruptly as it appears. He would be on the lookout, and I would hear from him at the first sign of the creature.

Lion's Mane Can Be Deadly

In the meantime I read up on the habits and history of this curious jellyfish. Floating in the open sea, sometimes near the surface, sometimes submerged, sometimes in packs, sometimes singly, a lion's mane, as the Holmes tale attests, is no creature to be taken lightly. Its lens-shaped body may attain a diameter of more than seven feet and a thickness of three. Tentacles, up to 800 of them,

may string out behind or below the main body 100 feet or more.

A specimen of some size was presumably implicated in the Holmes incident. And those welts were no doubt caused by tentacles clinging to or slipping over the struggling man's back. In contact with his skin, they discharged their myriad hypodermic filaments, each injecting a minute drop of virulent poison. Under these conditions the effect could have been fatal, although Conan Doyle was careful to describe his victim as one known to have had a weak heart.

It is likely that a large oceanic lion's mane would be a more formidable antagonist than even the feared Portuguese man-of-war.* The *Cyanea* has longer and more numerous tentacles, and the intensity of a jellyfish sting depends on how thoroughly the victim becomes entangled in the tentacles and on how much poison is actually injected. The stinging capsules of many jellyfish cannot penetrate human skin.

It should be pointed out that neither the Portuguese man-of-war nor the lion's mane is an aggressive creature. Each floats or swims passively through the sea, allowing its tentacles to lengthen and trail in the water with stinging cells all cocked and ready. Any organism—crustacean, fish, or man—brushing against such tentacles receives an instantaneous broadside of innumerable stings. If the victim thrashes, he is likely to draw other tentacles to him and receive additional broadsides. Finally, if he does not escape, a fatal dose of poison may be absorbed.

Of course the usual victims of stinging jellyfish are not men but small sea organisms which the jellyfish, after poisoning, draws up to its underside and eats.

The actual chemical nature of the jellyfish poison is not known, although efforts have been made to isolate and identify it.

* See "Man-of-War Fleet Attacks Bimini," by Paul A. Zahl, National Geographic Magazine, February, 1957.

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Clam Diggers Strike It Rich on a Maine Beach

A suspicious indentation in the wet sand betrays the clam's hiding place. When the digger pokes with his finger, he feels a pull or suction as the startled bivalve withdraws its siphon into the shell. Probing deeper, the clammer uncovers the succulent mollusk.

Here Maine residents and summer visitors burrow in the sands of Little River, an estuary near Kennebunkport. Waterlike sand dollars littering the Maine coast fascinate Paul Zahl, the author's son.

Bleached specimens are dead skeletons. Dark ones are alive; short delicate spines form a velvet fellwork on each hard, flat disc. Rough surf has dislodged these creatures from the ocean floor and cast them ashore.

Perhaps the most commonly encountered of the sea nettles, or stinging jellyfish, along the Atlantic coast belong to the genus *Dactylometra*. These are delicately tinted creatures with tentacles usually not more than a few feet long. Many a bather in Chesapeake Bay has had a brief brush with this sea nettle and no doubt remembers it very distinctly.* Because the creature is relatively small, the swimmer is likely to have escaped with nothing worse than an hour or so of burning skin pain. However, any bather unfortunate enough to get mixed up with a number of such jellyfish simultaneously, especially in the region of his face and eyes, could suffer far more serious injuries.

Live Specimens—Handle with Care!

When I received word from Woods Hole in May that the lion's mane was appearing in the waters there, I packed my things hurriedly and was off to see Sir Arthur's "lethal weapon" for myself.

With Milton B. Gray (widely known as "Sam"), veteran collector for the Marine Biological Laboratory, I rowed in a skiff across Eel Pond and pulled out into the harbor.

The summer season had not yet begun, and the only boats we had to watch out for were fishing craft in the vicinity of Sam Cahoon's Dock. The big steamship wharf was deserted, so we steered our small boat into the slip where the steamers from New Bedford, Martha's Vineyard, and Nantucket berth during their summer stops at Woods Hole.

It was here that we came upon our lion's mane.

*See "One Hundred Hours Beneath the Chesapeake," by Gilbert C. Klingel, National Geographic Magazine, May, 1954.

Jellyfish: an Apt Name for a Slippery Handful

Motionless and apparently dead, this small specimen of the giant Atlantic *Cyanea* (opposite page) floated in the shallows off the Maine coast. A crashing surf had stripped away its poison-laden tentacles. David Fulmer held the translucent blob while the author made the picture. Minutes later Mr. Fulmer's hand tingled painfully: stinging cells had remained active in the slimy mass (page 797).

swept in that morning by the tide. The first I saw was a small one with a body no larger than a teacup. It was pale yellow-orange, and its tentacle pack hung down no more than two feet below its body. The creature was pulsating near the surface, and its colors shimmered in the sunlight. It was not difficult to see justification for its name. A handful of hair and skin torn from the mane of an African lion and thrown into the water would, one imagines, look very much like this swimming specimen.

Jellyfish Lack Eyes, Ears, Bones

We scooped it up in a net and dumped it into a bucket of water, where its tentacles quickly underwent partial contraction. Now the resemblance to a lion's mane was not so apparent; the thing had lost its graceful beauty and become an ugly lump of stringy, tawny jelly with a soft, translucent dome.

We quickly found dozens of others moving rhythmically with the strange beauty peculiar to their kind (opposite).

Jellyfish are, of course, not fish at all. They belong to the third great subdivision of animals known as coelenterates, occupying a position above the protozoans and sponges in the scale of life, and below the worms and arthropods. Everything about these creatures attests to their primitive evolutionary status. They have no true eyes or ears but react to their environment by means of simple sense organs—single cells or clusters of cells which may be sensitive to light, vibrations, chemicals, etc. Internal communication is accomplished by what is called a nerve net. Jellyfish have no backbone or skeleton. Many alternate between a sexual and nonsexual form of reproduction.

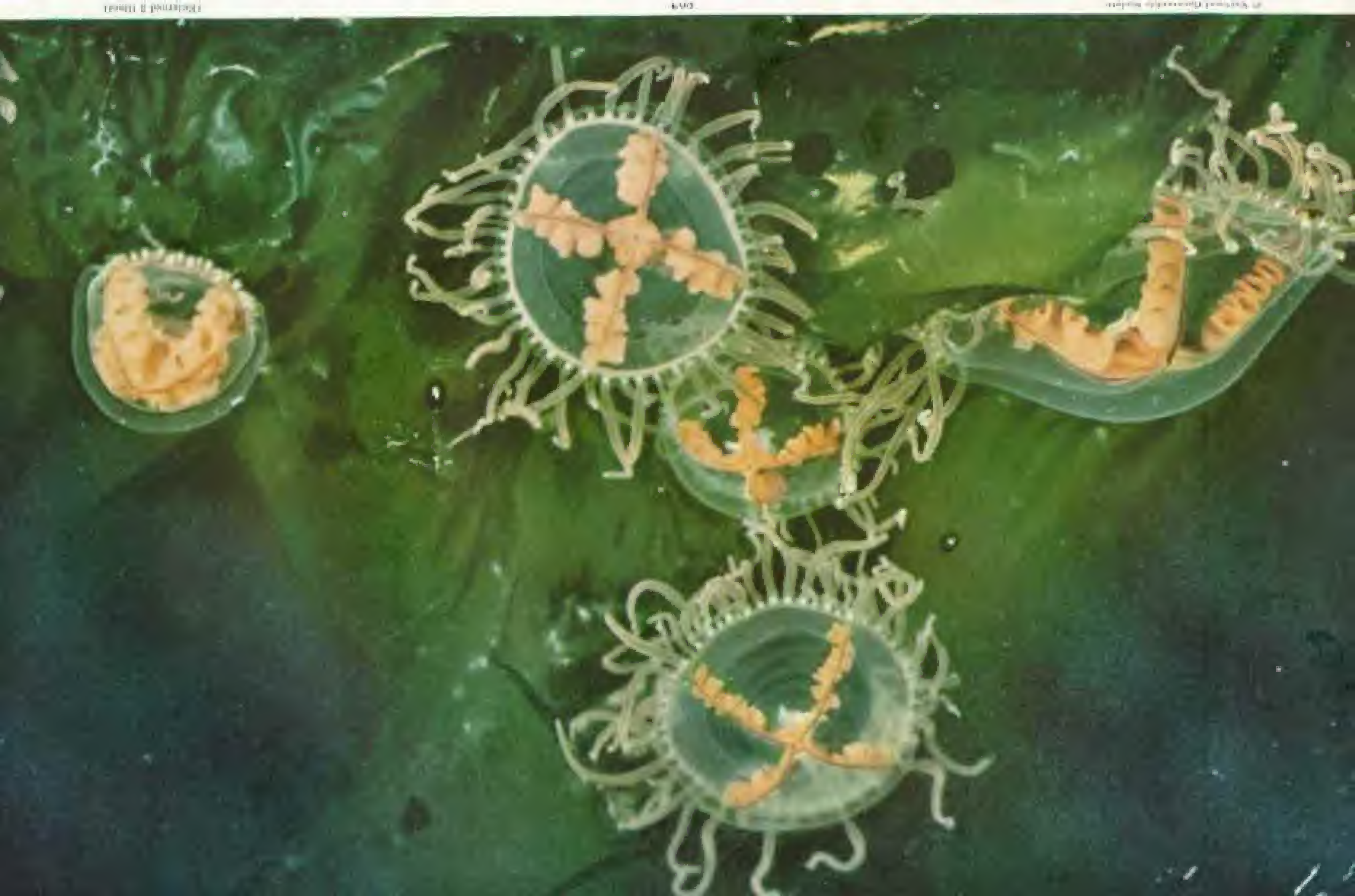
Many jellyfish species spend part of their lives attached to some sea-washed object on shore or bottom and part as independent free-swimming foragers. Their tissues are capable of incredible feats of expansion and contraction. And characterizing all coelenterates is the presence of stinging cells, in most species wholly innocuous to man. There are more than 9,000 known species of coelenterates.

(Continued on page 809)

Reduced to 1/3 natural size

Lion's Mane Wears a Tangled Mass of Tentacles Armed with Deadly Stings

Cyanea is usually seen in modest size, but huge specimens in Arctic and open Atlantic waters could kill a man with hundreds of poisonous tentacles that may dangle 100 feet. Pulsating umbrellas sometimes span seven feet.



Four-leaf Clovers and Crosses Deck Living Umbrellas

Portraits on these two pages show species of jellyfish, close cousins of the corals (page 809), sea anemones (page 813), and hydroids (page 815), all varieties of coelenterates.

Free-swimming jellyfish are called medusae because their dangling tentacles call to mind the snaky locks of the mythical Gorgon, Medusa. Small creatures coming within reach of the tentacles are paralyzed by poisoned dartlike threads, then swallowed within the translucent body.

Opposite: *Cotionemus*, often used for experiments on protoplasm, crawls with adhesive pads on its tentacles. Cross-shaped ruffles are reproductive tissues.

➔ *Aurelia*, the moon jelly, traps victims with a sticky substance on the gelatinous bell. Reproductive tissues make the four-leaf clovers.

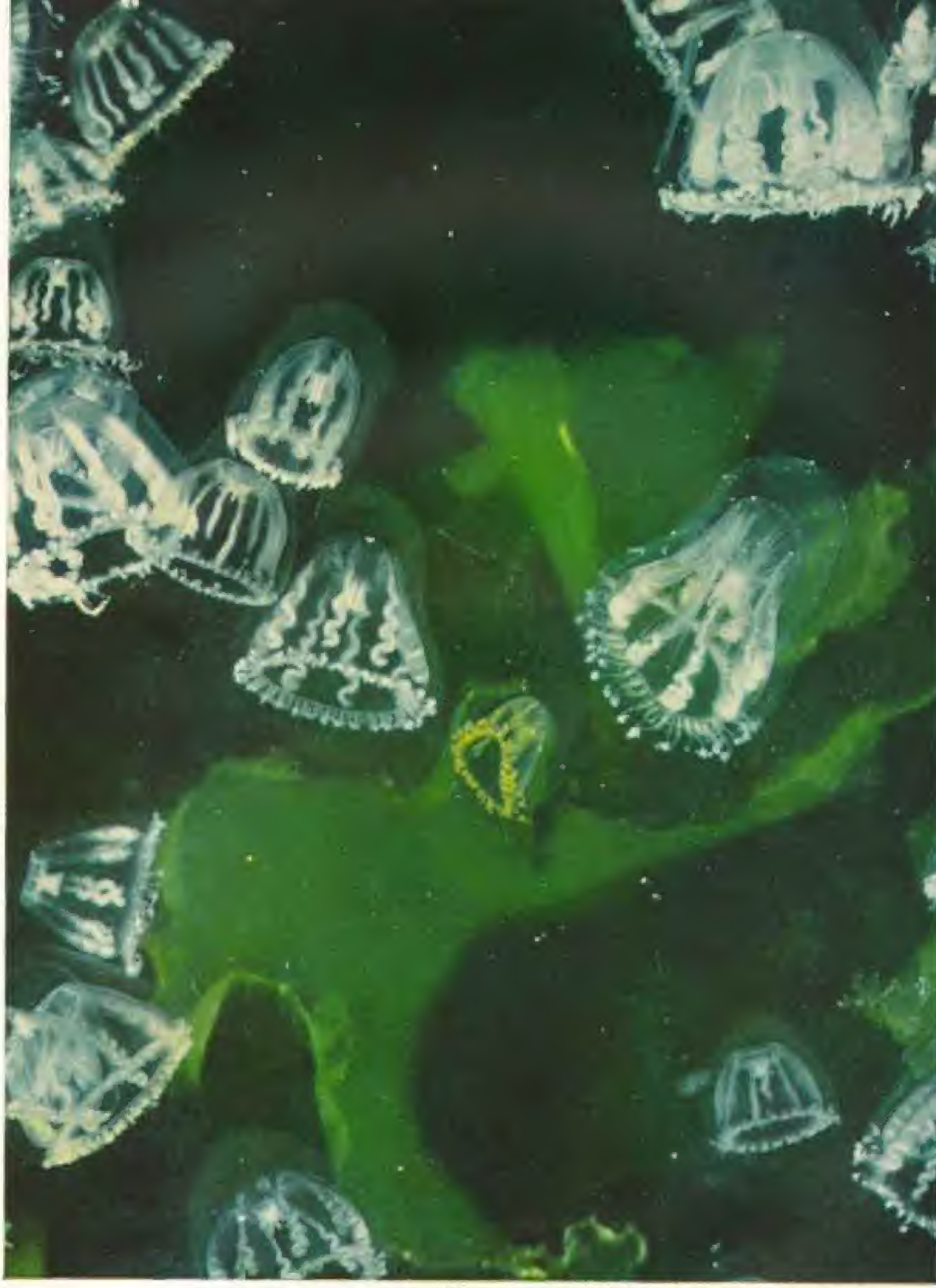
➔ Young moon jellies float in a watery universe.

Small flecks in many of these pictures represent sand and other suspended matter.

(Natural size; 1/4 natural size)

Sea Gooseberry Suggests a Space Ship Drifting Among Star Clusters

Glassy, fragile *Pleurobrachia*, a comb jelly, swims with meridianlike bands of tiny combs. Long tentacles sweep the water, snaring plankton on sticky cells. Comb jellies, unlike true jellyfish, rarely carry stings.



805 © Gesamtentwurf by Paul A. Zahl (Enlarged 1 Diam.)

Delicately Fringed Bell Jellies Float Against a Backdrop of Green Sea Lettuce

Melicertum campanula abounds along the coast north of Cape Cod, Massachusetts. It is almost 100 percent water. Like all jellyfish, it swims jerkily by contractions that force sea water out of the bell.

(Natural size)

Luminous Rainbow Jellies in a New England Tide Pool Glow with Unearthly Sheen

Swarms of *Mnemiopsis*, the sea walnut, light up brilliantly when night waters are disturbed. Here the ghost-like jellies swim near a velvety sea anemone, their pulsating combs rippling prismatically.

Eyes Scan a Bit of Rockweed for Hydroid Colonies

Under the intent gaze of a young visitor, the author selects material for his photomicroscope. Portrait of a *Clava* colony on page 870 shows the result.

Most photographs in the series were taken in laboratory tanks of this sort.

Twin-mouthed Sea Squirts Can Spurt Fountains of Water

Baglike *Ciona*, one of the tunicates (page 819), lives inside a thick tunic of tough material like the cellulose of plants. Anchoring itself to submerged rocks or timbers, the sea squirt filters food from water drawn into one siphon and expelled from the other.

(Enlarged 5-1/3 times)

Enlargements by Paul A. Zahl (Enlarged 2 and 3 times)

Delicate Animals Armored in Tiny Limestone Cups Create Star Coral's Flowers

Until the 18th century no one knew that corals, like sea anemones, were animals (inset). Colonies of the soft polyps build reefs and islands with their stony skeletons. *Astrangia*, the star coral, flourishes off Cape Cod.

the vast majority being sea dwellers rarely seen by the casual observer. A fresh-water variety is the common hydra, known to every student of high school biology.

Jellyfish, in their free-swimming phase, pulsate through the water, but their movements have no particular travel pattern. Many of them can submerge at will, as for example in rough weather at sea; but, by and large, they are the willy-nilly victims of wind, tide, and current. Some free-swimming jellyfish have hold-fast pads on their tentacles and live a considerable portion of their lives "crawling" about the bottom or on sea vegetation; one such is *Gonionemus* (page 802).

We didn't encounter any really big lion's mane that morning. Those six- or seven-footers are found only in open water, usually farther north. The largest we saw had a body diameter of not more than 10 inches.

Movement by Jet Propulsion

Back in the laboratory, I placed a dozen or so of those we had netted into a large aquarium fed with running sea water. They moved by an elementary form of jet propulsion. The swimming jellyfish expanded to create an under-body space that immediately filled with water. Then it contracted, forcing the water out in a jetlike stream which pushed the animal forward. Following each of these pulsating movements, the tentacles on the underside of the body trailed along with exquisite delicacy.

One of the commonest and most frequently encountered jellyfish is the *Aurelia*, or moon jelly. The common moon jelly has little color and is not therefore a very appropriate subject for the color camera. But Sam told me he knew a lagoon only 20 miles away where we could find hundreds of moon jellies with orange and brown tissues.

Next morning Sam and I, joined by Jim Whitcomb of the Woods Hole staff, loaded the skiff onto a truck and drove north on the main cape highway. We turned at length into an old road that threaded eastward toward the sea through pine barrens. It ended on a bank of a lonely lagoon connected with the ocean by a narrow inlet. I looked into the water for signs of jellyfish life but could see nothing suggestive. Sam shook his head: "Water's too rough today."

There was certainly a stiff wind, and the lagoon had a surface of whitecaps. "But we'll look," Sam added; so we launched the little boat and rowed toward the lee side. The lagoon was shallow and full of eelgrass. My eyes searched for colored objects among the green blades. It took Sam's laconic "There are some," to give perception to my sight.

Instantly I saw them, dozens of them, little discs moving through the water and ranging in diameter from penny to half-dollar size.

All these "flying saucers" of the sea, millions now it seemed, were jerking through the water in true jellyfish style. They lacked the long tentacles of the lion's mane, having only a fringe of short hairlike ones that undulated like the tassels of a surrey top. Each netting yielded us close to 50 specimens, often more, and before long our buckets were filled nearly solid with these delicate, wonderfully tinted little creatures. We must have caught at least 2,000 in half an hour (page 803).

The presence of such large numbers in this isolated lagoon is probably explained by the moon jelly's breeding habits. Its reproductive cycle begins with the fertilization of an egg cell which soon develops into a larva. The embryo swims about, then settles and attaches itself to some object near the bottom and grows into a tentacled polyp—that is, a hollow cylinder, like the hydra, with an "anchor" at one end and a mouth at the other.

At certain times of the year this polyp releases fragments of tissue, each of which eventually develops into the form of a mature moon jelly. They are small at first, like the ones we had been netting, but clearly adult in appearance. The bottom of our lagoon in early spring was no doubt heavily populated with polyps, which for a week or so had been pouring a crop of young into the water. Many would ultimately be swept out to sea.

Comb Jellies Grow Their Own Oars

There is a group of transparent organisms often seen along the Atlantic shore, indeed throughout the world, that on first sight look like jellyfish. Actually they belong to a different animal subdivision and are known as ctenophores, or comb jellies.

Whereas true jellyfish are somewhat translucent, comb jellies are nearly glassy; they have soft, easily squashed bodies. Most of them move through the water by means of eight bands of minute comblike structures on the body's outer surface.

The combs in each band lash rapidly. A series of such lashes may proceed up each

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Junior Explorers Wade Maine's Stony Coast in Quest of Sea Life

Near Goosenek, 20 miles south of Portland, dense rockweed beds harbor crabs, snails, starfish, mussels, sponges, and sea urchins. This band of teen-agers, led by Princeton student David Fulmer (second from left), accompanied the author in search of marine specimens (page 797). Here they examine a freshly netted crab.

band like a rippling wave. Each comb beat is comparable to a swift paddle stroke and causes the animal to move through the water like a many-oared galley. The rippling combs are a remarkable sight, especially at night when they often glow with a bluish other-world quality (page 800).

I spent several days looking unsuccessfully for specimens of this group in the waters around Woods Hole. Finally Sam said that he thought he knew where we could find some —up near the north end of the Cape Cod Canal, about 30 miles away. Most comb jellies are so fragile that one picked up in your hand will quickly disintegrate. Our problem was how to transport such delicate objects over 30 miles of rough road and keep them alive and whole in a bucket of splashing water. We decided not to worry about that until we had first found the specimens. So early one morning we were off again, with the skiff riding high on the back of the truck.

The Cape Cod Canal cuts across the neck of the cape, serving to connect Buzzards Bay with the more or less open Atlantic of Cape Cod Bay. Large steamers ply this canal, high bridges span it, and innumerable sea creatures live in its waters.

Not far from the northern mouth of the canal we drove in close to the water's edge, parked our truck, and launched the skiff. First thing we saw as we paddled along near the bank was a submarine fleet of the lion's mane. The specimens were a little larger and brighter than those we had seen at Woods Hole. But today the lion's mane was not our concern. Within minutes we were among comb jellies, hundreds of them slowly being swept along in the canal's strong tidal current.

Gooseberry Fishes with Sticky Cells

They ranged from grape size to pear size, and we identified three types. The commonest were the *Mnemiopsis*, whose eight bands of combs iridesced brilliantly in the sunlight; less abundant were the *Beroë*, tinted a distinct red; and only occasionally did we see *Pleurobrachia*, or sea gooseberries, each a nearly round orb with two somewhat feathery tentacles drifting underneath (page 804).

These sea gooseberries are of special interest, for, like the true jellyfish, they have tentacles, albeit only two. They trail and, again like those of coelenterates, can be raised or lowered at will.

These tentacles are lined not with stinging cells, however, but with yet another of Nature's many weapon types—myriad adhesive or so-called sticky cells. They operate by adhering like glue to any plankton organism that brushes against them. When a load of plankton victims is accumulated, the tentacle contracts to deposit the catch in the creature's underside mouth.

In view of the fragility of most comb jellies, we didn't use our nets; instead, we carefully dipped each specimen up in a glass dish, then deposited it in a larger collecting bucket in the skiff. It wasn't long before we had an assortment of several hundred.

Sam said that while here he wanted to look for sea slugs, which he believed might be around this time of year. For collecting them he had brought a long-handled net with an affixed blade, a pile-scraping instrument. We rowed to a wharf where the pilings were encrusted with an amazing variety of marine plants and animals.

"The slugs usually live just below the low-water mark," said Sam, as he lowered his pole with the net and quarter-moon scraping blade. He drew the pole upward, forcing the metal blade to dislodge any object living on the side of the piling. The very first load of scrapings included at least 10 strange reddish slugs, or nudibranchs, together with their white egg masses (page 818).

These animals bear some resemblance to worms, but they are actually mollusks without shells when adult. Their name (*nudus*—naked; *branchia*—gills) is their best description. Growing out from the top side of each finger-sized body were tissues intricately split into branches and tiny sub-branches. These external structures permit a gaseous exchange between the creature's "blood" and the surrounding water. On first glance these sea slugs were ugly, but only until one watched them crawl and observed the delicate structure of their busy gills.

Some species of sea slugs, like those of *Aeolis*, for instance, feed on tiny hydroid coelenterates, which grow like thick moss on stones and pilings. The tentacles of these hydroid victims carry the usual batteries of stinging cells, which are ingested during an *Aeolis* meal. But instead of assimilating or excreting the stinging cells, the sea slug somehow passes them through its tissue and deposits them, intact and living, in its own skin.

Sea Slug Uses Stolen Stings

Thus the pirated weapons of the dead and digested jellyfish are mounted on the sea slug's own ramparts, where they are fully functional and presumably serve to protect their new owner. For years zoologists puzzled over the presence of these stinging cells in the skin of sea slugs, which, as mollusks, shouldn't have them. Only by observing the slugs' dietary habits was the clue to this remarkable appropriation of another's armament discovered.

Our collecting finished, the problem remained of getting the specimens home over miles of rough road. We tried three devices: one of the wooden buckets containing comb jellies we filled to the top with water, then sealed the lid tight; to another of the buckets we added seaweed to reduce splashing; to the third we did nothing.

An hour later at Woods Hole we were eagerly examining the buckets. All the comb jellies in two of the buckets had disintegrated, but in the one we had filled with water and sealed securely, every specimen was in perfect condition. I carefully transferred these to an aquarium and for a full hour sat there in fascination watching their tumbling movements and their wondrous iridescence.

Of course the more hardy sea slugs needed

no special treatment for the trip, and all arrived in perfect shape.

A few weeks later, seeking a more rock-bound shore than that of Massachusetts, I shifted my sea studies, my color camera, lights, and aquaria northward to Maine, where the coastal geography is quite different from that around Woods Hole. Family friends, the Sandford G. Etheringtons, Jr., who summer at Fortunes Rocks about 16 miles south of Portland, had told me that near their shore home were all the rocks and tide pools I would want.

Treasures in Tide Pools

"Many a time," Rhea Etherington had said, "I've sat quietly on a rock down by the ocean and watched the clear pools left by the tide. At first I'd see nothing but brown seaweed and perhaps some snails. Then things on the bottom that I thought were pebbles would begin to move; little flowers would unfold, and the pools would seem to come alive."

I arrived at Fortunes Rocks, this time with my wife and two children to help and kibitz, at a period of extreme tides. This was good timing, for it meant that the rock pools farthest out from shore would be uncovered and easily accessible at low tide. These are the richest in sea life, since they are submerged except for a few days each month.

There were also tide pools close to shore, but these are uncovered at every low tide, twice a day throughout the month; their water is subject to warming by the sun and even to some stagnation. In them we found few sea anemones, for instance, whereas the pools far out were abundantly populated with the gorgeous anemone *Metridium* (opposite).

I set up my photographic gear in a workshop adjoining the Etherington garage. And I had no lack of helpers. Droves of summer resident children, not to mention their parents, dropped in often to see what was going on and to offer assistance. I was glad for their company and grateful for their willingness to help. But there were one or two features that made this workshop somewhat less than perfect.

Adjoining was a laundry room, equipped with an electric washing machine. It seemed that always when I had my camera lens focused on some fragile bit of sea lore, someone would arrive with a bundle of laundry. Then, for a full half-hour at a time, the machine would hum and vibrate, causing the image in my ground glass to shimmy hopelessly.

Under such circumstances, I would close shop and defer my camera work until nighttime, often to run up against complexities of another character. For example, I lacked running sea water, now customary in a modern marine laboratory. This was hard on my tanked specimens. But by careful avoidance of overcrowding and by regular water changes, I could keep most of my captives alive and healthy for five or six hours.

Those regular water changings involved setting up a virtual bucket brigade from the shore, a quarter of a mile away, to the workshop, sometimes even in the dead of night. In the Tropics I should not have been so successful, but in Maine's cold water the hazard of fast spoilage was never great.

This waiting for nightfall had its advantages, especially in regard to the sea anemones, which invariably contract upon removal from the sea. After placing these in my aquarium, I would wait, sometimes for an hour or two, until slowly they would begin to open and assume a natural true-life pose.

The sea anemone *Metridium* typifies that group of coelenterates whose members attach themselves to rocks and other surfaces instead of swimming free like the lion's mane. The *Metridium* is often called "sea flower"; its blossom is a great bunch of tentacles, all lined with stinging cells.

Anemones May Live 70 Years

The tentacles of most northern anemones are harmless to man. Accordingly, when one is exploring a tide pool and wishes to prove that the sea anemone he has found is really an animal and not a plant, he can safely touch the blossom. Quickly the creature "wilts" and takes on the look of a characterless lump of slimy tissue. But take your fingers away, step out of the pool, and watch. Within a few minutes the "florescence" begins—the tentacles stretch out in all directions until a glorious sea flower is again revealed.

Likewise in my laboratory I could manipulate and arrange my *Metridium* flowers with complete impunity.

Sea anemones are found the world over, in tide pools, on wharf pilings, clinging to the sides of sunken ships, on the bottom far down. On casual inspection they appear to be sedentary. In fact, they are capable of a very slow creeping, never letting go their hold on rock or bottom.

Sea anemones range in size from a fraction

(Continued on page 821)

Kodachrome by Paul A. Zahl (Enlarged 1-1/4 times)

Fluttering Myriad Tentacles, *Metridium* Resembles a Feathery Chrysanthemum

Like the jellyfish, this sea anemone is a death trap. Its delicate tentacles catch and paralyze tiny organisms. Extending a dappled stalk shaped like an elephant's foot, the creature glides with infinite slowness.

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(Enlarged 10 times)

Tubularia, a Colony of Carnivorous Marine Animals, Droop Like a Faded Summer Garden

Some primitive animals, such as these hydroids, develop plantlike structures with pseudo flowers, stems, and roots. A major difference lies in diet. Plants, using chlorophyll and sunlight, make their food from carbon dioxide and water. Hydroids, like anemones and jellyfish, eat other creatures.

Coelenterates Swaying in a Current Appear to Be Dandelions Blown by the Wind

Many hydroids are microscopic; others are 6-foot giants. In a multitude of beautiful forms they resemble vines, branching trees, feathery plumes, and such flowers as daisies, pinks, and dahlias. Under the microscope the delicately tinted petals prove to be fleshy tentacles constantly probing the water in search of prey. Like jellyfish, *Tubularia* paralyzes its victims with stinging threads. The digestive system lies within the flower.

Orange clusters on each polyp are *Tubularia's* sex buds.

Rosy Algae, Brittle Star (Left), Spiny Sea Urchins (Rear), Dogwinkle Shells, and Seaweed Create a Submarine Tableau

The scallop, akin to the clams, swims in zigzag fashion by clapping fluted shells. Blue eyes border the mantle inside each shell. Spiked "bushes" are sea urchins, scavenger cousins of the starfish. Right: A shrimplike amphipod rests on an incrusted shell.

(Enlarged 3 times)

Bushy-backed Sea Slug Exposes Its Gills in Treelike Branches

Dendronotus, a shell-less mollusk, belongs to a group called nudibranchs, meaning "naked gills." This specimen has just deposited a coiled mass of white eggs. Barnacles cluster on the rocks at lower right.

Starlike Ascidians Mass Together in Fleshy Colonies

Colonial ascidians, like sea squirts (page 807), belong to the tunicates, a group of sea creatures that illustrates evolution in reverse.

Tunicates start life as tadpolelike larvae, with a cartilaginous "backbone" and other characteristics possessed only by the vertebrate animals, including man. As they mature, the tunicates lose these structures and degenerate into primitive creatures such as the fungus-resembling *Botryllus* shown here.

These calico masses are agglomerations of individuals, each resembling a star.

Botryllus's colorful incrustations abound in shallow waters from Massachusetts southward.

Starfish Dine on Mussels

Some scientists say that poison secreted by the starfish paralyzes its prey. Starfish's powerful suckers, working in relays, tire out the bivalve's one muscle and force open the hinged shell, exposing succulent flesh. Oystermen destroy starfish as rapacious competitors.

Kodachromes by Paul A. Zahl (Ektachrome) 1/4 and 1/2 times

↑ A Colony of Microscopic Hydroids Recalls a Flowery Elfinland

Clava grows in velvet patches on rockweed, wharf pilings, and the rocky bottoms of tide pools and is common from Long Island to Labrador. Clusters of berrylike sex buds lie below club-shaped heads bearing circlets of tentacles.

↓ Mantis Shrimp Waves Iridescent Eyes Like Radar Antennas

Squilla, the mantis shrimp, seizes victims in powerful spiny claws (not shown) and while eating holds them in the innocent, prayerful attitude of its insect namesake. Man seldom sees this 8-inch crustacean, which lives in mud by day and hunts by night.

of an inch to as large as two feet across, the monsters being found mostly in such places as Australia's Great Barrier Reef. Some species seem to have a very favorable life expectancy; individual specimens on the Scottish coast have been observed for more than 70 years. Other species, by contrast, live for only a year per generation. Many sea anemones, particularly those in tropical waters, are brightly colored; the *Metridium* specimens we found were usually a shade of brown, sometimes blotched, with whitish tentacles.

There is a species known as the cloak anemone, *Adamsia palliata*, which spends its life wrapped around the soft tail parts of a certain species of hermit crab. The cloak anemone's poison is deadly when injected into other species of crabs, but relatively harmless to the hermit crab with which it consorts.

Some of the large anemone species, especially in the Tropics, have one or more small, highly colored fish that live among the tentacles; some species have "pet" shrimp, too.

Turning Stones for Starfish

On days when the weather at Fortunes Rocks was fine, I would invite the Etherington children and their friends to join me on collecting trips. At low tide, as far as we could see, the rocks were covered with rockweed and kelp. Rockweed often caused us to slip, but its matting cushioned our falls.

Out among the tide pools the water was still and clear as glass. On the bottoms and sides we could see a kaleidoscope of sea life: snails, sea urchins, scurrying crabs, mussels, sponge growths, calcareous algae, sea squirts, barnacles, and worms peeping out of their sand-coated tubes. We would wade into such pools and turn over stones. Here starfish were revealed, purple or red, or brown, or gray-blue; some the size of quarters, some as large as dinner plates.

My chief object was to locate coelenterates belonging to the group known as hydroids. These, like the anemones, can easily be mistaken for flowers, although most of them are too small to be seen in detail with the naked eye. Many hydroids, in fact, resemble flowers more than the anemones do, for, in addition to blossoms, hydroids have "stems" and even rooting structures.

The first of these I came upon at Fortunes Rocks was one called *Hydractinia*, which grows on the backs of abandoned snail shells occupied by hermit crabs. The clue to its presence is a velvety appearance of the shell. Examining the "velvet" under a lens, one sees hundreds of individual hydroid animals, arranged like a Lilliputian forest. The branches are, of course, typical coelenterate tentacles, waving to and fro in the water. *Hydractinia*, nearly colorless, was no apt subject for my color camera; nor were many other common hydroid forms that we found.

My eyes were alert for another hydroid, of the genus *Tubularia*. I had had luck my first day, possibly because I was using only one eye. The other had always to be on 6-year-old Billy Etherington and my small daughter, Eda, who had joined me on this collecting trip. They followed me dauntlessly up over slippery boulders, down crevasses, around pools and often into them. And they gathered many more specimens than I did. Their little beach pails, corresponding to my larger collecting bucket, were full to brimming at the end of the excursion: snails, limpet shells, sea urchins, seaweed, sand, pebbles, and driftwood.

Quite heartlessly, at the next low tide I was on the rocks alone. I managed to get out to the very last one on the point. The sea was pounding heavily, and I had to watch my footing. A fissure ran through a large rock heap, and the water in it was a foot or so deep, rising and falling with the swell.

I spotted a stunning cluster of *Metridium* growing under a shelf and started scraping some of them off, when farther under the shelf in the shadows I saw a patch of something pink, almost red. It was soft to my probing fingers, and I tore loose a handful.

Roses in a Handful of Slime

I lifted the mass out of the water and it looked like nothing more interesting than tinted slime. Nevertheless, I dropped it into my bucket of water and looked again. What I saw was something of nearly incredible beauty. Form and color had returned to my handful of slime, and I now saw a rose garden. Each "rose," about two or three times the size of a pinhead, was swaying back and forth as in an April breeze. With my pocket lens I took a better look. I had found my *Tubularia*, and its beauty exceeded all expectations.

For a second it was difficult for me to believe that each of these roses was a true animal. I watched a single flower under the lens: that corona of long pink petals was made up of tentacles; those central clusters that looked like fruit were reproductive tissues,

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"Look What I Found!" Young Eda Zahl (Right) Proudly Exhibits a Giant Seaweed

that stem was Nature's way of keeping this true animal in one place.

Now I saw the tentacle filaments moving, contracting, expanding. Lining those tentacles, although invisible even to my lensed eye, were the usual stinging cells, harmless to me but death to the tiny creatures passing forever to and fro with the tide's washings.

An hour or so later I had this tiny "garden plot" set up in my aquarium ashore. Without benefit of a lens, Rhea and Sandy Etherington, who were watching my camera activities, wondered what on earth I was finding photogenic in that confusion of tinted jelly. Then I turned on my lights and told them to look into the ground glass (pages 814 and 815).

During that spring and summer I made four extended excursions to various spots along the North Atlantic coast, visiting all manner of tide pools, beaches, estuaries, bays, mud flats, and lagoons all the way from Long Island to Maine.

I turned over stones, searched under seaweed and grass, waded through shallows, paddled about in skiffs, examined tide-exposed pilings, collected, studied, photographed whatever I saw in the way of marine animals.

Though it all added up to a very exciting experience, I knew that neither my eyes nor my lens had seen more than the merest fraction of what was there. I had only scratched the surface of Nature's marine wonderland.

New National Geographic Map with Notes Portrays New England, Past and Present

ONE of the earliest and most ardent press agents New England ever had was Capt. John Smith. To drum up interest in "those spatious Tracts of Land," the "Admiral of New England" issued in 1616 a glowing prospectus, with a map (page 824).

Solemnly he pinpointed the area as "that part of America in the Ocean Sea opposite to Nova Albyon [California] in the South Sea, discovered by the most memorable Sir Francis Drake in his voyage about the worlde. In regarde whereto this is stiled New England, beeing in the same latitude."

The 2,150,000 member-families of the National Geographic Society who receive this month The Magazine's 10-color supplement map of New England will get a rather more precise picture of this historic region. They will not encounter Smith's spouting sea monster nor his fanciful leopard on a hill. But they will find a rich profusion of 4,442 place names and 553 descriptive notes.*

Smith Found Indians "Goodly, Strong"

Working south from Penobscot Bay in 1614, Smith noted "sandy clifts, and clifts of rocks ...planted with Gardens and Corne fields, and ...inhabited with a goodly, strong, and well proportioned people." He could only surmise that the interior was very fertile.

Those who scan The Society's map, however, will suffer no such handicap: they can range far inland, across the full breadth of New England and into extensive bordering areas. To permit a larger scale and to include the resort-dotted Poconos, Catskills, and Adirondacks, the map has been tilted from the usual north-south orientation.

Yet this newest map owes a debt to Smith's. For it was the captain himself who coined the name "New England," and it was he (with Prince Charles) who changed the "barbarous" Indian village names. On the Maine section of his map, for example, he turned Accomintiscus into Boston, Sowocatuck into Ipswich, Ammoughcawgen into "Cambridg," and Kennebec into Edenborough. Perhaps we should be grateful for his shortening of Cape Tragabigganda to Cape Anna (Ann).

Had Smith known about Massachusetts' Lake Chargoggaggoggmanchaugagoggchaubunagungamaug ("You fish on your side, we fish on ours, and nobody fish down the middle"), he would certainly have approved the much-shortened version resorted to by National Geographic cartographers: Chaubunagungamaug.

The modern John Smith, journeying to New England by conveyances inconceivable to the Admiral, should find this large-scale map (12 miles to the inch) an invaluable guide to its pleasures and landmarks. Is he in search of sport? He'll note the U. S. Atlantic Tuna Tournament off Point Judith, Marblehead's renowned yachting basin, Maine's game-abundant north woods, and New Hampshire's many ski lifts.

Does he prefer to ramble quietly through old and famous houses? He will discover a wide variety, from the 1640 Whitfield House in Guilford, Connecticut, to the farmhouse near Plymouth, Vermont, where Calvin Coolidge's father gave him the Presidential oath of office by the glow of kerosene lamps.

Of the aborigines, few traces remain. Yankee guns soon broke the Indian power in New England, and in their manufacture laid the basis for the area's outstanding machine-tool industry. As the map indicates, a superb collection of firearms has been amassed in Colt's exhibit in Hartford, Connecticut. Old Sturbridge Village, Massachusetts, too, boasts a choice assemblage of weapons.

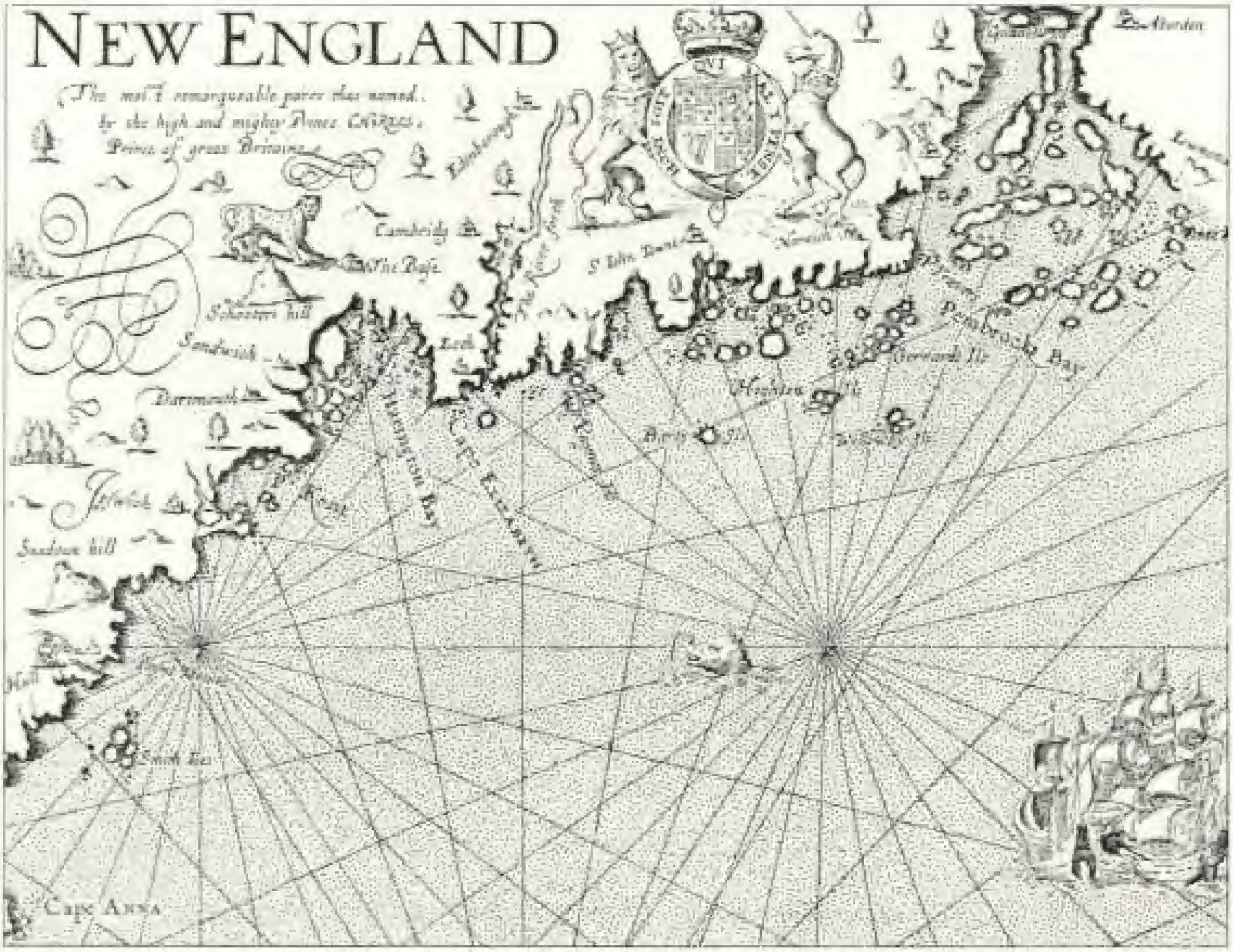
New England Re-creates Its Past

Such villages and the many museums house farm tools, ship models, clocks, maple-sugar products, dollhouses, sleighs, buttons, old patent models—anything and everything.

For the children, whose attention may sag even sooner than their parents' arches, the map holds promise of a Wild Animal Farm at Hudson, New Hampshire; a colony of tame beavers at Terrebonne, Quebec; Story Town at Glen, New Hampshire, complete with Heidi's Alpine hut, the Three Bears' home, and the Old Woman's Shoe; and the Chinook Kennels at Wonalancet, where Admiral Byrd's sled dogs were schooled.

For adults seeking repose, few places noted on the map could offer more serenity than the

* Members may obtain additional copies of the Map of New England (and of all standard maps published by The Society) by writing to the National Geographic Society, Washington 6, D. C. Prices, in the United States and elsewhere, 50¢ each on paper, $1 on fabric. **Indexes to place names, available for this and most other maps, 25¢ each.** All remittances payable in U. S. funds. Postpaid.



Capt. John Smith's Remarkably Accurate Map Helped Guide the Pilgrim Fathers

Mayflower pioneers, rejecting Smith's offer to guide them, bought instead his books and maps. In 1616 he published *A Description of New England* with maps, part of which is reproduced above. It shows a section of Maine's indented coast: Pembrocke Bay is today's Penobscot Bay, and River "forth" is the Kennebec. Many Indian villages were given English names; some like "Boston" and "Ipswich" later turned up in Massachusetts.

vine-wreathed studios of the sculptor, Augustus Saint-Gaudens, situated on a grassy ridge across the Connecticut River from Windsor, Vermont. Peace broods over these sunlit workrooms with their silent casts of the noble head of Lincoln, the grave stern-jawed Puritan, and the gentle bas-relief of Robert Louis Stevenson.

Another kind of sanctuary beckons at the Cathedral of the Pines, near Rindge, New Hampshire. Where the 1938 hurricane carved a great nave through the trees, an altar now stands "as a place where all people may come and worship, each in his own way."

New England's varied attractions are easy of access, as shown by the airports and the black and red networks of rails and roads, including an impressive and ever-expanding grid of superhighways.

From New York the Hutchinson River, Merritt, and Wilbur Cross Parkways push deep into New England. A new expressway, partly completed, parallels crowded U. S. Route 1, the historic Boston Post Road. From as far west as Buffalo, New York State's Thruway funnels traffic toward Albany and an entrance into New England via the $239,000,000 Massachusetts Turnpike, now under construction. Its Taconic State Parkway will also link up with this Turnpike.

North of Boston the New Hampshire and Maine Turnpikes whisk motorists up to Portland, with spurs now building to connect Concord, Manchester, and Nashua, and Portsmouth, Dover, and Rochester.

All this and more is emblazoned on The Society's fact-crammed map. Hospitable New Englanders, however, will insist that the outlander treat this map as an "aid to navigation," not as a substitute for direct experience. "The world," as Lord Chesterfield remarked, "is a country which nobody ever yet knew by description; one must travel through it one's self to be acquainted with it."

Switzerland's Enchanted Val d'Hérens

In a Tranquil Valley High in the Alps, a Pastoral People Still Live, Work, and Dress as Their Ancestors Did Centuries Ago

By Georgia Engelhard Cromwell

STRAINING up out of the dark canyon of the River Borgne, our yellow post bus climbed past terraced orchards of apple, pear, and cherry and emerged in a broad, sunlit valley surrounded by tremendous wooded hills. Ahead, far to the south, a wall of snow peaks glittered icily against the bright spring sky.

As the bus gained speed it passed groups of women bending over furrowed potato fields. Suddenly we jerked to a stop; a sleek mule was ambling calmly across the graveled road in front of us. On it a brightly costumed woman rode sidesaddle. And what a costume!

The rider's billowing skirt and close-fitting black jumper contrasted with a white blouse and a neckerchief of scarlet cotton. On her head perched a jaunty straw bonnet covered with black velvet and a crown of embroidered ribbons. An apron gay with needlework added a final touch of color.

"It must be a feast day," I commented to Tony, my husband. A stranger in the seat ahead of us overheard my remark.

"No, madame," he said. "It is not a feast day."

The speaker was a short, dark man with a weatherbeaten face; as he turned, I noticed in his lapel the badge of a Swiss guide.

"The women of the Val d'Hérens," he told us proudly, "are among the last in all of Switzerland who cling to their traditional costume for everyday wear."

Evolène Means "Soft Water"

The bus slowly entered a small town—Evolène, the "capital" of the Val d'Hérens. A narrow street led between houses with stone-shingled roofs and carved wooden balconies bright with window boxes of nasturtiums and geraniums. At one point the way was so narrow that the bus scraped against tall larchwood chalets on either side. At the town fountain a woman busily washed clothes; in front of tiny shops old women sat knitting. In the soft golden sunlight the village looked like a setting for a story by the brothers Grimm (page 826).

"All out for Evolène," chanted the bus driver. The name means "soft water" in the local dialect.

My husband and I, photographers by profession and mountaineers by choice, had come to this remote valley for two weeks of training climbs before tackling some of Switzerland's more formidable peaks. In the end we stayed all summer.

Seldom have we found a location where we could so perfectly combine our two pursuits. The fertile and beautiful Val d'Hérens, in the Canton of Valais, winds for 19 miles beside the glacier torrent of the Borgne; the valley's southern end lies near the Swiss-Italian frontier. Above its fields and pastures tower some of Europe's finest snow peaks (page 838 and map, page 831).

Tinkling Bells Break Evening Quiet

That evening I strolled down Evolène's one and only street. Narrow alleys and cramped byways twisted between rude hay houses on stilts. Here and there a three- or four-story chalet loomed, its wooden walls and beams blackened with age. Many of the houses were marked with the year of their construction; we saw one dated 1697.

Suddenly the hush was broken by tinkling bells; the clack of hoofs echoed on Evolène's steep, cobbled street. Around the corner came a train of mules laden with firewood. Urging the animals uphill, barefoot urchins shouted in a dialect strange to us. Behind the boys a little girl, black skirt flying and blond pigtails bobbing above a red neckerchief, tugged at two bleating goats. In the rear of the procession came an enormous pig, snuffling and grunting ponderously.

During our summer in Evolène such scenes became almost commonplace. For in a Europe that is fast succumbing to modern, mechanized civilization, the Val d'Hérens is one of the last refuges of Old World life.

In Evolène, in near-by Haudères, in La Sage and St. Martin, we found no night clubs, no movie palaces, no television. True, the small fry have taken to chewing gum, which was introduced into Evolène not long ago. But, in the main, the siren call of the

Time Stands Still in Evolène...

Deep in the folds of Switzerland's Pennine Alps lies the Val d'Hérens, a small lost world of antique charm. Its women wear the billowing skirts and jumpers of the past; its men work the mountain slopes in the manner of their ancestors. Many of these homes date from the 16th and 17th centuries

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☛Hay harvesters wear velvet-covered hats designed centuries ago.

Kodachrome by George Rinehart Cromwell (left)

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. . in Idyllic Val d'Hérens

River Borgne, flowing to the Rhône, cuts the gorge at left. Glacier de Zanfleuron whitens distant Bernese Alps. Farmers irrigate the terraced plots and grow potatoes and rye.

→ A mule hauls his winter feed to the barn.

20th century has sounded only faintly in this idyllic valley. Folded away in the Pennine Alps of southwestern Switzerland, it is a place where time seems to stand still.

There is neither barber nor beauty shop in Evolène. Once a month a barber comes south from Sion; if the men wish more frequent haircuts, wives or sisters do the honors. The womenfolk all have long hair. Adults wear it neatly braided and fastened in a tight bun to the back of the head; some of the small girls wear pigtails. Many of the people of the Val d'Hérens, like some of their neighbors across the Italian frontier in the Valle d'Aosta, are tall, fair, and blue-eyed.

Cattle Fatten in Alpine Pastures

One morning toward the end of May, when the snow had melted from Switzerland's high pastures, we were awakened by the jangling of cowbells and the sounds of many voices. From our hotel window we could see people driving a herd of stocky black-and-brown cows along Evolène's main street. Shaggy dogs capered and barked at their heels.

This was the *inalpe*, the day when the cattle are released from their long winter confinement in the stables of the village, to be driven to mountain pastures for the summer.

Tony and I hurried to join the crowd. The herd, including heifers and calves, crossed a wooden bridge over the Borgne and toiled up a steep forest path.

How well those sturdy, short-legged beasts could climb! Up and up wound the noisy throng, toward pastures blue with masses of gentians, until the chief herdsman called a halt in a meadowland above the forest.

"How far will you take the cattle?" Tony asked.

"There, to the Alpe de la Meina," the herdsman told us. He pointed with his flat leather whip at a tiny village perched on the skyline.

"The pastures are divided among the towns of the valley," the herdsman went on. "Every spring the town selectmen decide how many cows may graze on each pasture, and for how long. It has been this way since our valley was first settled."

We started off again up the hill. The path grew steep and muddy, but the animals climbed doggedly. Finally, more than three hours after leaving Evolène, we arrived at Alpe de la Meina. Many of the women and children disappeared into the village's rough wooden chalets, which had stood empty and deserted during the bitter Alpine winter. The herdsmen inspected the stone stables.

"Our families live up here with the cows for several weeks, until summer comes," volunteered the herdsman. "Then the herdboys drive the animals to the highest pastures." He gestured toward rounded brownish slopes far above us.

Wandering around the little settlement, I peered through the window of a small chalet. The interior was bare and dim. A few wooden bunks, covered with straw and rough blankets, served as sleeping quarters. Nearby were wooden benches and a small table. In one corner a woman crouched before a fire on a crude hearth of stone slabs; over it a black pot hung from a crane.

Early in the afternoon the herd was driven to rough watering troughs hollowed from the trunks of trees. At 3 o'clock came milking time. Herdsmen lured the animals into stalls by offering them chunks of salt; then men and women sat on one-legged stools and drew the milk into crude pails.

As dusk crept over the hillside, Tony and I started down for Evolène, waving goodbye to the herdsmen and their families.

Often that summer we passed similar "cow towns," called *alpages*, on our walks through the uplands of the Val d'Hérens. Far above them we could see dark specks moving against the skyline; these were the cattle peacefully roaming their 8,000-foot-high pastures. Often, too, we heard that most pleasant of Swiss mountain music, the distant ringing of cowbells.

Not until the first flurries of snow in autumn would the cattle leave their high pastures and descend to the valley towns

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Mountain-climbing Author Surveys the Route Up Snowy Pigne d'Arolla

The mountain here presents a sheer, almost unconquerable face. Georgia Cromwell, like hundreds who make the climb each year, attained the 12,470-foot summit by mounting the gravel moraine (center), traversing the glacier (left), and scaling the ridge.

As in other Alpine glaciers, this ice is slowly receding, leaving at its foot a heap of rubble, or moraine.

Barracks in center shelter workers on the Grande Dixence hydroelectric project, which uses equipment purchased in part from the United States. The men are building a tunnel to channel glacier waters into a reservoir in the Val des Dix (page 844).

Pigne d'Arolla stands at the head of the Val d'Arolla, an upper fork of the Val d'Hérens.

 Kodachrome by Georgia Cromwell

for the winter. This descent, the reverse of springtime's inalpe, is locally called the *désalpe*.

June came, with long, warm days. Evolène's women and children no longer tended cattle. Instead, small groups of them, mothers and pigtailed daughters, trudged to the hill villages of Getty, Arbey, and Villa to plant potatoes and tend small fields of wheat and rye. Here, too, they lived in rustic chalets, used by the valley dwellers only during warm spring and summer months.

In a chalet at Arbey, Tony and I saw a Val d'Hérens version of the "hideaway" bed. The piece looked like a chest of drawers, but Mme. Chevrier Pannotier, who lived there, showed us how a bed could be drawn from it.

Over the folding bed hung a crucifix, and near the window stood a larchwood chair with a heart-shaped hole pierced in its straight back. Beside the chair rested a spinning wheel. Madame Pannotier showed me how she makes woolen yarn on it, which she knits into socks and gloves for her family. When there is time to make them, she sells extra socks and gloves.

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Valley Family Takes a Busman's Holiday; Their Mule Lends a Tail to Help a Lady

Each spring melting snows leave these mountainside meadows cluttered with rubble. Val d'Hérens folk rake them clean before sending the cows up for the summer. In the fall, rakes again sweep pastures, scattering fertilizer and scratching it into the soil.

Out for a picnic in sight of Dent Blanche (center), this family uses its mule as carryall. Even today, most of the high mountain hamlets get all their supplies by mule train. Small and gentle, the valley breed can carry up to 300 pounds. This animal bears a small boy and wooden saddle, draped with supplies.

Georgia Engelhard Cromwell

Val d'Hérens: Tiny Wrinkle in a Mountain Coverlet

As a bird wings, the valley stretches a scant 12 miles. Its 9,000 people live an up-and-down life, wintering in such Bourgeoisie towns as Evolène and summering in "cow towns" under the raves of the peaks.

The beginning of July marks the most important part of the summer for the inhabitants of the Val d'Hérens. This is when haying begins.

A successful hay crop is vital if the cattle are to be fed during the months of deep snow, when the animals are stabled in towns and villages. So when the grass grows high and luxuriant, the shoemaker deserts his shop and the mountain guide his high peaks to gather hay with their wives and children.

Hay is not made in a day in the Val d'Hérens. In good weather it may take two

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↑ La Sage Sits Dreaming in the Alps; the World's Alarms Pass It By

During the Middle Ages the pastoral people of Val d'Hérens banded together in villages like La Sage to protect themselves against marauders.

About 100 years ago sportsmen and sightseers began arriving in numbers to explore the beauties of the Alps. To accommodate their guests, some valley men became guides; others hotelkeepers.

Despite the swirl of visitors, the old-time life flows on little touched by the 20th century. Cows migrate to the mountaintops in spring and return to barns in fall. Haying, cheesemaking, and farming continue.

Peaceful La Sage stands almost 1,500 feet above Evolène.

Mountain Ash and Geraniums Frame → St. Martin Against Glacier de Zanfleuron

These larchwood chalets are constructed on story-high stone foundations to keep them dry in winter. Overhanging roofs of stone slab protect balconies from snow. Basements store food.

St. Martin, lower in elevation than La Sage, is a fruit-raising center. The village priest grows these bright flowers on rock and balcony. His mountain ash is fruiting.

 Kodachromes by Ernst Cranwall

or three weeks of concentrated effort to gather the crop from the valley floor, and another two weeks to cut it from the higher fields.

I asked Mme. Eugénie Rumpf, the wife of a mountain guide, if I could go with her someday to see the haying.

"If you don't mind getting up at 4 o'clock in the morning," she said, with a gentle smile.

Haymaking in Alpine Pastures

I didn't reach the hayfield until 5. Madame Rumpf was already at work, swinging her heavy scythe rhythmically (opposite). On surrounding meadows I could see small groups of women and children, all intensely occupied, and neat patterns of stacked fodder.

Near Madame Rumpf, eight-month-old Cécile slept peacefully in a shining modern perambulator. Two older daughters, five-year-old Evoline and eight-year-old Lydie, tossed cut hay with long-handled rakes.

Soon Madame Rumpf sat down beside me.

"It is warm work," she said, "and, besides, my scythe is dull."

On her belt she wore a pewter case containing a whetstone; she drew it out and patiently stroked the blade until she was satisfied that it was sharp once more.

On and on, hour after hour, went the cutting, the raking, the tossing. The sunlight grew hot on the hayfield. Lydie trotted off to the village, a mile or so away, and brought back a can of milk.

"That is all I will cut here today," said Madame. "The hay must be left to dry for a day or so. If it is stored when it is wet or even damp, it will become moldy and useless.

"But over there," she pointed to a far field, "is hay which is ready for storage. Lydie, will you hurry back to town and see if my sister is coming to help me as she promised?"

Lydie went off again obediently.

"We all help each other," Madame told me proudly. "Next week, when I am finished with the hay down here, I will go with my

Shy Misses in Heirloom Hats Eat Frosted Pops as They Watch a Passing Parade

Georgia Engelhard Cromwell

daughters to Buraty" (she pointed in the direction of one of the hill villages) "and help my sister-in-law, Madame Gaudin, with the high haying."

We walked to the far field. On the ground Madame Rumpf spread a square of canvas with cords attached to its four corners. Stamping wooden pegs into the ground, she looped the ends of the cords to them, pulling the cloth taut. Then she raked the dry, fragrant hay onto the cloth and tied it into an enormous bundle (page 841).

Soon Lydie was back; with her was Madame Rumpf's younger sister, who carried a baby even smaller than Cécile. The women placed their babies on a low pile of hay, where they gurgled and frolicked gaily. In a few minutes a small boy brought a mule onto the field. Evoline and Lydie stroked the friendly animal's neck and held the babies up to its soft nose.

With a single smooth movement Madame Rumpf and her sister lifted the huge bundle of hay onto the mule's wooden saddle. Madame kept the load balanced with one hand while the younger woman led the animal down the road to a small hay house (pages 826, 827, 840). A young man and the little boy spread the hay on the floor and over the rafters. Here it would stay until winter came.

In a bad season, haying can be an agonizing affair. "I shall never forget the summer of 1951," Madame Gaudin, the wife of the chief climbing guide of the valley, told me. "I thought we would never get the hay in. All spring it rained, and the crop was of poor quality. Then, when cutting time came, there was more rain. How desperately we hurried when the sun finally came out!

835 Google Digitized Original

Mme. Rumpf, Cutting Hay, Wears Whetstone Cased in Pewter

"One day I worked without ceasing from 4 in the morning until 10 at night. We had no time even to eat; when darkness came, we were too tired to do anything but fall on our bunks without removing our work clothes.

"That year we did not finish the hay harvest until the beginning of September, and then much of it was so rotted that we threw it into the river."

"How did you feed your herds?" I asked.

"We had to buy hay, and that cost a lot of money. But even if we have to deny ourselves food, it is better than letting our cows starve."

Early one August morning, Tony and I wandered across the pasture of Zaté. Beneath the shelter of a huge overhanging boulder


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stood a tiny stone hut. Its rafters were rough-hewn from tree trunks; flat slabs of stone formed the roof. There was no chimney, but smoke seeped from cracks and crevices in the mortarless walls. Half a dozen pigs lay sleeping in the sparse grass beside the hut; beyond, a herd of goats eyed us curiously.

Inside, opposite the low doorway, a log fire burned on a hearth. Over the fire, on a movable crane, hung a huge copper caldron. Into it some men were pouring pails of milk.

"They're making cheese," said Tony. We watched as another liquid went into the caldron. "That's rennet they're adding now."

Rennet, he explained, is a substance from the stomachs of suckling animals—calves in this case: for centuries men have used it to curdle milk as a step in cheese making.

When the milk and rennet had been stirred with a peeled and polished branch, the caldron was swung away from the fire and the curds were bailed into a cheesecloth bag, which was squeezed to remove the whey. Next the pulpy mass was placed in shallow wooden forms with wooden covers.

Later, one of the men explained, the cheese would be removed from the bag and rubbed with salt, then left in the cool dark cellar of the hut to ripen. A bacterial culture, added earlier, helps the ripening process. About 200 of these large cheeses are made here each summer, he said. While he talked to us, our cheese-making friend fed whey to the pigs that crowded around his feet.

Near the alpages we often saw wooden crosses, high on the wind-swept meadows, silhouetted starkly against the backdrop of snow peaks and pinnacles. Dates carved on the blackened surfaces revealed that many of these lonely monuments are more than a century old. Some are votive crosses; others, bearing names as well as dates, memorialize shepherds, cowherds, and village priests.

Stony Paths Link Alpine Pastures

Hill villages, Alpine pastures, and cheese-making establishments of the Val d'Hérens are connected only by stony paths, and mules still provide the transportation. One such path we hiked over led high into the Col de Torrent, a 9,593-foot pass linking the Val d'Hérens with the neighboring Val de Moiry.

In the past, when no motor roads penetrated these remote valleys, this rough track was the only route of trade and communication between Evolène and its eastern neighbors. In my mind's eye, I could see the heavily laden mule trains and the peasants carrying wares on their backs as they crossed the Col de Torrent centuries ago.

In September, when the larch trees are golden, new activities invade Evolène. The silence of the forest is broken by the sound of axes as woodchoppers cut the winter supply of fuel. Mules carry the loads into town, where women stack them on balconies and under jutting eaves.

Then villagers unearth their potatoes and store the crop in chalet cellars. Cattle owners open their hay houses and toss the fodder to keep it from molding. Cows no longer graze silhouetted against the skyline, but make their slow way down to the 6,000-foot pastures. Men and women spread a heavy coating of manure on the meadows, to ensure a good growth of hay for the next year.

Near the alpages, farmers balance huge, round mountain cheeses on pack boards; these will be sold in the Val d'Hérens and in the larger towns of the Rhône Valley. Pigs are slaughtered, and truckers from Evolène and Haudères drive to and from Sion bringing canned goods and other supplies to tide the folk of the Val d'Hérens over the winter.

At Evolène we got little news of the outside world. Local newspapers featured bits about a laborer at Hérémence, lower in the Val d'Hérens, who fell out of a cherry tree and broke his leg; we read of accidents in the Alps, and of a motorbike rider who collided with a post bus near Sion. But the world's graver problems rarely intruded into the peaceful villages of our valley.

Page 836

← Festival Visitors Parade Their Finery Through the Streets of Evolène

True to its name, the Canton of Valais is a land of valleys, each isolated by mountains and each a tiny world apart. Before the days of rapid communication, people of different valleys developed distinctive costumes, customs, and dialects.

Today few Valaisans except those in the Val d'Hérens wear the traditional costumes as daily dress. But most treasure the old-time apparel and put it on for special occasions such as Evolène's costume festival.

Upper: A flower-decked jeep tows a float representing the farming and spinning activities of the upper Val d'Hérens.

Lower: Musicians in top hats, knee breeches, and tail coats lead a delegation from Salvan, western Valais.

Evolène People Take Their Sunday Picnic to the Realm of Sky, Tor, and Glacier

Short, sturdy legs fit the brown-black cattle of Val d'Hérens for mountain life. Each spring cows fight for the role of herd queen and guide. The breed is believed to descend from a Roman strain.

Dent Blanche: Its Citadel a White Tooth, Its Ramparts a River of Ice

First scaled 93 years ago, 14,318-foot Dent Blanche still challenges experts. The least difficult route to the peak lies along Glacier de Ferpècle (center) and up the steep ridge from the right.

The official language of the Val d'Hérens is French, as it is in a number of other areas of polylingual Switzerland. But among themselves the natives use a time-honored dialect much like that of the Valle d'Aosta, across the border in Italy.

The children speak only this dialect until they are six or seven years old; then they are sent to school, where they are taught arithmetic, history, geography, and to read and write grammatical French. At this point, for some, their education ends. But, as we discovered, quite a few in Val d'Hérens develop a real interest in cultural matters.

One day Tony and I were coming down from a climb with two guides, Lucien Gaudin and his young brother-in-law, Marius Rumpf. They walked ahead of us, deep in animated conversation. I heard Marius say:

"No, I think Racine is by far the better of the two." They were absorbed in an argument about classic French poetry and the relative merits of Racine and Corneille!

In Evolène on August 1, birthday of the Swiss Confederation in 1291, the streets were hung with flags.* In the evening we watched fireworks and huge bonfires flaring from the hill villages. Later we joined in a ball held at one of Evolène's small cafés. Somewhat surprisingly, there were no old-time country dances; the steps were the same as in New York or San Francisco.

Many of the larchwood houses of Val d'Hérens date back several centuries, and new buildings must by local edict conform with the old style of architecture.

One evening we had dinner with guide Jean Rumpf and his wife. Their small dining room is paneled with larch, and the chest of

* See "An August First in Gruyères," by Melville Bell Grosvenor, NATIONAL GEOGRAPHIC MAGAZINE, August, 1936.

← **Day's End: A Harvest of Sweet-smelling Hay Rides Home to Evolène**

↓ Madame Rumpf and her sister tend babies while handling hay (page 835). This crop, a mixture of wild flowers and grasses, feeds cattle during winter. Women never cut their hair; hats fit around and over braids.

Georgia Engelhard Cromwell

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Raclette, Alpine Rarebit, Whets Picnic Appetites

The recipe: Journey to a mountain meadow with a view (page 838), build a fire, and slice a wheel of cheese in half (right). Turn the cut edge to the fire and melt. Scrape the molten cheese onto a slice of bread or boiled potato and add a dash of mustard. Then eat, as do the author (above) and her friends (below).

Kodachromes by Karen Cromwell and Mitsuchiman (below) by Georgia Engelhard Cromwell

drawers, the large cupboard, and the table and chairs are of stone pine, a wood highly prized by Swiss cabinetmakers. In one corner stands a large rectangular stove. Curtains and upholstery are products of local looms, quiet and harmonious in design.

Madame Rumpf's dinner, too, was quite conventional: hors d'oeuvres, a roast with vegetables and potatoes, crisp salad, and a bowl of stewed fruit.

Pride Preserves Old Valley Dress

Chatting one day with Mademoiselle Métrailler, who runs the Evolène weaving shop, I asked why the women of the Val d'Hérens still cling to the costumes of their ancestors. She looked at me with surprise.

"Our dress is more beautiful than modern styles," she said. "Why should we give it up?"

At the Cantonal Festival of Costumes, held in mid-August, the traditional Evolénard styles were shown in contrast to the dress of other neighboring districts. Evolène, with its Old World atmosphere, its aura of tradition, provided a perfect setting for this fete.

Sometimes only the people of the Val d'Hérens participate, but during our summer in the valley there was a special treat. Folk came from all over the Canton of Valais; each district, each town sent its costumes.

Visitors came in post buses and Volkswagens, on motorbikes and bicycles; some even trudged the dusty 17 miles from Sion on foot. Ladies from Hérémence brought tall gold-trimmed headdresses and black, gold-embroidered skirts. The women of Sion appeared in puffed and panniered gowns of pastel shades and broad-brimmed straw hats; women from Isérables bore on their heads miniature wooden cradles filled with flowers. Fifers from St. Luc, in the Val d'Anniviers, played in frock coats, knee breeches, and stovepipe hats (page 836).

Evolène was represented by its men in suits of brown cloth with brown velvet lapels, and by its women in their bright dresses and hats. Some carried long-handled hay rakes; others bore sheaves of barley. A team of mules dragged an elaborate float displaying Evolène's local industries: spinning, and weaving on a hand loom.

Visitors from all over Switzerland cheered the procession as it wound through the town. Peaceful Evolène was transformed for a day into a buzzing metropolis.

After the procession a rustic banquet was held on a near-by meadow. Tables were piled high with sausages, cheeses, cakes, and bottles of Rhône Valley wine. Dancers whirled on a wooden platform to the music of a band from Haudères. The ladies of Sion sang old folk songs.

Everybody had a wonderful, carefree time. Against the handsome backdrop of the Glacier de Ferpècle and craggy Les Dents, Evolène's peasant pageantry created an unforgettable scene.

To learn about the history of the Val d'Hérens, we visited Evolène's old schoolmaster, M. Antoine Maître. The gray-bearded scholar bowed over my hand in courtly fashion.

No one, he told us, knows exactly when the Val d'Hérens was first settled. In clipped, precise French he continued:

"The Roman legions conquered our province, Canton Valais, and settled along the Rhône. They apparently taught our ancestors how to make wine; it was the Romans who planted vineyards where you see them today between Martigny and Sierre."

The people of the Val d'Hérens, the schoolmaster said, were peaceful, pastoral folk. Records from the Middle Ages show that their livelihood was then, as it is now, the raising of cattle and the making of butter and cheese. During the 13th and 14th centuries the people banded together to found the little hill towns of Getty, Lannaz, Bréonnaz, and La Sage, as well as Evolène, to protect themselves and their herds against pillaging bands of wanderers.

The Evoiénards, especially, were constantly harried by marauders from the Valle d'Aosta in northern Italy, just across the mountains from the Val d'Hérens. Finally, toward the end of the 14th century, a treaty was arranged, allowing the Evolénards to drive their sheep and cattle across the glaciated Col de Collon and down the Valpelline to the Roman fortified town of Aosta, where great fairs were held.

Family Names Came from Occupations

M. Maître told us that many of the family names current in the Val d'Hérens hark back to feudal days when surnames were rare. Then people called themselves by the town they inhabited or by their occupation. Bovier or Bouvier was a cowherd, while Favre signified a blacksmith. The school teacher's own

← Cabane des Dix: Haven in an Icy Wilderness

This hammock-crowning hut, one of a chain of refuges maintained by the Swiss Alpine Club, can accommodate 60 guests. Overnight lodgers bed down in large bunkrooms. Everyone sleeps with his clothes on, but it is considered good form to remove climbing boots before retiring. The hut furnishes felt slippers, spring mattresses, and blankets.

The author and her guide, Marius Rumpf, stride the Glacier de la Luette. Rumpf, in dark glasses, lightweight clothing, and rubber-cleated boots, is dressed to climb a snow peak. He carries ice ax and rope. Food and a sweater for the heights fill his rucksack.

Clouds in the background mantle Les Dents massif.

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A Climber Hacks Footholds → Up a Shimmering Wall of Ice

Guide Lucien Gaudin leads a party of mountaineers connected to his rope. Taking every precaution, he holds his body in balance and somewhat apart from the cliff—a technique that permits his feet to press more firmly forward into the steps.

Gaudin's ax, thrust quickly into the ice, can save a slip from becoming a fall.

Last summer was so cold and rainy in Europe that Val d'Hérens guides found little work. Depending on the difficulty of the climb, veterans like Gaudin can make up to $50 a day.

← Page 844: Thawing at a warmer hour, this slope froze into a choppy sea of ice. Climbers thread the obstacle course on Pigne d'Arolla (page 830). The rope links them for safety.

name, Maître, means "teacher." One of the mountain guides from Evolène is Henri Chevrier; his ancestors were *chevriers*, or goatherds.

Not until the 16th and 17th centuries did artisans—weavers, stonemasons, carpenters, and shoemakers—establish themselves in the smaller towns. To my surprise, the schoolmaster told us most trade was based on the barter system until the last century.

We thanked M. Maître for the information, and he seemed pleased. "So few Americans come to our valley," he remarked. "It is perhaps too simple a place for them."

How to Make Friends with Evolénards

At first glance, the people of the Val d'Hérens are aloof and reserved. But once we came to know them, we found them a kind and warmhearted folk.

Once at our hotel a Belgian woman complained that the Evolénards seemed unfriendly. "Just this morning," she fumed, "I tried to photograph one of the haymakers. The woman turned her back on me and shouted that my mother had taught me no manners."

"Next time," I suggested, "try asking permission first. She'll probably allow you to make her photograph and then invite you to share her lunch."

One old lady at the Bazar du Centre, where we bought many of our picnic supplies, often gave us little presents: gumdrops or chocolate. She always wanted to know where our mountain-climbing expeditions would take us.

"I pray for you on these trips," she said. "If I know you are climbing a difficult mountain, I say a special prayer."

During our summer in Val d'Hérens Tenzing Norkey, the Sherpa climber who accompanied Sir Edmund Hillary in 1953 to the summit of Everest, spent a few days in Evolène.* Visitors from outside the valley pestered him for autographs and photographs. But not the Evolénards. Being mountain folk, they were thrilled to have "the highest man in the world" (to quote Lucien Gaudin) among them.

In other towns his presence might have created mob scenes. But here Tenzing was treated with the utmost courtesy and respect. He was not stared at by the natives or pursued by bands of curious children; there were no banquets and no speechmaking. Not only the beauty of the Val d'Hérens but the kindly tact of its people impressed Tenzing deeply.

"I feel at home here," he told me. "It is like being in my own country, with my own people. It is the nicest place in Switzerland."

One day toward the end of September, Lucien invited us to join him and his family on a Sunday picnic to the Alpe d'Arbey.

"And as a token of our friendship," he said to me, "will you do us the honor of wearing the Val d'Hérens costume?"

Tony and I were deeply touched, for this invitation symbolized our acceptance as members of the simple but proud community.

The party consisted of Lucien, his wife and children, the two Rumpf girls, and a young couple, the Métrailliers.

Marcel Métrailler brought his mule. On it we loaded five-year-old Lucien Gaudin, sacks containing bottles of white wine, an enormous golden cheese, and some boiled potatoes.

The Alpe d'Arbey, which Lucien had selected, offered a perfect picnic place: a high, small meadow bright with flowers. Friendly cows came up to lick our arms and hands in search of salt. Hundreds of feet below, Evolène's brown-and-white chalets and the church with its stone steeple drowsed in the September sun. The town looked like a toy, dwarfed beneath the snowy Dent Blanche that towered at the head of the valley.

Lucien and Marcel built a fire and placed the cheese on a large flat stone beside it. As the cheese melted to a sticky golden paste, they scraped it off onto the boiled potatoes

* See "Triumph on Everest," by Sir John Hunt and Sir Edmund Hillary, National Geographic Magazine, July, 1954.

For reaching the top of Everest, the National Geographic Society in 1954 presented Tenzing Norkey with a cash award and a replica of The Society's Hubbard Medal given to the expedition.

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Guide Uses His Rope as a Brake ➔ Rappelling Down a Precipice

Mountaineers rappel, or rope down, when hand and foot holds are scarce or the rock appears rotten and subject to avalanche. Here on a descent from the ridge of Bertol, Marius Rumpf controls his drop by snubbing the rope between his legs and across his shoulder. Leaning back into space, he braces his feet against the rock. Though this technique appears sensationally dangerous, it is comparatively safe.

Pigne d'Arolla rears on the right. Rains have corrugated the soft moraine at its foot.

Inset: Guide Gaudin cautiously tests hand and foot holds on La Rousette, a peak near Arolla. Mrs. Cromwell pays out rope and awaits her turn to move up.

 Kodachromes by Edna Cromwell

Sweet-toothed Goats, Craving Chocolate Tidbits, Accost a Climber

Goats as well as cows summer on Val d'Hérens' high mountain pastures. Eaton Cromwell feeds this pair on the stone terrace of a chalet high above the resort town of Arolla.

and added a touch of mustard. This was *raclette*, the Val d'Hérens version of rarebit, and a culinary specialty of the region (pages 830 and 842).

The children sang and danced together, their treble voices mingling with the tinkling of cowbells and the lowing of cattle. Black skirts swirled and pigtails gleamed in the golden afternoon light. It was like a gay and beautiful dream.

Winter Comes to the Val d'Hérens

But, like a dream, the picnic ended all too soon; blue shadows crept slowly up the hillside, and chilly breezes warned that it was time to descend to Evolène.

As we walked down, Lucien said to us sadly:

"I know you must be going home to New York, but I wish you would stay.

"When you leave, I must give up mountain climbing and go back to my life as a farmer," he added with a wry grin.

Inevitably the day of our departure arrived. A sudden storm brought snow far down on the hillsides. Wind roared through the larch trees, and tormented clouds raced across the Glacier de Ferpècle and the sharp ridges of the Dent Blanche, highest peak of the Val d'Hérens (page 839).

At the post office we boarded the yellow bus that would take us back to Sion. The Gaudins and the Rumpfs were there to see us off.

"Be sure to come again next year," they chorused. "Be sure to write to us from New York."

Leaning out of the bus window, we waved at the little group. The women and girls stood proud and erect in their handsome costumes. The driver tooted the bugle notes of his post horn.

Then the bus rumbled down the steep, winding road, down into the misty gorge of the Borgne, away from the Val d'Hérens, our valley of enchantment.

A Silver-voiced Bird with a Lyre-shaped Tail Sets the Forest Echoing as He Sings for His Mate—and Eavesdropping Humans

By L. H. Smith

With Illustrations from Photographs by the Author

"Timothy" stood on his earth mound deep in Sherbrooke Forest, spread his tail feathers into a shimmering fan, and began to sing. In a clump of tall ferns a few feet away I crouched quietly to watch the dramatic display.

He was in the midst of his song and dance when an aircraft passed, more than a mile overhead. He paused, cocked an eye upward, raised his topknot, and stalked away with ruffled dignity. Timothy hated planes.

Yet for nearly 25 years this particular lyrebird tolerated human intrusion into his domain, the thick, damp woods in the hills 20 miles east of Melbourne, the best-known habitat of his species. Lyrebirds, so called because their tail feathers curve gracefully into a form suggesting a Greek lyre, live only in Australia's eastern and southeastern highlands.* They are about the size of domestic hens; ordinarily, they do not fly.

Many American soldiers will remember with pleasure meeting His Majesty Timothy. For about 15 years I was one of his devoted admirers. During that time, I was fortunate also in finding many others of his kind and learning their fascinating ways.

Female Who Wouldn't Pose

Except in rare instances of stralght-out luck, he who would see a lyrebird in the wild must search diligently, and he must usually expect disappointment. I remember well my excitement, more than 20 years ago, when I saw my first.

I was walking down Sherbrooke gully, and I had my camera with me—just in case. Suddenly a dark brown form streaked over the ground ahead of me and up a slope. It vanished almost before I could realize it was a lyrebird. Then the chase began. The going was rough, the hill steep, and I breathless. Holding the carrying strap of my camera in my teeth, I crawled on hands and knees up the bank.

Abruptly, I saw my quarry directly in front of me. My heart beat faster. It was a female, and only a dozen feet away. She scratched vigorously for worms, apparently oblivious of my presence.

As quietly as possible, I edged closer—ten feet—eight feet.

"Now," I thought. "This is the moment!"

But she moved on a few paces. Cautiously I followed. I tried to dodge little twigs and bracken which might obscure the picture. It was going to be a perfect photograph. I was young then.

At last I found myself on one end of a rotten log with the bird on the other, about eight feet away. Carefully I focused the camera, held my breath, and—Mrs. Lyrebird trotted off down the gully, leaving me literally out on a limb.

Many Hunts, Few Pictures

This was only one of a series of bitter disappointments. Trying to photograph the female lyrebird is exasperating enough; to get the male in front of a lens is even harder. A few successes, however, have made the campaign worth while.

Furthermore, the sheer pleasure of rambling through Sherbrooke is reward in itself. Heavily timbered slopes alternate with dells where streamlets gurgle after winter rains. Tall mountain ash trees rise majestically on flying buttress bases; there are musk trees, and in springtime acacias turn the forest gold with beautiful blossoms.

Here one may find wallabies, bandicoots, wombats, possums, and wood mice, as well as innumerable birds. The black cockatoo, the kookaburra, the currawong, the harmonious thrush, the whipbird, the rosella, and the delightful yellow-breasted shrike robin are just a few. Nor would the list be complete without mention of the pink robin, with his deep-pink breast and sooty-blue body, making a pretty picture as he flits in and out of the green ferns.

Sherbrooke Forest has many moods. Sometimes it is heavy with silence, sometimes vi-

*See "Beyond Australia's Cities," by W. Robert Moore, National Geographic Magazine, December, 1936.

Kodachrome by L. H. Smith

Sweet-singing Lyrebird's Shimmering Tail Feathers Spread Like a Silvery Parasol

Two side plumes suggesting the shape of a Greek lyre, two fine whiplike feathers, and 12 filamentary feathers adorn the lyrebird, an inhabitant of Australia's eastern and southeastern highlands. This is Timothy, long-time "king" of fern-floored Sherbrooke Forest, 20 miles east of Melbourne. Atop an earth mound, he displays his fanlike plumage and pours forth melodious song. If his mate approaches, he attempts to capture her beneath the outspread tail.

brant with varicolored songsters and gay beneath the blue of a September sky. It can sound harsh as trees fight the angry winds of July, a winter month in Australia. Muffled in winter fog, it becomes cold and forbidding.

To know Sherbrooke, you must roam its wide expanses, smell its fragrance in spring and autumn, and see the iridescent hues of dewdrops glistening on tree ferns or suspended like jewels in a delicate spider web. You must lie on the forest floor and gaze up through spreading branches, waiting for a lyrebird to begin its song.

As a songster, the lyrebird, particularly the male, is justly famous; but its song is only part of its charm. The glittering display of the silvery filaments of its tail is a deeply moving spectacle (opposite).

Myth of the Musical Tail

Ever since this remarkable creature was discovered in the newly founded colony of New South Wales 157 years ago, visitors from overseas have made special efforts to see and hear it. The first recorded specimen collected by a white man was taken in 1798, 10 years after the colony was founded.

John Gould, often called the father of Australian ornithology, devoted considerable time in 1838-40 to a search for the lyrebird. But because of the rugged nature of the country and the extreme timidity of the bird, he obtained only a few specimens.

The lyrebird's song was a great mystery to early observers or, rather, listeners, for there were few indeed who reported seeing the bird displaying and singing.

One wild story was that the lyrebird made his song by moving his tail feathers in the breeze. Even now, as one sees the bird pouring forth his melody with effortless precision and observes his throat rippling, it is almost impossible to understand how he does it.

There are two species: the Superb Lyrebird, *Menura novae-hollandiae*, the more common, found in Victoria and New South Wales; and the Albert Lyrebird, *M. alberti*, first named by John Gould in honor of Prince Albert, Queen Victoria's consort. This species is confined to northeastern New South Wales and southeast Queensland.

The two species have much in common. Both are gifted songsters and superb mimics. The males have 16 feathers in the tail, consisting of two lyrate feathers, two fine whip-like feathers, and 12 filamentary feathers.

There are, however, striking differences. The broad side feathers of the Superb are about 30 inches long. They are marked with a series of V-like "windows" and are beautifully colored on the underside. Birds pictured on these pages are all Superb.

The feathers of the Albert are much shorter than those of the Superb, and are a plain silvery blue-gray on the underside, without other markings except a black tip.

The body of the Superb is a grayish brown on top, gray on the neck, with a coppery tinge across the shoulders and on the end of the wings; the crown of the head is dark brown to black.

The Albert is much more colorful. The back is coppery to rufous, and there is a rufous patch beneath the throat. The under coverts of the tail are also a bright rufous.

Lyrebirds ordinarily begin mating in May. Naturally the breeding season is the period of greatest emotional activity. Observations on many pairs indicate they are mated for life; yet every year at the beginning of winter the male birds woo their mates ardently.

How the Male Builds His Mound

Frequently during this period the male leaves his feeding ground and runs to sing and display on a mound he has constructed amid the ferns or bracken.

In preparing the mound, the bird first clears the ground by breaking off the bracken with his claws and digging out the roots. Then he scratches earth toward the center of the clearing, piling it up six to nine inches.

One bird may have as many as a dozen mounds all in secluded spots. Generally speaking, the birds do not share mounds, although I have often seen different birds perform on "borrowed" mounds. Each bird lives in its own particular area, which extends over a radius of perhaps 200 yards, but there is considerable overlapping at the margins.

During the opera season in lyrebird land the male may sing and display several times in the course of a day. He does not always visit the mound to do this; often he breaks off in the act of feeding to release a burst of song. Such outpourings of melody frequently serve to rouse his emotions, and he will rush to a mound to continue the display and song for perhaps half an hour.

The lyrebird's song includes not only his own powerful, rippling call, but a melodious blending of the notes of many other birds.

← Snuggled in Its Warm Nest, a Wary Chick Eyes Intruders

May and June, and occasionally April, find the female lyrebird weaving her nest, sometimes on the ground, sometimes in a tree. She lines a stick framework with fern roots and soft gray feathers from her flanks. Dry eucalyptus leaves sprinkled around the top provide camouflage.

A circular entrance in the front opens into a large inner cavity, sloped toward the rear to ensure the egg's safety. Here, with tail curled over her back, the female incubates her solitary egg and hatches a helpless, almost naked chick.

The male never helps build the nest or feed the young. He sings and displays at a distance as his mate performs the numerous tasks.

As the youngster grows, bare skin disappears beneath soft down. To exercise, it stands erect and stretches in the nest's hollow dome.

↓ Mother Bird Arrives with Worm-laden Beak

At five or six weeks of age the chick will totter from the nest and follow mother into the forest. Emerging from a ground-level nest like this presents no problem, but the first descent from a high tree nest is fraught with peril. Fluttering from its skyscraper nursery, the young bird may break a wing. Lyrebirds seldom fly; they climb by jumping from limb to limb and then glide earthward.

Hungry Male Combs the Forest for Food

Full beauty of his tail feathers is revealed only in display (page 850). Here the ground-dwelling lyrebird scratches for worms, centipedes, and tiny crustaceans in Australia's rich, damp forest soil. Lichens and moss drape mountain ash and rock.

Hygienic Mother Discards Droppings

Presumably to destroy the scent, she carries the chick's droppings in her beak to a near-by stream. Tail feathers of the female, unlike the male's, are plain and broad. The two lyrate feathers are much shorter and less prominent.

He imitates the hearty laughter of the kookaburra, the flutelike notes of the butcherbird, the harsh screeching of the black cockatoo, the resounding crack of the male whipbird and the soft notes of the female in reply. He pours forth the liquid notes of the harmonious thrush, the glorious song of the blackbird (an introduced species), and, most remarkable, the sounds of several different birds all "talking" at the same time.

Song May Imitate a Buzz Saw

In the lyrebird's song you may hear the rustling of the wings of crimson rosellas in flight, the "guinea-a-week" call of the pilot bird, the sharp "Egypt" cry of the crescent honey eater. Indeed, it may imitate almost any other bird. In addition, there are calls resembling the barking of a dog, the whistle of a train, even the buzz of a saw!

The song is usually continuous, passing with effortless grace from one call to another.

The lyrebird sings best from May to September or October, though he may sing at any time.

Frequently, while the bird is displaying, the female will come to the mound to watch her mate, and then his excitement becomes intense. His filaments vibrate so fast they look like a shimmering haze of silver, and he circles rapidly in an attempt to capture the female beneath his outspread tail. It is a moving experience to see the two birds, partners for life, touch their beaks together in ecstasy.

Throughout the display the bird's body is usually concealed beneath his tail feathers, spread like a glittering parasol.

When the display is over, the bird throws his tail back, often holding it wide apart and then slowly bringing it together like a fan being closed. He stands upon the mound for a brief period, as if in deep meditation. He then raises his crest, shakes his feathers into position, and walks sedately off the mound into the forest.

Female Builds the Home

The female lyrebird is most industrious and sagacious. She constructs her nest, unaided, in the April-May-June period. The position of the nest varies from ground level to a height of perhaps 80 feet. It is commonly situated in the fork of a tree or between two trees at heights of from three to ten feet, often overlooking a stream.

The solitary egg is normally laid in the June-July period, though sometimes much later. It weighs about two ounces and varies in base color from light to dark-grayish purple with dark-brownish purple splotches over it. In preparation for the egg, the female lines her nest partly with soft, loose feathers from her own flanks.

Since the chick is hatched in the depth of winter, when snow often falls in the forest, his mother spends much of her time the first few days sitting in the nest to keep him warm. But by the time he is a week old, mother lyrebird is required to expend a good deal of energy gathering food for the young one: worms, centipedes, and similar delicacies.

She keeps the nest hygienic by carrying the chick's droppings to a near-by stream (page 853). This habit tends to destroy the scent and so protect the chick from predators. A cluster of droppings in a creek has often led me ultimately to a nest.

The chick remains in the nest until he is five or six weeks old, when he totters into the forest after his mother. September is graduation month for baby lyrebird.

For a few days, possibly a week or so, his mother hides him in the grass or behind a large log, or at the base of a clump of trees, while she continues to feed him. Even as late as May of the following year, I have seen a female pass a tidbit to her last season's chick.

How to Make Friends with a Mother

While the baby is in the nest, the mother bird is very brave and usually tries to chase intruders away. However, after she becomes used to visitors, she generally goes about her normal duties of caring for the chick with apparent unconcern, provided no attempt is made to approach the nest.

Under such conditions some birds become quite friendly. We used to take a tin of worms from a suburban garden every Sunday to one particular female, and when the supply failed, we took a garden fork and dug for worms in the forest near the nest. The female followed the fork and took the worms as they were thrown across to her.

We have succeeded in winning the confidence of two females in Sherbrooke Forest to such an extent that they have come up and fed the chick when it was carefully held in my wife's hands. Birds have done this in three successive years; we do not know of any parallel event elsewhere.

↓ Beauty Vanishes When Feathers Molt

Not until he is seven or eight years old does the male lyrebird acquire his tail of maturity. Once a year thereafter he sheds all 16 tail feathers and grows a new set.

"Even while molting, the bird may sing and display," says the author. "His little tuft of a tail vibrates merrily while he pours out melody."

↑ Timothy Preens on a Fallen Limb

↓ Milliners once avidly sought these showy feathers for ladies' hats. Today laws protect the birds. V-like markings decorate the 30-inch-long lyrate feathers. Timothy holds them unusually straight as he performs a rhythmic dance.

Kodachromes by L. H. Smith

L. H. Harth

In Striking Pose, a Female Imitates Her Mate's Display

"Excitable and rather unfriendly, this bird used the display to lure me away from her nest in Sherbrooke Forest," says the author. "I nicknamed her the 'photogenic female,' but she was far less spectacular than the male."

The female lyrebird is about the size of a male, but her plumage is less colorful. Her back is mottled brown, her breast and the underside of her tail gray. Unlike that of the male, her tail consists of plain broad feathers, dark brown above and light brown to gray beneath. Her two lyrate feathers are much shorter and less prominent.

The females often sing, and some are good songsters. Some even throw their tails over their heads in an attempt to display, but the effect is not nearly so spectacular as that produced by the male. One female in Sherbrooke Forest, unusually given to displaying and singing, was known as "the singing hen." Strangely enough, this bird was always unfriendly; I was never able to win her confidence, as with other birds.

At the end of the breeding season, from about September onward, the males molt their 16 tail feathers over a period of three to four weeks (page 855). New feathers grow quickly and are complete again within four months. When he is free of the tail, the male occasionally flies.

The lyrebird is "family minded," and it is common to find a group of four, five, six, or even seven scratching side by side. If one should find such a group in, say, March or April, almost invariably one of them is the female, with last season's chick in attendance, and all the others are the progeny of years gone by.

The male is frequently near and occasionally will cease feeding to stalk majestically over to the female and chick. After either

When the nest is high, the female reaches it, not by flying but by springing zigzag from limb to limb in near-by trees until she is high enough to spring across to the nest. She regains the ground in a glorious glide.

Although the high nest protects the chick from forest prowlers, it is not always in his best interests. I know of one nest 80 feet high which was occupied by a chick for eight weeks. Though I didn't see it, the descent of the youngster must have been fraught with peril. One bird I have known for several years has a broken wing, an injury very probably sustained when he came down from a "skyscraper" nursery.

casting an approving glance at them—or reminding them that he is still the master (I am not sure which)—he resumes his feeding. Sometimes he will quickly displace one of his offspring from a good worm patch.

The young males and females look alike at first. But when the male is six or seven years old, his tail undergoes a remarkable change: filamentary and lyrate feathers commence to grow. Thus one sees "changelings" with perhaps one or two filamentary feathers in their plain tails; later the number of filamentaries increases and lyrate feathers grow.

Young Birds Form Lasting Friendships

For some time both immature and mature lyrate feathers are worn, but ultimately the transformation is complete. By careful observation and luck in finding birds with special markings, I have been able to follow this transformation. It takes about a year.

The male lyrebird therefore acquires the tail of maturity after seven or eight years, but he certainly does not always mate then. I have observed a male with a mature tail still the playmate of a near-mature male, and although there was abundant evidence of their interest in females, I am certain that these adolescents had not yet mated.

These friendships between lyrebirds last for many years; it is probable that the birds are members of the same family. Even after they have mated and taken up their own territories, the birds often meet and sometimes visit one another on their display mounds.

Usually such meetings are followed by a game of "chasey," when the birds run through the forest playing "follow the leader" for 20 minutes or more. I have seen as many as five of them in the one game. Often at the termination of the game one of the birds will go to a favorite mound to display and sing as if possessed. On rare occasions two birds will join in the display and entertain one another. This is indeed a moving spectacle and a feast of melody!

The immature males are fond of singing and displaying; especially in spring they take over when the mature birds are going into molt.

Lyrebirds vary greatly in temperament and approachability. They are inclined to be timid, but some—males, females, and immature birds—will tolerate a surprising amount of human intrusion. This alone has made photography possible.

Timothy, who became perhaps the best known of Sherbrooke's lyrebirds, was unusually friendly, and I spent many happy hours in his company. Dawn always found him high in a mountain ash or a giant blackwood, and from his lofty perch he would serenade the new day. For perhaps a quarter of an hour he would sing; then, with a splendid glide, he would come to earth and seek his breakfast.

I came to know most of Timothy's moods and habits. I learned to know when he was going to cease feeding and spring to one of his many perches, worn free of moss and bark by years of use, and sing. By his actions on the mound I could tell when his mate was near by, for then Timothy would move his tail rapidly from side to side and sometimes back off the mound in his excitement.

At other times he would be on his mound completely carried away by his own song, then suddenly cease singing and grow tense. He would dart his head from side to side and up and down. I learned that this meant Jock, a male playmate, was approaching through the dense bracken. Jock would greet his friend with a most peculiar call, which sounded like "Paaaaaart! Paaaaaaart!"

Three-cornered Game of Tag

At this sound Timothy would usually race off his mound in hot pursuit of the visitor, who always anticipated the first rush and led the chase. They would course wildly through the woods for perhaps half an hour. Sometimes I would follow, a poor third, breathless, camera in hand. More often I was saved from too much running by the fact that they usually coursed in wide circles.

I remember the last day I saw Timothy, a glorious one in early spring. For an hour at mid-morning I stood quietly watching him feeding, waiting for him to spring up onto a low stump to sing and preen. After he had completed his toilet, he went to a favorite mound, where he sang and displayed.

At 3 in the afternoon he was back on the same mound and from there went to a well-worn limb.

I left him there, and that was the last I ever saw of him. He was known to be at least 25 years old; now he is dead. Whether he fell to a prowling fox or just died of old age, I do not know. But I do know that Sherbrooke Forest does not seem the same without him.

Passage to Freedom in Viet Nam

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By Gertrude Samuels

SUPPOSE more than half a million Maine farmers and town dwellers were suddenly uprooted, moved 1,000 miles south by ship, and resettled in North Carolina.

Imagine the countless problems such an upheaval in human geography would involve, and you have some idea of the gigantic task of transplanting more than 700,000 men, women, and children from Communist North Viet Nam to free South Viet Nam in Indochina.

Problems there were far greater than they would be in the United States, with its vast resources and rail network. Yet despite overwhelming difficulties, the refugees *have* been moved, and impressive progress has already been made toward their resettlement. Three governments—the United States, France, and Viet Nam—worked with private relief agencies to handle the migration.

Why did the refugees leave their homes and fields to flee south?

In a muddy refugee camp in South Viet Nam I asked this question of a small, wiry man in a torn shirt and black shorts. His name was Ngo Van Hoi, and he had once owned a small grocery shop in his Tonkin home in the north.

Flight from Terror

"Some of my family were killed," he told me, "by the French bombings and by the Viet Minh"—the North Viet Nam Communist forces.

"And then," he added, "we were forbidden to go to church." Like the great majority

of the refugees, he and his family are Roman Catholics.

So Ngo Van Hoi had taken his seven children, aged from 3 to 17 years, and gone to the Catholic church in Hung Yen, where he lived. From there, with many of his neighbors, he began the 1,000-mile journey to freedom.

Since 1947, my overseas "beat" for the *New York Times Magazine* has been refugees. I have visited the displaced-persons camps of Europe; sailed with homeless Jews to Israel; been in Korea during the war when thousands of refugees fled south with their worldly goods roped to A-frames on their weary backs.*

* See "The GI and the Kids of Korea," by Robert H. Mosier, National Geographic Magazine, May, 1953.

← **Refugee-laden U. S. Navy Ship Ends a Mercy Run to Saigon, Freedom's Port of Entry**

Northern Viet Nam went under the Communist heel in July, 1954, by terms of the Geneva cease-fire agreement that brought an uneasy peace to Indochina. The pact granted free movement of population across the demarcation line as opposing armies were shifted. More than 100,000 people fled south in one of modern history's epic migrations.

About a third escaped in United States Navy ships that shuttled between Saigon and Haiphong, now in Communist hands.

Here U.S.S. *Montrose*, an attack transport, docks in the Saigon River with 2,000 passengers weary after three days at sea.

↓ Another transport, U.S.S. *Montrose*, put up this whiteside welcome in English, French, and Vietnamese (page 866).

U. S. Foreign Operations Administration (left)
Gertrude Samuels, Pix, Inc.

← Prayer Lightens Bitter Burdens on the Road South

Like most who fled the Reddled Viet Minh, these Tonkinese villagers are Catholic. Their priests organized the migration and served on the marches as leaders and comforters.

Peter Schmid, Pix, Inc.

♦ Only one last look back on the thatched village these humble people called home. Leaving the place where they were born and had hoped to spend their lives, they carry faith in their hearts and a few cherished possessions on their backs. Luckier than many, this group leaves without Communist hindrance.

 Francois Pages, Black Star

Just before coming to Viet Nam, I had been touring the Near East, India, and Pakistan to observe refugees made homeless by political and religious strife.

And yet I was unprepared for the strange human paradoxes of Saigon, where I observed the refugees as they arrived.

The background of their flight is now history. The cease-fire agreement of July, 1954, signed in Geneva, gave the Communist Viet Minh forces provisional control of the land north of the 17th parallel, including a population of 12,000,000—more people than all New England—and the cities of Hanoi, Hai Duong, and Haiphong (map, page 862).

To South Viet Nam the treaty assigned the land south of the 17th parallel, with 11,000,000 people, the capital city of Saigon, and the rich farmlands of the south.

French forces received the right to stage

Wide World

Incident of Flight: a Curbside Bath

From her chubby youngster a mother washes the dust of Hanoi, soon afterward occupied by Communists. Refugee baggage clutters the sidewalk. Two layers of palm leaf go into a conical coolie hat, called *cai non*.

their withdrawal from the Communist zone over a period of from 80 to 300 days, depending on the area. Similarly, the Viet Minh were committed to pull back their forces from south of the 17th parallel by May 19, 1955. Civilians who wished to do so could move from one side to the other while the troops were withdrawing.

As the deadlines for French withdrawal neared, people surged overland and to the sea, seeking to move south. Under the French colonial administration, some 1,600,000 Vietnamese had been converted to Catholicism by French missionaries, and the Catholics came first. Buddhists and members of other religious groups also joined the exodus.

The people were sub-

Viet Nam: One More Divided Land

France no longer governs her former colony of Indochina. Communists rule 12,000,000 people and 60,900 square miles north of the cease-fire line. Free South Viet Nam governs 11,000,000 citizens and 66,305 square miles. Communist pressure threatens the independent States of Laos and Cambodia.

Above: Danger lies behind, yet fear still freezes faces that should be wet with smiles.

863 Wide World

The French Air Force Flew Thousands to Safety. A Plane Loads at Nam Dinh

jected to pressure and propaganda from both sides. The Communists told them that they would be thrown off boats, have their hands cut off, or suffer epidemic disease if they left their villages; the other side warned the villagers about their fate as Catholics if they stayed north under communism. More important than the propaganda, the priests, knowing how the Reds would treat the Church, were the prime movers in saving their flocks.

By August 10, 1954, an estimated 200,000 refugees were awaiting evacuation from Hanoi and Haiphong. Most had sold all their worldly goods; camping in the streets, many were robbed or mobbed by pro-Reds.

In what became known as "Operation Exodus," four nations shared the humanitarian effort to lift the refugees out of their misery: the Vietnamese created reception centers and provided some basic amenities; the French supplied ships and planes; the British provided an aircraft carrier; the United States organized Navy Task Force 90, comprising more than 30 ships, to aid the evacuation.

Paradox in Saigon

The exodus by sea was from Haiphong, chief port of North Viet Nam, to Saigon, capital and biggest port in the south. The number who moved south was larger, staggeringly larger, than the South Viet Nam Government had expected.

The number who wanted to move north was tiny by comparison; reliable estimates put the civilian total at about 40.

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U. S. Navy, Official

A Human Tide Waits Patiently to Board a Freedom Ship near Haiphong

Refugees throng the well deck of a French Navy landing ship that ferried them to the steep-sided U. S. transport (right). They face a 1,000-mile South China Sea voyage. French sailors help make the gangway fast.

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Peter Stackpole, Pix, Inc

Big Hands, Even Kind Ones, Frighten a Little Boy with Terror Too Fresh in Memory

Enraged by the southward exodus, the Communists used propaganda, threats, and violence to stem the tide. Their efforts succeeded in many cases and left a marked imprint on those who did escape.

Babies born aboard refugee ships, an average of one to a voyage, went ashore showered with gifts. Some mothers named infants after ships' officers, who happily accepted the honor.

Saigon has long been known as the "Paris of the Orient" because of its cosmopolitanism, fashionable shops, sidewalk cafes, spacious boulevards, French buildings, and Parisian gaiety.*

After my visit, in late April, 1955, civil strife broke out in Saigon, bringing death to scores and laying waste a large section of the once-gay city.

But when I was there, a torrent of traffic swirled on Rue Catinat, Saigon's Fifth Avenue, past police in tropic whites, hotels, cafes, and stately tamarind trees. In the harbor near by, almost ignored by the city, 2,000 refugees poured down gangplanks of the U. S. S. *Montrose*, which had evacuated them from Haiphong in the north.

Wearing conical hats, dark tunics, and peasant trousers, barefooted and weary, mothers handed down their babies first; sympathetic young sailors helped old people at the gang-

* See "Indochina Faces the Dragon," by George W. Long, NATIONAL GEOGRAPHIC MAGAZINE, September, 1952.

866 U.S. Foreign Operations Administration

Tonkin Family "Bucks Up" Navy Style

Villagers sometimes had trouble with ship's plumbing, but they quickly learned to handle four-tier bunks

planks. The refugees swarmed on the dockside, uncertain, silent, confused. Even as they stumbled away, the bluejackets aboard were cleaning up the ship, preparatory to going back for more.

Perspiring, shirt-sleeved sailors gave each family small presents in a farewell gesture: when a mother's hands were full, they pressed the gifts earnestly into a baby's fist. They had gone all out for the refugees on the voyage from Haiphong, trying to encourage them. Now, in wordless sympathy, they helped them ashore with their bulging sacks, all that was left of their old way of life.

Capt. Scott K. Gibson, commanding officer of the *Montrail*, told me he was on his third round trip, each taking about seven days.

"Practically everything that sails is in this ship lift," he said: "troop transports, cargo ships, LST's.

"Whole villages come aboard at a time: maybe two small villages of 800 or 900 each, maybe a larger one of 2,000. We berth them by villages. They like to be near their own."

Sailors Lend a Hand with Babies

The lean, keen-eyed skipper, reticent about his own job, was enthusiastic about his men's response to the refugees. Like the Army in Korea—or, for that matter, like U. S. foot soldiers, marines, and sailors everywhere—the Navy had "shot the works" for the refugees.

"Sailors dug into lockers and pay to give them food, clothes, candy. They bathed the kids and played with them, made the old ones feel at home (page 868). When the refugees come on board, they are dejected and befuddled. When they come off in Saigon they seem to have more of a desire to live."

Near the ship, signs welcomed the refugees in three languages: "Good luck on your passage to freedom" (page 859). Volunteers handed out "welcome kits" of soap, towel, and toothpaste, and tins of milk labeled "From the people of America to the people of Viet Nam—a gift."

Few refugees seemed then to notice the welcome signs. They took what was being handed out stolidly, as if the terrors of the past few weeks had sapped their emotions. Open trucks, with French military drivers, were waiting for them at the dock. Many refugees drew back in fear. To their questioning faces, a truck driver bawled in French, "We are going to a reception camp where there is food. It is only temporary."

He left the wheel to hand up an old woman gently to his Vietnamese helper on the truck. Priests in long black frocks moved quietly among them, explaining and interpreting to the villagers with whom they had traveled.

The refugees climbed on. Some had found their voices and were shrieking for a lost child or a bag. None but the sailors, a few volunteers, the truck drivers, and a couple of foreign observers were around to witness this milestone in a country's history.

Monsoon Rains Dampen Spirits

The day following the debarkation from the *Montrail*, I went to Phu Tho reception center with José Revello, a 27-year-old Vietnamese of French-Spanish extraction, my interpreter. José had been wounded serving with the French army in Tonkin. He was the office manager in Saigon for CARE (Cooperative for American Remittances to Everywhere); volunteers from his agency and from the Catholic War Relief Services had been assisting at the debarkation.

Some 16,000 refugees were temporarily quartered at Phu Tho, on the edge of Saigon. In and out of the camp, from pier and airport to center, from center to more permanent quarters in jungle clearings inland, the human movement was in almost constant stream.

There was no real shelter then from the monsoon rains which had begun, macerating the earth as well as men's spirits. True, there were some large tents with two tiers of wooden berths under canvas accommodating five or six families. There was, of course, no privacy, no sanitation or civilized amenities.

Inside one tent I found a family of children filling up on rice, beans, and fish, supplied by the South Viet Nam Government with the help of U. S. funds (page 870). Across one wall of the tent were chalked the words:

"A welcome from the people of Saigon to their brothers from the north."

Through my interpreter I asked again: Why had they come? Why had they made this sacrifice? Despite the grim surroundings, the answers were unwavering:

"We came here because we wish to live in peace . . ."

". . . because I want my children to follow my faith."

". . . because I do not like the Communists."

Beyond Phu Tho and in the future lay permanent homes, new farms and villages where these displaced people could become self-supporting, self-respecting citizens again. But the steps to independence were slow and hard.

South Viet Nam has thousands of miles of rich potential farmland. It is, in fact, far less crowded than the north. But much of it is still covered with jungle or lies in swampland needing drainage. Large areas held unused by wealthy landowners have only recently been made available for resettlement.

Thus the "permanent resettlement" camp I saw in October was a strange sight. I rode out with a 75-truck convoy of refugees to the Rach Bap area, some 45 miles north of Saigon.

To our right lay a huge jungle clearing. In neat rows on the drowned earth, like cardboard toys, stood hundreds of small brown tents, empty then, buffeted by the torrential rains, waiting for occupants, presumably our people. A cry went up from the trucks.

People came jumping off, men, young boys, and mothers with children. They ran to our jeep, which carried eight priests, shouting, "Chung toi khong muong di"—"We don't want to go!"

The priests got out and tried to soothe them. Father Kieu Ba Viem of Vinh Loc stood in the rain with a handkerchief on his head as the people milled about him, pleading. One ragged boy of 10, not much older than my son, pulled at the priest's sleeve, weeping, "My mother and sister are sick . . ." No one went into the empty tents. They got back on the trucks. We moved on a bit. The "settled" areas of Rach Bap came into view.

Early Days Were Dark

Thousands more of the tents covered the ground as far as the eye could see, but they were filled with people. They huddled on their rice mats on the soggy earth under the canvas; or, standing ankle-deep in mud, dumbly watched us as we drove up; or struggled to get a sack of rice in from the rain. I followed the priests into a few of the tents.

Some people said they had been without food and medicine and water for days. Some were catching rain in tins outside their tents. Others simply sat with their babies in a seeming state of shock. The whole area reflected such helplessness that you could only pray that their prayers were being heard somewhere.

Yet even in those black days the glimmerings of the future were apparent. Near the encampment, skeletons of buildings were up, waiting for the rains to abate to be completed.

← Pickaback Boy Proves More than a Handful

Refugees flocked first to inland staging areas at Hanoi and Hai Duong (map, page 862). There some were flown south; others moved to Haiphong, where this picture was taken, for evacuation by sea.

On October 10, 1954, the Communist Viet Minh moved into Hanoi under the cease-fire terms, and 20 days later took over Hai Duong. Refugees continued to trickle into Haiphong.

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Saigon: Gangway → to a New Life

Although foreign nations have given substantial aid in food, housing, and medical facilities, South Viet Nam faces a serious problem assimilating its new citizens.

Here a truck convoy awaits new arrivals; one of the drivers offers his services as baby tender.

Gertrude Samuels, Pix, Inc.

↓ "Better Hit It over the Rail, Pal. You're in No Shape to Slide!"

U. S. Navy, USIS


PA
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U. S. Foreign Operations Administration

♠ Drab Tent City, Last Stop but One on the Liberty Road, Awaits the Exiles

The South Viet Nam Government, using funds from the United States Government and private organizations, temporarily shelters arrivals outside Saigon. Newcomers build villages as soon as land becomes available. Doc Mo settlement, in a jungle clearing, uses tents from United States military stocks in Japan.

←Rice and Beans Put Hunger to Rout

This family fled Tonkin because the Reds forbade them to attend church (page 858). Here the youngsters eat Government fare at Phu Tho reception center.

Opposite: Masks of fear relax at journey's end, new hope softens memories of flight.

Gertrude Samuels, Pix, Inc.

871

The outline of a village-to-be was emerging. The people in the convoy finally understood that this was where their future began.

Today the skeleton structures have grown into permanent houses, and the houses into villages. Hundreds more houses are going up in South Viet Nam each day.

In the past year the U. S. Government has allocated $45,000,000 for Viet Nam to transport, feed, and clothe the refugees and to help them build new, self-supporting villages. Funds have been administered by officials of the South Viet Nam Government with the advice of the Foreign Operations Administration.

Private voluntary agencies worked hand in hand with Government officials. In addition to CARE and the Catholic War Relief Services, the Red Cross of many countries, the United Nations Children's Fund, and others have provided tons of food, dried milk, and clothing. Food from U. S. surplus stocks has been rushed into the area, and the estimated need is still for about 2,400 tons of food supplies a month in straight relief.

An estimated one-third of the refugees are already resettled and are becoming self-supporting. Given a minimum of tools and equipment, they have gone to work with will and initiative.

At the old Army post of Gia Kiem, now called New Phat Diem, 40 miles northeast of Saigon, bamboo grows everywhere, fortunately. About 20,000 refugees live in this community. Within two months of their arrival they had seven grades of school going, a market place, a *paillote* (thatched hut) church built, and

Doc Mo: Villagers Roof a Home with Thatch from the Fields

Using U.S. technical advice and machinery, South Viet Nam's newest citizens have built neat villages of small double homes in their resettlement areas.

←A man carries roofing material to the village arising near Doc Mo's tent city (page 870).

→Seeds sown in tree soil take root as a resettled family works its first garden. These villagers of Tan Phu Trung, 15 miles northwest of Saigon, nourish vegetables with fertilizer from the United States.

now they're raising pigs. The refugees, who came from Phat Diem in North Viet Nam, have been building 100 thatched houses a day!

A few miles southeast of Saigon, in the Phuoc Ly area, stands a brand-new village with small double houses in a rectangle of neat rows, surrounded by gardens. It has two schools, an infirmary, and a paillote church. Brickmaking and the Foreign Operations Administration gave these refugees from Thanh Hoa province in the north their new start in life.

Farmers and fishermen, they had lived briefly in tents and huts. The FOA sent in four large mechanical brickmaking machines; technicians of STEM, the Special Technical and Economic Mission of FOA, came to show them how to work the machines and also how to lay out their village. The technicians also examined the water in the area and helped with sanitation. In two weeks the refugees had moved into their new homes and were at work, not alone for themselves but for thousands of other refugees.

The machines are now in full operation, making bricks for schools, infirmaries, and other public buildings for the dozen or more refugee villages that have sprung up in the area. Recently the brickmakers from Thanh Hoa decked their streets with paper streamers: "Thanks to Our Great Benefactor." They had given their village a name—STEM.

The Moses of one exodus, youthful Do Ba Ai of Tam Toa, led his parishioners from their centuries-old village with their fishing gear and old bronze church bell. The French Navy towed their 21 fishing boats 186 miles along the coast to the edge of Tourane.

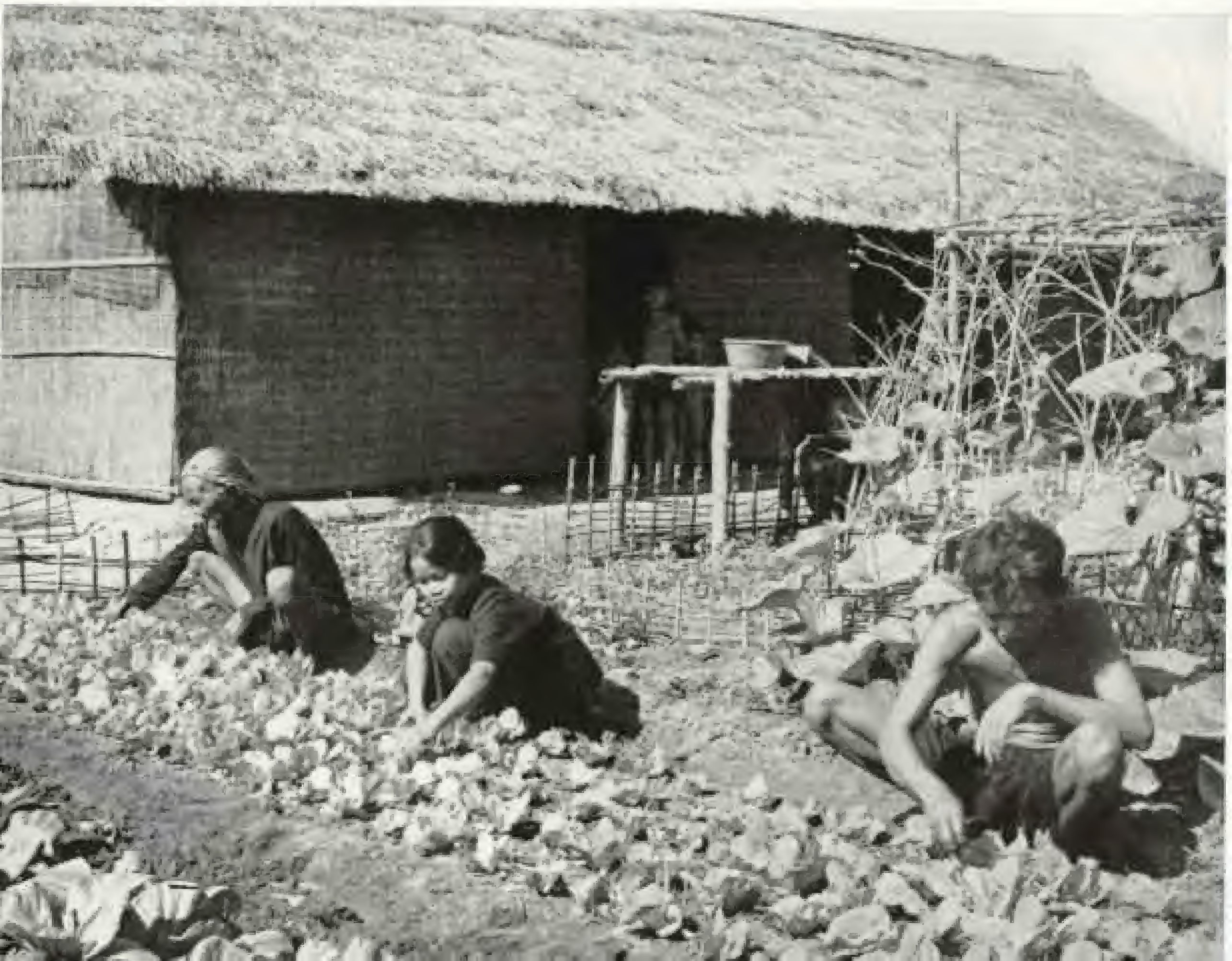
Here they gave prayerful thanks, suspended the old bell on a scaffold made of two-by-fours, and went to work building shelters and vegetable gardens. Today the fishermen of New Tam Toa are back at their old livelihoods, in the waters off Tourane; marketing their fish through a cooperative.

There are endless stories like theirs, of courage and enterprise and luck. But this does not mean that the refugee problem in South Viet Nam is solved; far from it.

As this is written, refugees are still pouring in by thousands. Barracks near Saigon have been converted into a hospital, and Catholic War Relief Services reports that 80,000 cases are being treated each month.

American-supplied bulldozers and other earth-moving equipment are just beginning the job of clearing mountainous jungle land to the north of Saigon. Other machines have started the task of draining a vast, fertile, but swampy area in the Plain of Jones, to the southwest. Someday rich farms may burgeon here, but not yet.

A new land reform decree issued last February is designed to bring another estimated



Refugee Lads Wear Their Best Smiles to School as a New Life Begins

Along with their houses, villagers build infirmaries, churches, and schools. These youngsters reciting a lesson in unison turn over their one-room school to adult classes at night.

800,000 acres of farmland under cultivation, much of it by refugees. Under the new law, absentee owners of estates, mostly in the far south, will be obliged eventually to work their now idle lands, often with refugee help, or rent them to farmers.

A House Divided

But the South Viet Nam Government still faces enormous problems in extending its control and enforcing its decrees throughout the country. Feudal chieftains, underworld groups, and religious sects have for years maintained standing armies of their own. Many large landlords, too, are understandably reluctant to give up their holdings.

The United States and other nations have worked hard to keep South Viet Nam from falling into Communist hands. The future of the refugees who fled from communism depends to a large extent on whether South Viet Nam can stay free. And, conversely, how well the refugee problem is handled will, in turn, be an important factor in deciding the future of South Viet Nam.

These 700,000 refugees, who surely proved that they are powerfully anti-Communist, are among the staunchest friends the Free World has in Asia. Witness a letter—and there are many like it—written by a refugee schoolboy to a U. S. friend, an FOA official who helped start his family on a new life:

"Dear Sir:

"The new Vietnamese year is going to come. I have nothing to wish you on the particular occasion of the new year. But, I have only my sincere heart to offer you. And I wish you a new happy year and above all you have always the plentiful health to be liable to help all the refugees on the hard way. I know also that you left your dear relatives, your family, your comfortable country—set to come in Viet Nam for your immense sacrifice and charity.

"I want very much to see you and above all to sit near to you to learn to speak the American with you. I thank you very much because you sended me your photo that you took.

"I beg to remain, dear Sir, yours respectfully.

Your graceful

Tran Luan Lai."

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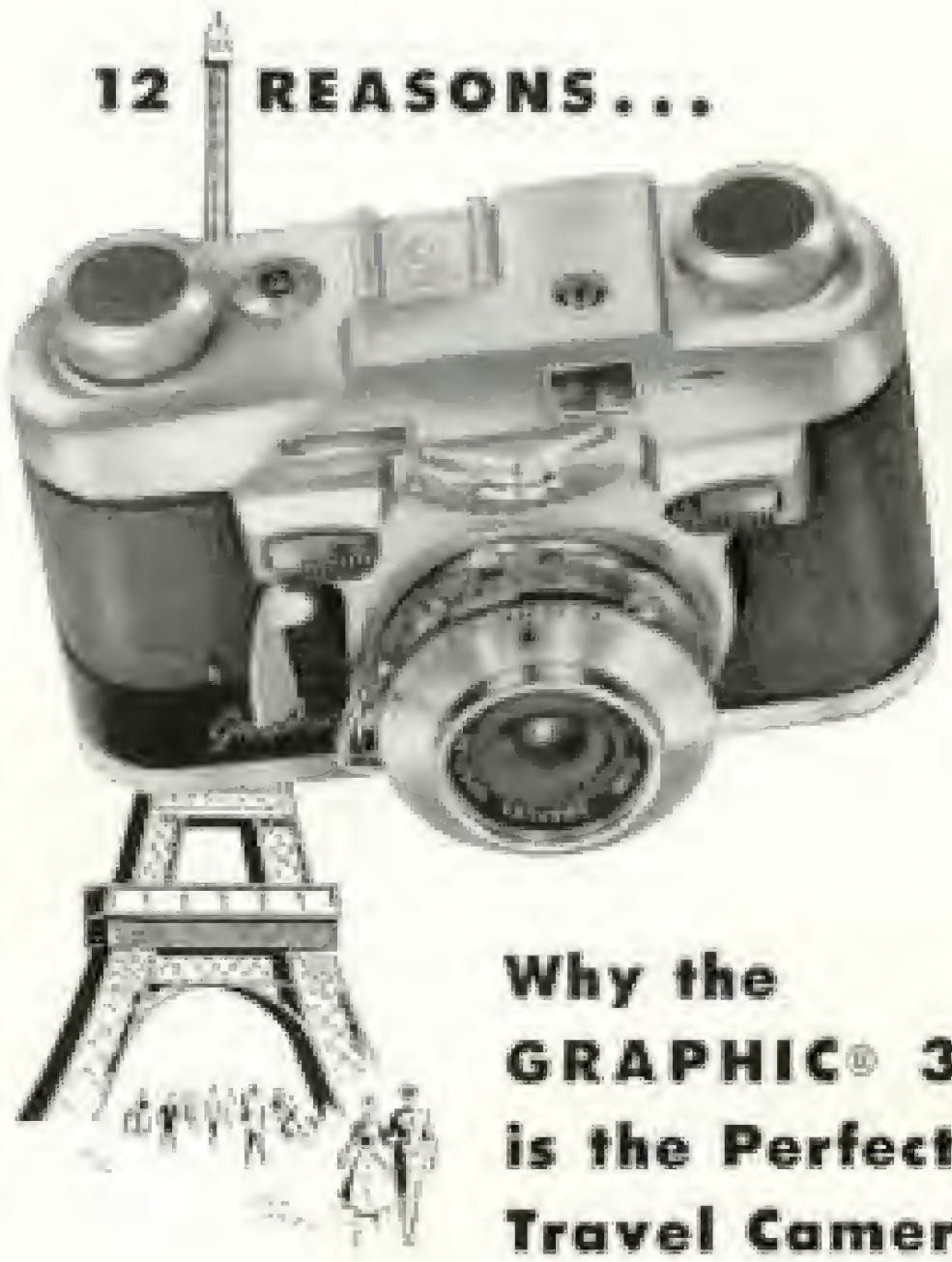

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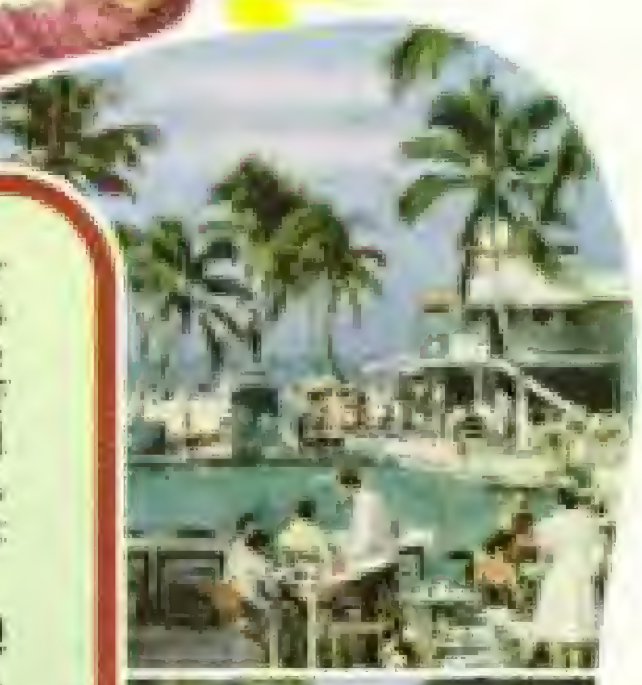

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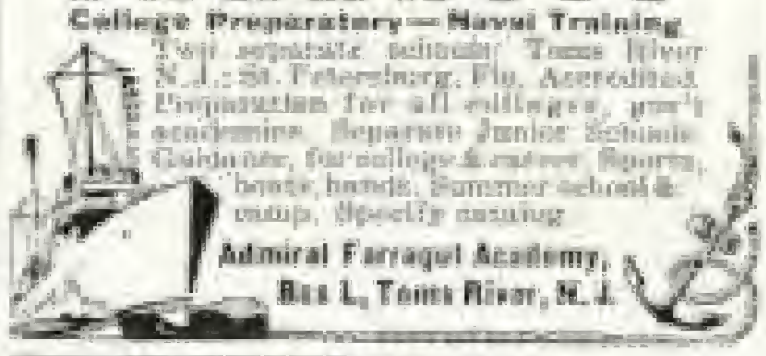

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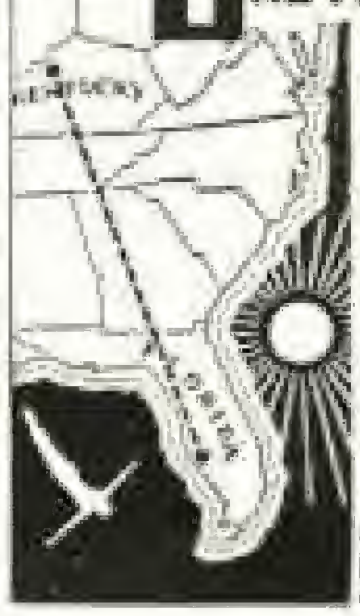

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HAYNES STELLITE Alloys · PRESTO-LITE Acetylene · PYROFAX Gas · PREstone Anti-Freeze · Dynel Textile Fibers
UNION CARBIDE EVEREADY Flashlights and Batteries · LINDE Oxygen · BAKELITE, VINYLITE, and KRENE Plastics · LINDE Silicones

COSTUME: GOLDWORM

Almost everyone appreciates the best...

A hot sun, a big thirst—and nothing will do but a Coke. Lively, ever-fresh, ice-cold Coke. Just nothing like its bright little lift—nothing like its bracing sparkle—to bring you back cool and quick. *You know:* here's the perfect refreshment . . . ice-cold Coca-Cola!

Drink Coca-Cola

Fifty million times a day . . . at home, at work or on the way *"There's nothing like a Coke!"*

See Eddie Fisher on "Coke Time"—NBC Television twice each week