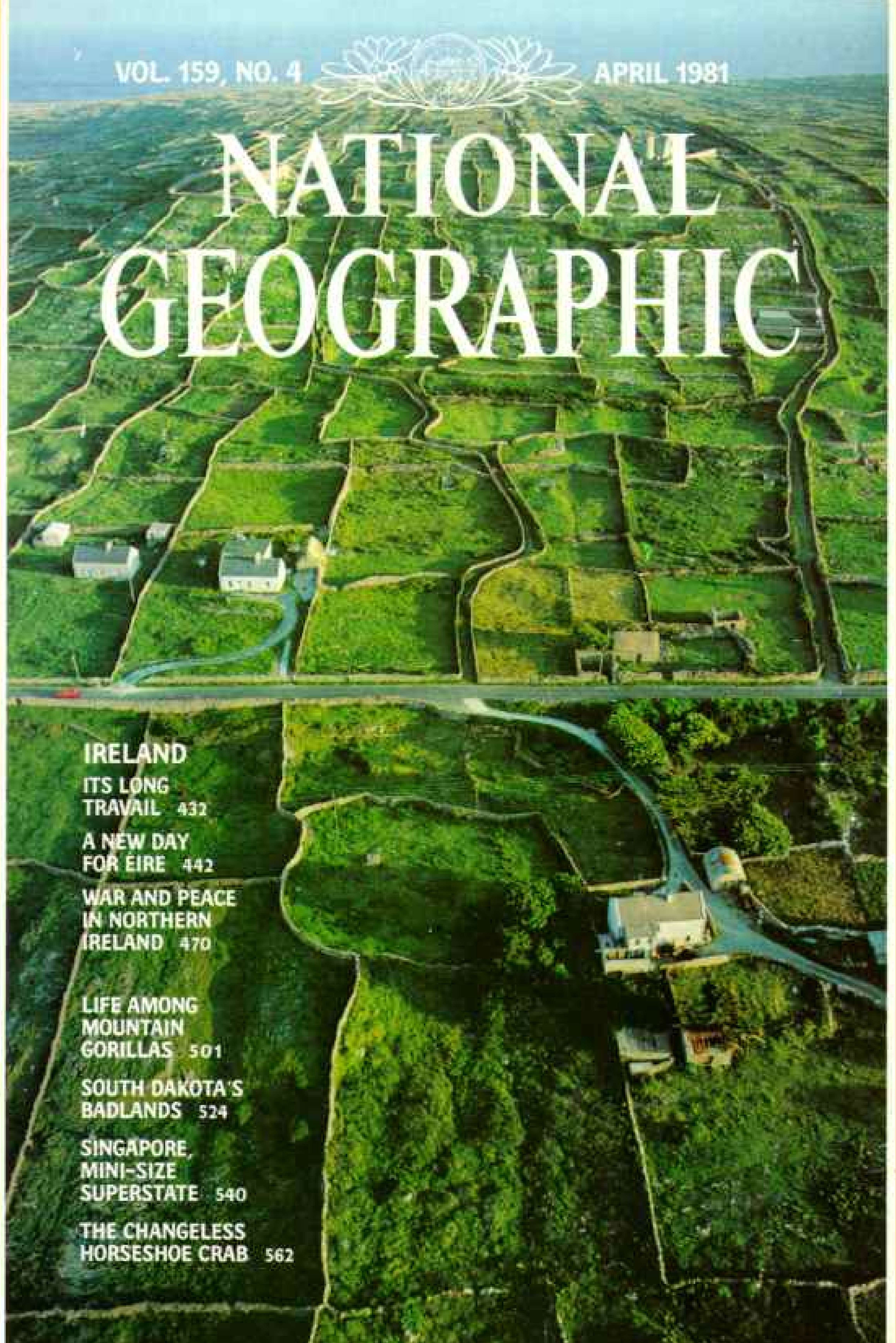
DOUBLE MAP SUPPLEMENT: IRELAND, MODERN AND HISTORIC



SEE "GORILLA" WEDNESDAY, APRIL 8, ON PBS TV

AS WE WERE PREPARING the articles and supplement map for this issue dealing with Ireland and its two parts, word came of the gunning down of Bernadette Devlin McAliskey and her husband, Michael, followed by the murder of Sir Norman Stronge and his son, James. Once again it seems that violence is used to thwart the political initiatives of responsible governments.

For 12 years the sectarian conflict in Northern Ireland has been like a black hole, drawing in and devouring every material hope of ending it. It seems immune to the normal processes of negotiation, arbitration, and political compromise. Hatred and the urge for vengeance are passed along, lives are staked upon loyalties, and a web of economic and religious differences ensnares all participants.

To the rest of the world it is also a strange struggle, for it takes place in enlightened and prosperous northwest Europe, even as tourist-laden planes fly overhead to London and Dublin and Paris. Other powers have shunned the struggle, unless one calls the misguided support of some Irish-Americans for purchase of arms an act of political power.

Yet there is wide interest in the world for the end of this agony. The Irish emigrants who went out to the United States, Canada, Australia, and other parts of the world have had an impact upon their adopted lands. Their descendants do not want to look back upon Ireland in sorrow and shame.

Prior to the recent violence, there were quiet signs that the governments of Mrs. Thatcher in London and Mr. Haughey in Dublin—intent on preserving their initiative—were moving toward a mutual policy that might lead to a restoration of parliamentary self-government in the north, buttressed by imposed guarantees for the Catholic minority. The question now is whether murderous events will again outflank this movement, as it seems they are calculated to do. We join the hopes of others that it will not be so.

Wilbur E. Garrett
EDITOR

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April 1981

IRELAND

I Its Long Travail 432

The faith of Patrick and a fire for freedom have burned for 1,500 years. Associate Editor Joseph Judge paints the historical setting.

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Are the Badlands misnamed? John Madson finds a haunting beauty in that bleak, eroded landscape. Photographs by Jim Brandenburg.

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The island nation packs 2.4 million people, mostly Chinese, into its 238 square miles and paces Southeast Asia in trade and finance. Bryan Hodgson and Dean Conger report.

The Changeless Horseshoe Crab 562

A "living fossil," this beach visitor matches ancestors impressed into 145-million-year-old rock. By Anne and Jack Rudloe, with photographs by Robert F. Sisson.

COVER: *Stone-wall maze protects the precious man-made soil of Inishmore, one of Ireland's Aran Isles. Photograph by Cotton Coulson.*

The Travail of Ireland

By JOSEPH JUDGE ASSOCIATE EDITOR
Photographs by COTTON COULSON

THEY ARE EVERYWHERE in Ireland, these things of stone on the folded green fields, under the scudding Atlantic clouds—towers tall and straight with conical caps, rain-worn castles, broken forts, fallen naves, and battered sanctuaries.

One spring morning in County Limerick I came upon just such a place, Monasteranenagh. Cows were gathered by those walls still standing and grayed after some 800 years. As I neared, I dreamed of the founder, the O'Brien who had defeated the Danes nearby, of the thunder of Sir Nicholas Malby's English cannon blasting down the ancient walls, but those phantoms of the mind gave way when I stepped into the hushed ruin and found a fresh grave, graced with flowers, in ground made sacred 30 generations ago.

At the heart of everything Irish is the earth, the sod, enclosing the many dead, disclosing from time to time the special treasure, like the Communion service found last year in Lurgoe, Tipperary, the magnificent chalice of which (**inset**) had lain underground for centuries.

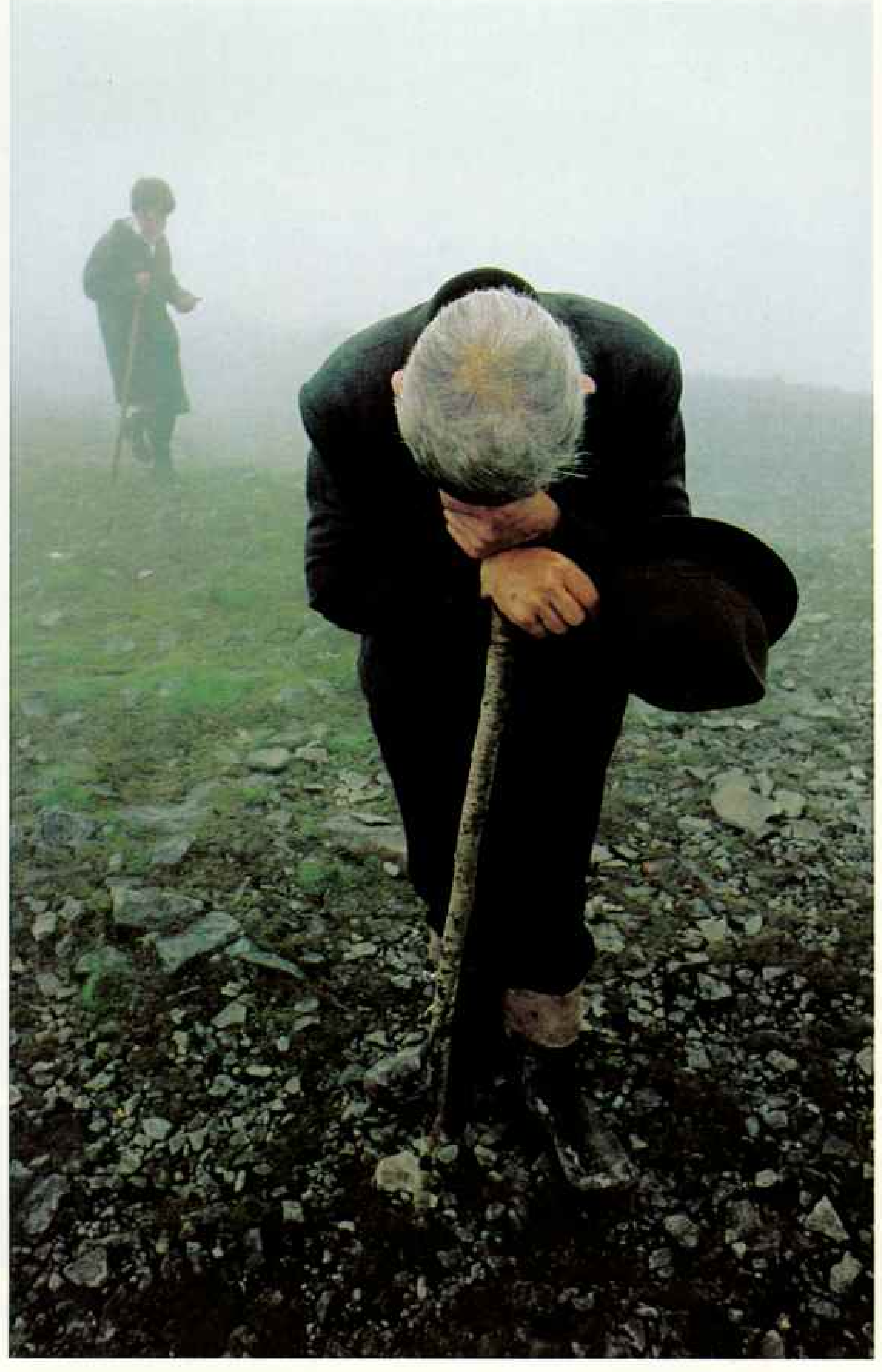
NINTH-CENTURY DERRYNAFLAN CHALICE (17.8 CM HIGH); SISSE BRIMBERG

It recalls the golden age of Christian Ireland that followed the labors of St. Patrick in the fifth century. Millennia before, however, pagan things of stone had risen—circles and dolmens from 3000 B.C., hill forts built around the time of Christ and used ever after.

Two hundred years after Patrick's death, Celtic Ireland was thick with monasteries, and Irish monks went out to France, Germany, Switzerland, and beyond, where they founded monasteries that kept the learning of Rome alive; indeed, the Middle Ages may be said to have begun with the arrival of Irish monks at Charlemagne's court.

The Irish have kept ever since the faith of Patrick, to their pride and sometimes to their utmost misery. I voice this sentiment out of an American-Irish

"Foot-holy Pilgrims who walk in wishes." — PADRAIC FALLON
Climbing since before dawn, a pilgrim bows for prayer in noonday fog on the crown of the holy mount Croagh Patrick.



"A wilderness of stone and stone walls," Inishmore awed writer John M. Synge

83 years ago when he came to the Aran Islands to explore the Gaelic soul.

background with a standard symmetry of emotion: the wearin' o' the green on St. Patrick's Day, living shamrocks and cardboard leprechauns, "Oh, the days of the Kerry dancing," the priest with immaculate hands reading the Mass for the Dead while old women in black keened and rains from the wrong side of the Atlantic swept streets of Boston, Baltimore, or New York.

The past was drowned in sentiment and strange longing as the old men sat staring at a glass of whiskey as if it were a crystal ball, but fixed on the past that never was. Maudlin. Angry. Pious. Outrageous. Poetic. Thick. Hilarious. Irish.

The Christian world of Patrick's isle was shattered by the Vikings in A.D. 795. For 200 years Ireland lay prone before the raiding ships, and to this day the ground of Scandinavia is filled with Irish treasure. Many of the Vikings had come to stay, however, and created what had not existed before, the town: Dublin, Wicklow, Arklow, Wexford, Cork, and Limerick, all Viking towns. (See this issue's supplement map of **Ireland**.)

Their power was effectively broken in 1014 when the Irish High King, Brian Boru, defeated a host of Scandinavian allies, and lost his life, at Clontarf.

Brian Boru of Cashel. Magic names still. Today the music of a stirring march, the drums steadily beating, the pipes skirling, rings over tape recorders, and the great Rock of Cashel still veers up suddenly from the emerald plains of Tipperary, crowned with its ancient churches and castle. To stand beneath the ribs of stone and feel the presence of Cashel is to sense the tenacity, the brutality, the wholeness, and the continuous energy of Irish history.

THE CLASPING of English and Irish destinies, which culminated in so many disasters, began when Tiernan O'Rourke, an Irish chieftain, lost his kingdom and his wife (some think with her consent) to Dermot MacMurrough. Though the lady was returned, O'Rourke sought revenge and finally conquered his rival. Dermot fled to Henry II, the French-speaking King of England, who permitted him to enlist the aid of the Norman leaders of Wales. The most powerful of them, Richard FitzGilbert de Clare, known as Strongbow, agreed to help Dermot regain his Irish throne in exchange for his daughter's hand and control of the kingdom. So they came, names now famous in Irish history: FitzGerald, FitzHenry, Carew, Barry.

The Norse of the towns and the Irish of the countryside resisted at Wexford, at Baginbun ("At the creek of Baginbun, Ireland was lost and won"), but the Normans had come to stay. So had the "Irish question."

Ancient history? In 1969 a tablet erected at Baginbun to commemorate the Norman landing was broken within a week.

Henry II himself came in 1171, seeking and obtaining the submission of all to the crown of England. Norman castles rose at Maynooth, Trim, Carrickfergus, Dublin, and a dozen other places.

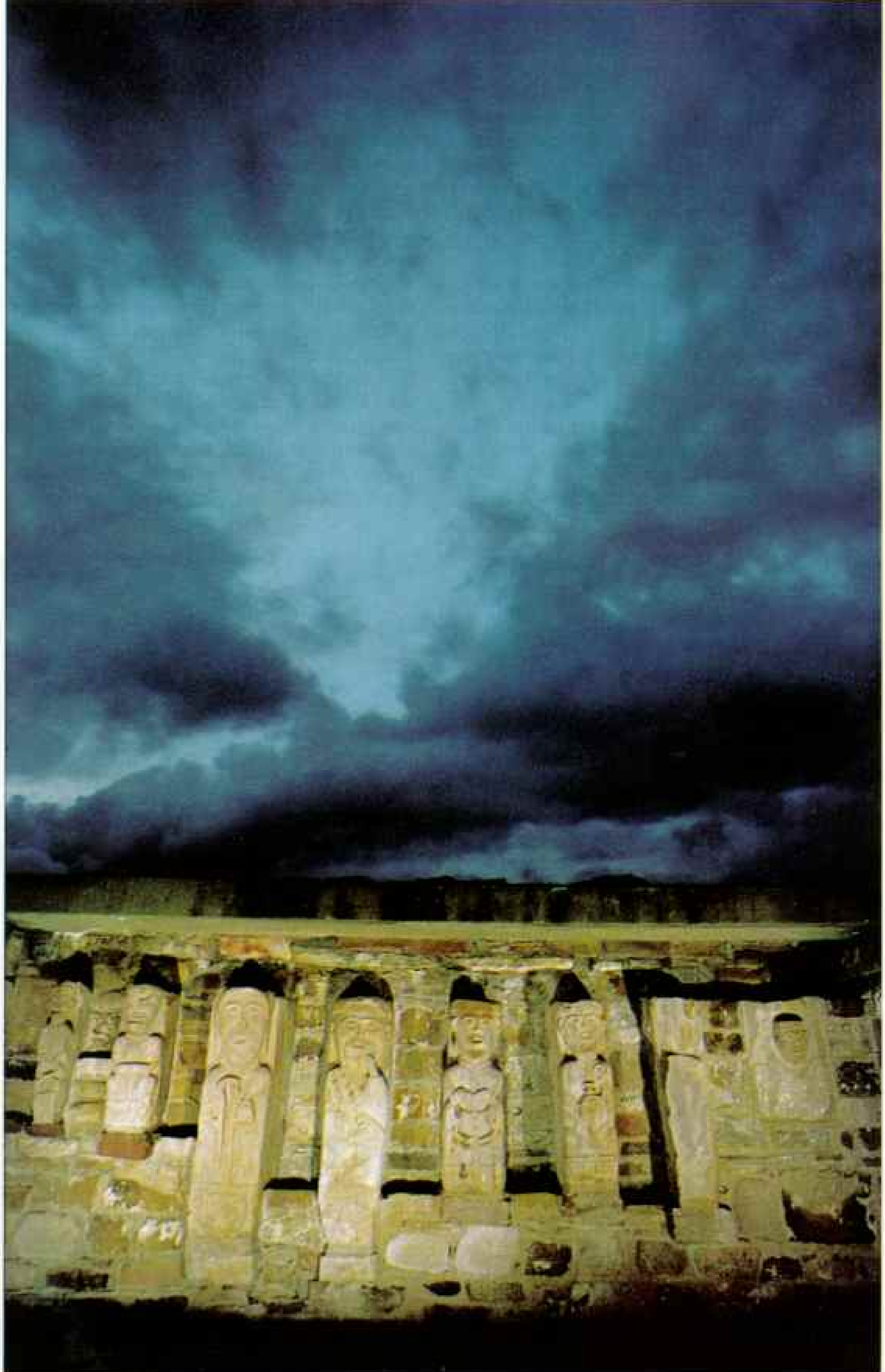
The new lords nurtured the civilization of village and church, of tilled farm and abbey, especially those of the great medieval orders, Cistercian, Dominican, Franciscan. New towns like Galway sprang up. The Gaelic Irish, however, were never quiet, as MacCarthys and O'Donnells won victories, but what defeated the Normans in the end was the culture itself, for the would-be conquerors in time became "more Irish than the Irish themselves."

Finally, England's Richard II, at the head of a mighty host, came to suppress the Gaelic chieftains, and while he was in the process, Henry of Lancaster landed in England and seized the throne. Not for centuries would an English king again come to Ireland, and then only to lose another crown.

Under Gaelic pressure, English rule shrank to a small region around Dublin

"Who dreamt that we might dwell among ourselves
In rain and scoured light and wind-dried stones?"
Archaeologists echo poet Seamus Heaney's query, pondering early Christian statues uncovered in a later church on White Island in Lower Lough Erne.

CARY WOLINSKY, STOCK, BOSTON



known as the Pale. English kings ruled their Irish dominion through Anglo-Irish lords, but the island was disturbed, and Gaelic law and custom prevailed "beyond the pale." When the last of the king's ruling lords, known as Silken Thomas, openly rebelled, the Tudors of England realized that a vigorous Catholic domain on their flank invited intervention from abroad; to reign in England, they must rule in Ireland.

The Tudor conquest, unlike the Norman, attempted the thorough subjugation of one people by another. In the ensuing struggle the chiefs who fought for Irish independence—Red Hugh O'Donnell of Tyrconnel and the great earl Hugh O'Neill of Tyrone—joined earlier O'Neills and the FitzGeralds in the pantheon of Irish rebels. The O'Neill badly mauled a veteran English army at Yellow Ford in 1598, and The O'Donnell soon swept English arms from Connaught.

When England's long-hated rival, Spain, dispatched 4,000 troops to aid the rebellion, Tudor fears and suspicions regarding Ireland were confirmed. The Spanish force landed at Kinsale, on the southern coast, and was immediately bottled up by an English siege. O'Neill and O'Donnell hastened south for the climactic battle in 1601. They lost to the English Lord Mountjoy.

O'Neill and a hundred northern chieftains with a thousand followers went into exile on the Continent rather than serve the English monarchy.

With the chief rebels out of the way, Ireland began to change hands. The first Stuart, James I, expanding the empire, reached out also toward North America, where a fort appeared at Jamestown. He applied the same technique to Ulster and implanted

Scottish-Presbyterian settlers in their wooden forts and little towns. As the Protestant colony grew, Gaelic-speaking Catholics were pushed back toward the Shannon, as the Indians of America were pushed back toward the Alleghenies. English law with its ideas of property, its judges and sheriffs and tax collectors, spread over Ireland, replacing the brehons and chiefs and clan-owned kingdoms.

The conquered isle was now caught up in the flaming religious and civil wars of England. In 1641 the Ulster Irish rose, scattering thousands of colonists. Five years later, under Owen Roe O'Neill, an army composed of both native Irish and Catholic descendants of Normans and others won a memorable victory along the banks of the Blackwater River. But the dream of Irish independence was shattered when Oliver Cromwell and Parliament's forces defeated Charles I in England and beheaded him. Before long, Cromwell himself landed in Ireland, intent on suppression and revenge, on ending the Irish question forever.

THERE IS no greater villain in Irish folk history than Oliver Cromwell. He smashed Catholic Ireland, its institutions and its people. Massacres at Drogheda and Wexford were followed by the exodus of 30,000 Irish to the Continent. Cromwell's iron boots marched the length and breadth of the land, leaving pillars of black smoke over church and monastery.

Within 50 years Catholic Ireland was largely owned by English Protestants, and the system of wealthy, often absent, English landlords and a massive, poor peasant class of Irish that was to bear such bitter fruit was well established.

There was to be another hurrah. In 1660 the Cromwellian government collapsed and Charles II was called from exile. But Irish hopes for restoration of the land were tempered by the knowledge that it was a Protestant army that recalled the king, and the settlement, when it came, proved galling—the loyal Catholics ended with a fifth of the land. As Jonathan Swift said, the Cromwellians "gained by their rebellion what the Catholics lost by their loyalty."

The climax of the English struggle for kingship came now, and it came in Ireland. Charles was succeeded by James II, a Catholic king; when James had a son and a Catholic dynasty seemed inevitable, a group of English noblemen summoned the Protestant William of Orange from Europe. James fled to France, and in 1689 he landed in Ireland at the head of a French army, thinking Ireland and its loyal Catholics to be a stepping-stone back to the throne.

In due course, William arrived in Ireland and the *Cogadh an Dá Rí*, the "war of the two kings," commenced. Much of Europe

"Loud above the grassland,
In Cashel of the towers,
We heard with the yellow candles
The chanting of the hours."

—AUSTIN CLARKE

participated. When James and "King Billy" finally faced one another across the narrow Boyne River, James had 25,000 French and Irish troops and William 36,000 English, Dutch, Danes, Germans, and Huguenots.

The Battle of the Boyne is generally regarded, especially in Ulster, as the last gasp for Catholic Ireland, but actually the war went on. Its chief spirit was Patrick Sarsfield, who stoutly defended Limerick against siege, until the truly decisive engagement at Aughrim, where a Dutch general named Ginkel defeated a French general named St. Ruth because of betrayal. Sarsfield came to terms, but this Treaty of Limerick is remembered bitterly in Ireland for its being so often broken.

Sarsfield, like the other rebels before him, passed into folklore. He led some 14,000 troops to the Continent to fight on against England for France, the first of the famous "wild geese," men who left Ireland to take up arms in foreign armies.

Thus, defeated at Kinsale, defeated by Cromwell, defeated at the Boyne and Aughrim, the Irish entered the age of the notorious penal laws.

THIS IS THE MOMENT in the long tale when the memory of the immigrant's son stirs and awakens: "An Irishman could not speak his language, practice his religion, be educated, hold office, or own a horse worth more than $10." The hedge schools, where Latin, Greek, and Irish were spoken. The secret Masses spoken in caves and open fields. The "Protestant lease"—a grave. The murky pubs and constant talk of rebellion.

In 1798 open revolt, fomented by Wolfe Tone and aided by a French army, added more martyrs and battlefields to the Irish earth. The Frenchmen, supported by a motley mob of peasants, were run down and defeated by Lord Cornwallis, of Yorktown fame, and the gallows claimed the losers.

Years of suppression were climaxed by the Great Famine. It is difficult for us now to imagine the emptying out of the island; in six years, two million people died or left, fleeing to Canada, the United States, England, Australia, blown across the world in a diaspora of the poor and ill schooled, the country oaf, and the incredulous, clutching the rosary beads and the whiskey jug.

The calamity was essentially man-made, a poison of blind politics, scientific ignorance, rural suppression, and enforced poverty. For more than 120 years after 1845 Ireland's chief export was its people; the farmlands today have a third or less of their former population.

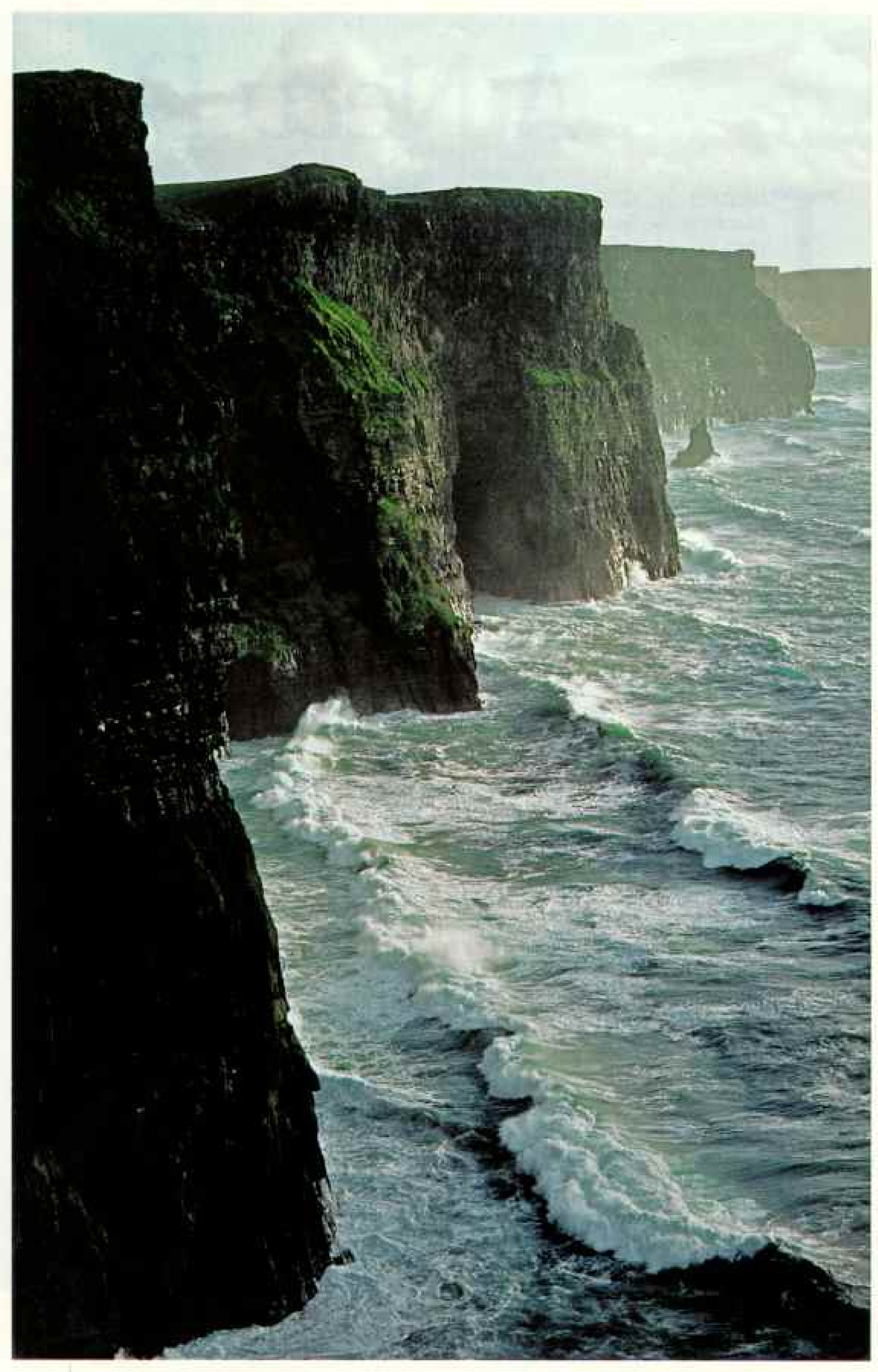
What could come of such misery? Over the reaches of the land, the lords who could collect no rents sold out cheaply or resorted to mass evictions and destruction and burning of cottages. Yet another rebellion, that of the Young Irelanders, ended in a bloody mess at Ballingarry in 1848. Nineteen years later, with help from the Irish of the United States, the better organized Fenian rebels rose against the English; they were crushed as the others had been.

At length British statesmen realized that Ireland, like a lamed and sick dog, was chewing on itself. In 1869 the Protestant Church was disestablished, ending mandatory tithes. The following year the first Irish Land Act was introduced. In the following decades the struggle over the land was renewed by leaders like Daniel O'Connell, until, with England preoccupied by World War I, Irish rebellion struck again during Easter Week, 1916.

The guerrilla war that followed ended with Irish independence in the south and protracted, agonizing struggle in the north.

Brian Boru, Silken Thomas, O'Neill and O'Donnell, Sarsfield, Wolfe Tone, Young Ireland, Fenian, Easter Week. After eight centuries of defiance, Ireland achieved independence in that troubled time, hopeful that her sons and daughters would no longer, like the autumn geese, fly away. □

"Keeping position like broken heroes, with waves breaking upon them like time." So poet Louis MacNeice saw palisades like the Atlantic-washed Cliffs of Moher, rising 700 feet in County Clare.



A New Day

THERE'S A HEARTBREAKING beauty in the Irish landscape: dark cliffs against the sea, fingers of green land pushing out against the sea, meadows of yellow gorse and slate blue rock, brown boglands, sometimes a house and two figures in the distance. More often the landscapes are empty, and so we can populate them with our dreams, the ideal of man, uncorrupted, living in harmony and touch with the earth and the sea.

At times it seems that Dublin too, founded in the 9th century by Vikings and given its present appearance in the 18th and 19th centuries, has escaped the 20th, as if the century, like the clouds, has merely passed over, leaving a soft, magical city, evoking childhoods, familiar nooks, a human scale, gardens and black iron fences, where anonymity remains both suspect and transient.

And so, amid our own complications, a vision of Ireland has often restored us: one place, a small island on the edge of Europe, where time has stood still.

But Ireland is changing. Pursuing a policy of rapid industrialization, the Republic of Ireland (in Gaelic, Éire) experienced in the past decade unparalleled growth and prosperity: Industrial output doubled, incomes soared; farmers—such as the McGrath family of County Tipperary (**right**)—found that their gains rose 140 percent in five years.

With prosperity came other changes. More Irishmen were coming back to the island than were leaving it. More were marrying and at an earlier age. Ireland now boasts not only the fastest growing population in Western Europe but also the youngest, half under 25 years of age.

Membership in the European Economic Community has given it new diplomatic and trade links with the Continent, lessening its centuries-old dependence on Britain. Such gains have brought new confidence. What newly affluent Irish farmer, buying land in England because it's now cheaper than at home, could not feel a twinge of pride?

So Ireland joins the 20th century: To that

for Ireland

By JOHN J. PUTMAN
NATIONAL GEOGRAPHIC SENIOR WRITER
Photographs by
COTTON COULSON

"Half-mournin' skies for ever over us," *Dublin playwright Sean O'Casey observed of his city on the River Liffey, here spanned by the 165-year-old Halfpenny Bridge,*

foreground. But there's a brighter forecast for Ireland's capital as construction cranes take to the skyline in the biggest building boom since the 18th century.

Countries of the European Economic Community named. Greece became a full member on January 1, 1981.

ECONOMIC REVIVAL of long-depressed Ireland, independent from Britain since 1922, came through the aggressive wooing of foreign firms that have invested four billion dollars and employ a third of the industrial labor force. A strong drawing card: 1973 membership in the EEC.

OFFICIAL NAME: Éire (Ireland). **GOVERNMENT:** Parliamentary democracy. **AREA:** 70,283 sq km (27,136 sq mi). **POPULATION:** 3.4 million. **RELIGION:** Roman Catholic. **ECONOMY:** Manufacturing, agriculture, tourism. **LANGUAGE:** Irish (Gaelic), predominantly English.

lovely landscape, long marked by ruined Norman keeps and medieval monasteries, we must now add factories and suburbs.

I had come to Ireland to learn how these changes had come about and where the future might lead—for the past two years have seen setbacks. But I wanted first to learn something of the Irish character, and I began my instruction in Dublin.

WHAT INDEED are the Irish like? "We are the greatest talkers since the Greeks," Oscar Wilde claimed. The barrage of words begins in the morning: "Grand day, isn't it! . . . Gorgeous morning, now, isn't it! . . . Mind you, that's a durty wind today, likely to give you a dose of pneumonia, and no charge!" The talk ebbs and flows thereafter until flood tide, when shops and offices close and pubs fill.

"Pint o' stout, please. . . . *Now, with pleasure, sir!* . . . Two Paddys, please. . . . *Ah, grand, there you are, sir!*" In time individual voices merge into a single animate sound that fills every corner, as warm and reassuring as a peat fire on a winter's day. This is the hour of social communion, an affirmation, its rituals the slow pulling on the pump levers that fill glasses with dark stout, the careful scraping off of excess foam with a knife. Gossip abounds. "The Irish are a fair people," Dr. Samuel Johnson once noted, "they never speak well of one another." There's talk of horses and business deals and a catching up on news of friends and relatives—for Ireland's a small place, and the interconnections extraordinary: "Of course I know her; she's my sister's godmother!" Promises are here made in the best of spirits, for no one will hold you to them.

The first warning comes: "Last round, gentlemen!" More drinks are ordered, the tables crowded with glasses. Then, "Time please, gentlemen, ladies. Time, please!" As

Harbor of a Georgian doorway, *150 years old, brings friends together at one of the last occupied buildings in Dublin's Summerhill neighborhood, slated for residential redevelopment. Since the 1930s city government projects have rehoused 43 percent of Dublin's citizens.*

J.MORAN
LADIES
HAIR STYLING

__Sanctuary from life's storms,__ the Irish pub draws patrons to camaraderie and conversation with a ritual to savor—the traditional pint o' stout (__below__)—here enjoyed near its major source, the Guinness Brewery in Dublin. With 11,000 pubs across Ireland, few villages are too small to support one. Old Dublin friends (__right__) take their sip at O'Neill's. "We've been coming here all our lives," says Catherine Coleman, left, mother of 11 and grandmother of 21. Women were once restricted to lounges or closed booths called snugs, but rules are relaxing.

the patrons depart, the once animated room falls into a silence like death. Out on the sidewalk, benedictions are given, the last words of the day: "God bless, Frank, take care o' yourself. . . . See you at the next meeting, Declan, God bless. . . . God bless, Mick, all the best. . . . God bless."

SOME ASPECTS of the Irish character, it is said, are traceable to the centuries of British rule. "We're all lawbreakers at heart, you know," a poet said with only half a smile. From oppression had come a taste for anarchy, a belief that freedom lay not in institutions but in opposing them; a drift into fantasy, escape of the powerless. George Bernard Shaw had lacerated his countrymen for this: "Oh, the dreaming! the dreaming! the torturing, heart-scalding, never satisfying dreaming, dreaming, dreaming. . . !"

Even the wondrous circumspection in Irish conversation is attributed to English rule—a hark-back to the days when a troop of English horsemen might rein up to an Irish farmer and demand: "Be this the road to Kilkenny?" To which the Irishman, realizing the fierce captain had taken the wrong road, would reply: "Well now, would ye be wanting to go there by way of Thurles?"

The English influence cuts another way. I sat one day in the faculty Common Room of Trinity College with Brendan Kennelly, poet, professor, anthologist. Brendan is a Kerry man, raised in the Catholic tradition. He writes of farmers and fishermen, of parents and girls and pilgrimages, of history and myth, and of the darker side of love. He draws on Irish strengths: "Our consciousness of suffering, our ability to turn suffering into music."

Trinity was founded by Queen Elizabeth

in 1591; until very recently it was regarded as a bastion of the Anglo-Irish, the descendants of the Normans and English who settled in Ireland over the centuries.

The Anglo-Irish were trained generation after generation to serve the crown, but they also profoundly touched the lives of the Irish among whom they settled. They gave to Irish literature Jonathan Swift, Oliver Goldsmith, Wilde, Shaw, W. B. Yeats, J. M. Synge, Samuel Beckett; they gave to Irish patriotism Wolfe Tone, Edmund Burke, Charles Stewart Parnell. They gave Ireland its structures of government, civil service, and trade unions; to Dublin its grandest buildings; to the countryside its great houses and gardens; above all, they had given to Ireland their language.

"Oh, indeed they were and are a great people, a great culture," Brendan said. He himself writes, thinks, even dreams in English. But something bothered him.

He had recently completed a series of poems entitled, "The Case of Jack vs. the Former Occupant." In them, Brendan said, "Jack seizes a house, assuring the Former Occupant that 'Once you get used to the idea that I've taken over, you will really appreciate my style and sophistication, my way of doing things, the symmetry of my gardens, and the style and beauty of my rooms. I will give you this as a gift; just have the humility to accept it.'

"But something keeps nagging at the Former Occupant and he says: 'Why is it that I've always liked my gardens slightly wild? I dislike this particular symmetry? I dislike this particular beauty?' He can't really tell why or find out. So the poems go on, seeking answers but finding only more questions."

The devotion of the Irish is apparent: in the crowded churches on Sundays, and in

BALLINGARRY
I.F.A. BRANCH
NO
SUPER
LEVY
IRISH SUGAR
DEMAND
Gurteen
Macra
Branch
SUGAR CUT
MEANS
LOSS OF JOBS
EEC THREAT TO
SUGAR INDUSTRY
HANDS OFF
SUGAR QUOTA
EEC
SUGAR QUOTA
NOT ON
NEW SUGAR QUOTA
MEANS LESS JOBS
EEC
SUGAR QUOTA
NOT ON
E.E.C.
SUGAR QUOTA
NOT ON
C.S.E.T. WORKERS
REJECT
SUGAR QUOTA

special buses and trains bearing pilgrims to penitential exercises at Lough Derg, or to Knock, where there have been reports of cures. How often had I been told that "the church formed us, whether we practice it or not," and that in Ireland's darkest moments, the church was always there.

I drove to St. Patrick's College, some 15 miles west of Dublin at Maynooth. The college was founded by the English in 1795 "for the education of people of the popish persuasion." Today it is the site of the national seminary, meeting place of the bishops of Ireland, and the very anchor of the Irish faith. There was a great quadrangle, neo-Gothic buildings, the smell of fresh-cut grass and lilacs.

I strolled the grounds with Father Gerry Watson, professor of classics. He spoke of one change wrought by prosperity:

"There were 550 resident clerical students in my day; now there are 300. Vocations have declined. As late as the 1950s, Ireland was a country with few openings for a bright lad—the bank, the civil service, teaching, or the priesthood. There are more opportunities for fellows now. Just a fact of life."

And there was the question of the swelling generations of youth on the way. They would be the first to grow up with prosperity, television, travel, a clear view of ways of life unknown to their parents. Would they be distancing themselves from the church, considered conservative by European standards, or would they hold firm?

Father Gerry was hopeful, but uncertain. "There was a lot of discussion of topics that concerned young people a few years back. Contraception, divorce, mixed marriages, laicization—funny, they were mostly marriage issues. But it's died down now, and some of those involved have gone abroad.

"Ireland has never been a great country for theology. There's this tight-minded Irish thing: When you get an Irish person who wants to be tight minded, he can be the devil's worst. I was active in all these issues from 1968 through 1970—talking to groups, TV appearances, publishing. I was threatened with dismissal. In the past few years I'm just dealing with individual people and talking with them. I teach Greek and Latin and I'm happy enough at that."

We had walked past the seminary's apple orchard, past the old Protestant chapel, past the residence with its ghost room—closed for many years after the mysterious deaths of two students there—and started across the bridge that leads to the college's modern new annex. "Ireland," Father Gerry said, "is a small place, and not a great place for speaking out."

IT WAS only last year that a political lobby was formed to seek legislation permitting divorce in Ireland. When the motion was introduced in the Dáil, the lower house of parliament, only one lawmaker supported the bill—the one who introduced it.

Family planning seems another matter.

***The embrace of politics** and a shared hope of Irish unity link Prime Minister Charles Haughey (**above,** left) with members of his Fianna Fáil party—the Soldiers of Destiny. But all too often Ireland's destiny is dictated by events beyond its borders. Sugar factory workers joined farmers in County Tipperary last spring (**facing page**), protesting an EEC proposal to tax excess production of milk and sugar beets. Marches continue as farm profits face a triple threat: inflation, reduced subsidies, and penalties on increased yield.*

While the Irish birthrate has remained high in recent years, the fertility rate (the rate of children per married couple) has been declining. From 1975 to 1979, the fertility rate dropped a substantial 5 percent. Experts believe Ireland's annual crop of babies has peaked at 72,000 and will hereafter decline. "People just going their own way, and saying little about it," one priest opined.

Helping people to go their own way is a handful of volunteer family-planning clinics around the country. I stopped by one, just off O'Connell Street in Dublin. The clinic stands only a block from the great old Rotunda Hospital, founded in 1745, one of the oldest maternity hospitals in Europe.

IT WAS THE ROTUNDA that brought Dr. Rosemary Jordan to Ireland. "It had a great name, and I was fascinated. But when I arrived, I was appalled. In Oxford, when I was a student there, you would walk the ward and every mother would stop you and say, 'Look at my baby, isn't it beautiful!' Whereas in the Rotunda, it was too often 'Oh, no, not another one!' And nobody ever suggested how another could be avoided."

Dr. Jordan is now one of twenty doctors working part-time at the clinic.

"We have always been careful not to break the law. Until 1976 the importation of contraceptives was illegal. We could prescribe them, but patients had to go abroad to get the contraceptives. Then we could import them but not sell them; we supplied them in exchange for donations. Now this year there is a new law, its effect uncertain."

Some 12,000 persons, young and old, come to the clinic each year for consultations, sent by their family doctors, or by a friend's advice. I talked with one couple.

"It was my idea," Esther said. "I had just had my sixth child, and it was a surprise, coming five years after the last one. We decided to do something about it."

Jim, a laborer, had readily agreed. "It wouldn't bother me to have a dozen kids. Wouldn't bother Esther, either. She came from a family of 12. It is the financial problem. You can't give them all you'd like."

Esther and Jim have come to the clinic for several years and have had no more children. "It's not my health, mind you,"

Enthusiasm unfurls *a crazy quilt of homemade banners over a capacity crowd of 74,000 in Dublin's Croke Park* **(above)** *as County Galway, in maroon, wins the 1980 All-Ireland Hurling Final, its first championship since 1923.*

An ancient Irish sport resembling field hockey, hurling demands fleet reflexes from teams of 15 players who wield wooden sticks to send a hard, orange-size ball through their goalposts.

Game time of 30-minute halves never halts for minor injuries, such as a hand laceration **(right)**. *Hurlers play for love, not money, as members of the amateur Gaelic Athletic Association, born of nationalistic fervor in 1884 to promote Irish games.*

Fuel of home fires *for centuries, peat* **(above)** *now provides 20 percent of Éire's electricity. The national Peat Board harvests an annual four million tons of the nation's greatest domestic energy source.*

The Irish roots *of Henry Ford prompted the 1917 opening in Cork of the automobile maker's first overseas plant* **(below)**. *Workers take a break during a day's production of some 90 Ford Cortinas, mostly for export.*

Hand-stitched in 2,000 homes, Wallabees tops join their soles at the Kilkenny factory of Padmore and Barnes (**below**), a subsidiary of an English company, Clark Ltd., that markets most of the product in North America.

Applying finishing touches, a cutter at Waterford Glass Ltd. (**below**) uses a single cutting edge to decorate a crystal bowl. The company recently opened a third factory to meet world demand.

__No soft Irish mist,__ emissions shroud the Nitrigin Eireann Teoranta fertilizer factory at Arklow, County Wicklow. Large areas of surrounding forest have been damaged since the state-sponsored company opened the plant in 1965. Winds sometimes sweep the foul air into town, half a mile away, but most residents endure for the plant's economic benefits.

Stiffer pollution controls have governed industries introduced since 1971, and light manufacturing, such as production of computer systems, now dominates.

Esther said with a big smile. "My doctor says, physically, I'm good for another ten!"

I left the clinic and walked down O'Connell Street to the quays, turned right and proceeded to Halfpenny Bridge, a wondrous pedestrian span of cast iron built in 1816. I stood there awhile, watching the Liffey slide by below. I had learned a little of the Irish character; it was time now to look into the changes that had come to the republic.

"I'm afraid we're withering. Even the shadow of what we once were is fading. . . . What do we send out to the world now but woeful things—young lads and lassies, porther, greyhounds, sweep tickets, and the

shamrock green. We've scatthered ourselves about too much. We've spread ourselves over the wide world, and left our own sweet land thin. We're just standing on our knees now." Thus playwright Sean O'Casey described his homeland in the 1950s.

INDEPENDENCE in 1922 had not led to "a terrible beauty" but to turmoil: first a civil war bloodier and more destructive than the war for freedom, then a harmful economic war with Britain, then the dislocations of World War II. And always the government had turned inward, seeking self-sufficiency, prohibiting foreign investments and imports. Ireland stagnated.

Among those who remember those years well is Dr. Ken Whitaker. We talked in the black, modernistic Dublin headquarters of the Bank of Ireland, which he now serves as a director. In the fifties, he was the head of the republic's department of finance.

"About 1956 we'd reached the valley of despondence. Emigration was then in the 90,000s. Most were in their late teens and early twenties; almost half of a generation was departing in search of jobs. There was discontent, a disillusionment about the freedom we'd got and the lack of success we'd made of our own affairs."

Dr. Whitaker and his colleagues began to draft a new economic plan. "Some outmoded policies were thrown out without a word. The idea of self-sufficiency was abandoned. We began to invite foreign investment and open up to trade. Within a few years we could look back on an average growth of 4 percent per annum. We began to gain confidence, courage."

A SECOND and more dramatic turning point came in 1972 when the republic voted to join the European Economic Community. Membership the following year opened the Common Market to Irish goods and produce without tariffs, pumped an average 600 million dollars a year in agricultural subsidies into the republic, and made Ireland an ideal platform for non-European firms wanting to manufacture inside the EEC tariff barriers.

Ireland set out to lure foreign industry, especially U. S. industry. Officials targeted companies with a shortage of manufacturing capacity in Europe, knocked on doors, talked with decision makers. They offered a tax holiday on exports, grants for capital investment and worker training, relatively low labor costs, English-speaking workers, political stability, new plants already built and waiting, solicitous assistance at every step. In time they could also offer U. S. companies the highest return on investment in Europe—an average 29 percent.

Today overseas investment in Irish plants totals four billion dollars. Forty percent has come in the past six years, about half from the United States. Foreign firms now employ 80,000 workers, about one-third of Ireland's manufacturing labor force.

I dropped by the Industrial Development Authority (IDA), the agency that leads this effort, for maps showing the foreign factories in Ireland, a sort of industrial Baedeker. I wanted to know which companies had come, and why. Then I departed Dublin.

At Kildare, home of the Irish National Stud and the great Curragh Racecourse, I discovered that the largest employer was Black & Decker. On the edge of the great green Kildare plain—"still just as God made it," one Irishman assured me—some 522 workers fabricate 16,000 Workmates a week for sale in England, West Germany,

Confession, Communion, and care *come to 90-year-old Mary Carroll in monthly visits by Father Patrick Flynn of Templemore parish, County Tipperary.*

Confidences of a secular sort pass from Augustine O'Donoghue to Mirirm Slattery ***(left)****, after their first Holy Communion at age seven.*

Deprived of economic and political power by a ruling Protestant minority in centuries past, Irish Catholics found identity in their religion. Devotion to the church remains strong, but, says one priest, "We've had a mental revolution along with our industrial revolution. People today seem more willing to question their parish priest, and I don't think that's such a bad thing."

A horse in the drawing room? *That's okay with Americans Stanley and Sally Ann Browne, if he's their pet called Billy. The Brownes' home has been their castle*

since they were lured to County Tipperary by the spell of a 16th-century fortress, which they have now renovated, setting aside eight bedrooms for paying guests.

the Netherlands, France. Black & Decker strategists intend to put their wood-and-metal workbenches into one out of every five European homes.

At Ballivor, County Meath, a tiny crossroads village, the only traffic jam occurs when shifts change at the new Nippon Electric plant. Inside, 150 local women in surgeonlike smocks and caps, directed by five Japanese, produce a million computer chips each month for the European market. The Japanese reported business good. They were adding 100 more workers.

At Killarney I found that tourists share with industry some of the most beautiful landscapes in Ireland. Here visitors in horse-drawn jaunting cars savor the gorgeous lakes and oak-clad hills; above the largest of the lakes, Lough Leane, ten Germans and 440 Irishmen toil with Teutonic precision making cranes for loading and unloading container cargoes around the world.

Liebherr International had come in the late 1950s in search of labor. West Germany has no shortage of labor now, but German companies—and Dutch and Belgian—still come, for the IDA benefits, for lower costs, and sometimes because of the idea that if things should happen to go wrong in their own countries, well. . . .

My industrial Baedeker led me to Galway (Thermo King, Digital Equipment, Wilson Sporting Goods); Shannon (Mohawk Europa, Squibb & Sons, General Electric); Limerick (International Systems and Controls, Analog Devices, A. C. Nielsen). Each plant means paychecks for Ireland's young people—and more.

On a plateau above Killala and its lovely bay in County Mayo stand the huge acrylic-fiber and spinning plants of the Asahi Chemical Industry of Japan, employing some 500 workers. The fiber plant produces 18,000 tons annually, 90 percent for export. To quench its thirst, two million gallons of water is piped daily from Lough Conn, ten miles inland; the effluent is discharged into the bay.

The plants dwarf the town, their size and purposefulness enough to frighten off the bravest of leprechauns, and that effluent remains for some a concern. Yet when I talked with members of the community council in the back room of the Killala General Store, there were no negative comments. Sean Hannick, councilman, explained why:

"Before Asahi, we seemed to be a dying town. There was not a chemist's shop. Now there is. Housing has doubled. Our primary school, once down to only 86 children, now has over 200. Even our pubs have been updated." For Killala, the monster plants seemed a deliverance.

As EEC MEMBERSHIP permitted Irish industrial development to take off like an Aer Lingus jet, it also revolutionized Irish farming. Since time immemorial, the island's wealth has lain in its soft rains, lush pastures and meadows, and its cattle herds; the national epic, the *Táin Bó Cuailnge*, describes a cattle raid.

To this heritage, EEC membership added guaranteed prices: Farm income jumped from 710 million dollars a year to 1.5 billion, the price of a young heifer from 160 to 450. Last year EEC price adjustment payments to Ireland reached 800 million dollars, a sum equal to 10 percent of the national budget, almost $250 per Irishman.

Farmers with good credit and willing to take a risk moved swiftly, among them Con Ryan of Glown.

The hamlet lies in the hills of Tipperary, close by Upperchurch. It consists of four houses built early in the last century by a woman for her four sons. Con, her great-great-grandson, lives in one of those houses. It has a parlor, a kitchen, two bedrooms with a loft above, and walls four feet thick. We sat in the parlor before a peat fire. Some of Con's nine children played in the kitchen, where Cathy, the hired woman, ruled. Con's wife, Mary, was at school, teaching.

"I was born and reared on 60 acres," Con said. "An 11-cow farm. That was all the land I had until five or six years ago. There's a brother involved with me now. We inherited an uncle's farm, bought more land, and now have a hundred cows between us."

Through the small window I could see the milking shed: 14 cows at a time, about 300 gallons a day stored in a thousand-gallon cool tank. "The milk is collected every second day by a pumper truck from the Tipperary Co-op. They make butter, skim-milk powder, and cheese, most for export.

"There is a big investment," Con said, "long term, with risk." Most of his neighbors were unwilling to invest. They kept to six or a dozen cows and sold to a creamery. They remembered the ups and downs of the past, or the tales of them. "They're saying, 'What about people like Con Ryan now with all his milk, what's he going to do with it if things turn down?' "

Indeed, farm earnings had slumped during the past two years. But Con was confident. As on many an Irish farm, a fine new house was rising just beside the old. It had generous rooms for nine children, a fine picture window looking out over the hills, a spacious and modern kitchen, and, for the first time in Con's life, indoor flush toilets.

Con's future seemed bright, but in many an Irish farm cottage a pair of older brothers or an older brother and sister sit silent before the peat fire at night. In their day there had been neither opportunity to expand nor money or land enough even to marry. This generation will soon die out; the scramble for their land begins. It is now a major issue for the government.

IN CRISSCROSSING IRELAND, it is the landscapes that stick in the mind, that come back in memory long after you have departed: Of the bleakness of Donegal, where thatched roofs of cottages are lashed down to hold against winter winds; and of the barrenness of Connemara and the Aran Islands, where crop soil is still fashioned from seaweed and sand, and the maze of field walls holds the countless stones hand-cleared from fields; of Galway Bay, the breaking up of a storm, the appearance of the sun, splintering the sky with colors.

History sits lightly on the land. Here and there prehistoric stone pillars, their swirling inscriptions mute yet mocking. Others have come before you, they remind, so long ago their names are forgotten, as your name will be forgotten.

The medieval monasteries hold their lessons too. They are abandoned, the monks long vanished; all that remain are the small stone churches, the round towers, and the surroundings the monks loved to limn: "Death-green of yew, huge green of oak. . . . tall deer, quiet does. . . . trapped trout, sweet sloes and honey. . . . Black-winged beetles . . . small bees. . . . fine white gulls all sea-singing. . . ."

At Waterford and Cork it is the Rivers Suir and Lee, glinting in the sun, that you remember. They had borne the Danish Vikings who came and here founded settlements. While in Kilkenny, at castle and cathedral, you are at first puzzled by the slight flavor of a small ducal town in France, until you remember it was shaped and governed for centuries by Normans.

A landscape like this, which stretches not only the eye but the soul, can be marketed, and the government's Bord Fáilte (Board of Welcome) does so vigorously. Last year more than two million tourists came to the republic, leaving behind 730 million dollars. Some were not content only to visit but wanted a piece of this landscape.

I was fishing in Lough Derg on the Shannon one day. It was the mayfly season and we sought the brown trout by dapping—with a great long pole allowing a hooked fly to just lie on the water. It was a gorgeous day: clouds running fast, wild swans riding the water, one wing uplifted to catch the wind like a sail, the distant cry of birds. Farmhouses were tucked into the hills, unassuming. But then I noticed one large house, its glass front like a great cyclopean eye, so positioned to drink in every ounce of view. A Belgian had built it, I was told, and there were German owners too—hunters, fishermen, walkers. Many Europeans, seeking a respite from their crowded and competitive lands, are building holiday homes in Ireland.

They'll be a long time filling up this landscape; still, slowly they change the look of Ireland, as some feel prosperity may change the character of the Irish.

EVERY NEW force brings in its train surprises, some not pleasant. "Our society has become notably more selfish, highly competitive, everybody looking out for themselves. They want to take our increased wealth in terms of higher incomes now, rather than to plow it back into savings and investments for the future."

I was talking with Garret FitzGerald in Leinster House, seat of the Dáil and the senate. Dr. FitzGerald is leader of the opposition Fine Gael (People of Ireland) party.

Ireland's window on the Atlantic, *Galway thrived in medieval days when trade with Spain made the port the country's wine purveyor. Recalling that heyday, a 20th-century*

cathedral, in a bend of the River Corrib, is ornamented in an Iberian style.

He is a tall man with a shock of gray hair, his manner remindful of a favorite college don.

"We had for a long time a stagnant economy, a rural society with no expectation of anything getting better, and most people were curiously content with their lot. Those who weren't content left, so we exported our tensions. This has changed. The tensions are here, expressed in a new materialism."

There was a need, he said, to invest more in jobs and housing for a huge younger generation, a need for better social services—"We are pretty mean with our poor." But the Irish were as yet unwilling to do it.

Support for Dr. FitzGerald's thesis of "a new materialism" came from Donal Nevin, assistant general secretary of the Irish Congress of Trade Unions. The congress represents 65 percent of Ireland's nonfarm workers, and has offices on a quiet residential street in Dublin.

"In recent years," Mr. Nevin said, "the serious disputes have been largely in the public-service sector. Groups convinced themselves, perhaps correctly, that they had fallen behind workers in the private sector. I suspect that most claims today are based not so much on the value of the work done, but on what somebody else has.

"The psychiatric nurses argued, for instance, that here was this other group who were getting more money for less important work. The same with the post-office workers. They claimed they were not doing as well as others. They went on strike for 18 weeks! There is an aspirations gap, heated up by political promises, and how we meet this situation, I don't know."

WHILE MANY ARGUED over how to slice the money pie, a chill began to pass through the economy. In 1980 growth tumbled to less than one percent; real earnings were arrested or fell; inflation rose to 18 percent. Some of the reasons lay outside Ireland: recession in the Western world; increases in the price of imported oil, which supplies 70 percent of the country's energy. Other reasons lay within: heavy government borrowing to keep the economy moving, to satisfy income expectations, to keep creating new jobs—each with a price tag of $12,000.

One great hope lies in the Porcupine

Bank, 120 miles off the coast of Galway. The discovery of oil there spurs visions of a new North Sea, with wells pumping money into the economy, lessening the need for imports. But it is uncertain whether the oil exists in commercial quantities, and it lies below as much as 1,400 feet of water (twice the depth of North Sea fields) in some of the world's wildest seas. Development poses new technical problems and could not be achieved before the mid-1980s.

There was another cloud hanging over Ireland, an old one.

I could go for days and weeks without anyone mentioning "the troubles" in the north, the killings and the bombings. There were reminders: *"BRITS GO HOME"* scrawled on a wall; a convoy of the gárda, or police, and armed soldiers escorting a money truck to a provincial bank—it is said the Provisional IRA finances part of its Ulster activities with money robbed from banks in the south. There were the daily newspaper reports, black type on white paper, easily skimmed or avoided, and there was television—including three British channels, one from Belfast. (See the article beginning on page 470 of this issue.)

It is on television that the north comes most often to the south: A man shot and his body dumped on the roadside—it lies there three days, the police fearful of booby traps; a man shot down in front of his wife and daughter—when the killers had first called, the daughter had offered them tea, not knowing who they were; a new hotel, ready

for opening, blown apart; a rail bridge linking north and south, blown apart; a car bearing a British officer, blown apart.

But television too can be avoided: "The north again—turn it off!"

Most people in the republic seem to want to ignore the troubles, to get on with their lives and jobs. When I brought up the subject with a small group of Trinity College students, one girl, a Catholic, said: "Here, it's as if something were happening in Beirut. We don't want to think about it, or know what happens, or be asked to make any decisions about it.

"I think people have a kind of guilt complex, for having always wanted the north to be a part of the republic, and for having sort of sung 'wrap the green flag round me, boys' twelve years ago when the troubles started. They feel sort of responsible for having somebody pick up a gun. Nobody wants to think about it any more."

But some do, of course. They meet in secret, make plans, arrange for money, guns, explosives. The killing goes on—a dark stain on the shamrock green. No one I talked with saw any early solution. Tribal passions run too deep; only time and a softening of attitudes could change things.

Yet recently the Irish government had reaffirmed its wish "to secure the unity of Ireland by agreement and in peace." It had suggested that the Irish constitution might be altered "to accommodate those whose traditions and attitudes are different." And that "the hinge of the door that must be

Guardian of splendor past, *Desmond Guinness* (**left**) *founded and heads the Irish Georgian Society, which preserves such 18th-century treasures as the Castletown estate near Dublin. A pioneer of abstract beauty, internationally known artist Patrick Scott* (**above**) *created a series of rainbow rugs for the Kilkenny Design Workshops, established to raise standards of Irish industrial design.*

opened is in London"—it wanted London to nudge the north toward unity.

I DROVE to the northern outskirts of Dublin, turned down a shaded lane, stopped to identify myself to a policeman, and pulled up before a handsome 18th-century Georgian house. The doorbell was answered by Charles Haughey, Taoiseach, or Prime Minister, of the Republic of Ireland.

Dubliners say of Mr. Haughey: "He's a pragmatist, not a dreamer of dreams." An accountant, he amassed personal wealth, rose swiftly in politics. In 1979 he was called by his party, the Fianna Fáil (Soldiers of Destiny), to leadership. It was time, many felt, for a pragmatist, a man who could do his figures, keep the economy rolling, try new approaches to the question of the north.

He is of modest height, quiet, and speaks measuredly, like a man who, crossing a bridge, tests each plank with his toe before putting his full weight on it. There is a hint of Lear in the face, the result, perhaps, of having been brought to trial on charges of plotting to smuggle arms into the north eleven years ago; he was acquitted.

We strolled the grounds, talking of changes. Prosperity might make union with the north easier. For a long time the south was the poor relation. Now, with its rapid growth, it should seem more attractive to the northerners.

Membership in the EEC had changed Ireland psychologically.

"We were for such a long time only England's back garden. A civil servant would sit in his office in Dublin all his life. Now he's going to Brussels, meeting other Europeans, finding he can perform at the same level. This has strengthened our confidence."

But the greatest change was in Ireland's youth. "I grew up in Dublin, and in those days you didn't think much of what was outside Dublin; the city was your world. Young people don't think that way now. They're going off to Europe for holidays and to work in the summer, and they think of Ireland as a whole, rather than only of their city. And there's a better feeling about Ireland, a change of consciousness, because recently they have not had to confront the decision of whether to emigrate or not. I cannot help but think that Ireland will be changed in 20 years. Not the basic character, but the technology, the living standards, the amount of education, the general feeling—we can already see the beginnings of this."

AND SO, to the long list of Ireland's invaders must now be added money. It arrives from over the horizon, not in longships but on computer printouts, its heraldry the abbreviations for marks, francs, dollars, pounds, kroner. As the Vikings and Normans and English gave Ireland its towns and cities, its common language and institutions, money gives it suburbs, automobiles, television sets, charter flights to Miami, and, for the wealthy, holiday homes in Spain, great houses, and that enduring and mythic symbol of privilege, horses.

It is not certain that the prosperity will continue, or how profoundly it will affect the Irish. Is it not written that "They came forth to battle, but they always fell"? And that in Ireland "The inevitable never happens, the unexpected always"?

James Joyce, angered at the elusiveness of the Irish mind, had his fictional hero boldly proclaim: "I go to encounter for the millionth time the reality of experience and to forge in the smithy of my soul the uncreated conscience of my race."

The Irish still struggle to forge that conscience, or consciousness; it eludes them yet. We can no more seize it with our hand than we can the mist off Connemara, or the great throat roar of a Curragh racing crowd, or the lilt of a woman's song.

Of all the words written and spoken by the Irish about the Irish, perhaps most could agree on only these: "No man at all can be living for ever, and we must be satisfied."

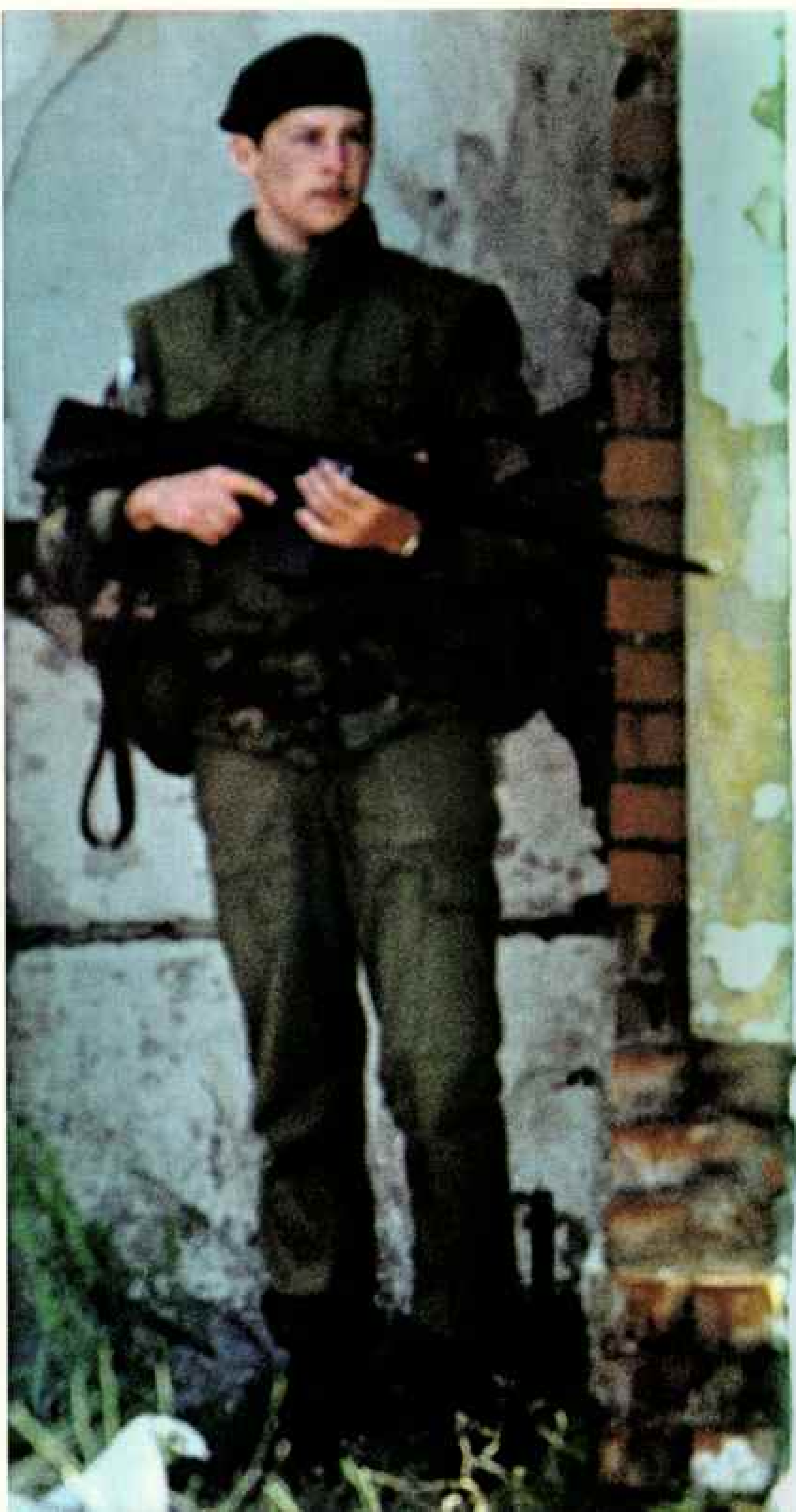
God bless. □

The Golden Vale, *a rich swath of land running through Counties Limerick, Cork, and Tipperary, supports much of the republic's beef and dairy farming. A decade ago agriculture accounted for 54 percent of Ireland's exports. Now manufactured products have taken the lead as the nation searches for new sources of gold at rainbow's end.*

War and Peace in

By BRYAN HODGSON NATIONAL GEOGRAPHIC SENIOR STAFF

British combat troops seeking information about terrorists in Belfast play an uneasy role as peacekeepers. As one soldier cradles a baby, another keeps watch around the corner for snipers. Since 1969, when the army stepped in to halt rioting between Roman Catholics and Protestants, some 20,000 people have been killed or injured in bombings and assassinations. Police reassume responsibility for law and order as the army phases down from 21,000 to 11,300 men. Yet terrorism continues, and firebrand leaders keep old wounds fresh.



Northern Ireland

Photographs by CARY WOLINSKY STOCK, BOSTON

Bonfires fed with spite *burn till dawn on the Glorious Twelfth of July to celebrate the 1690 victory of William of Orange over England's last Roman Catholic king.*

For, behold, the Lord will come with fire, and with his chariots like a whirlwind. . . . and the slain of the Lord shall be many.

ISAIAH 66:15-16

MIDSUMMER MIDNIGHT, and Belfast is burning. From the red-brick neighborhoods along the Shankill Road and Sandy Row huge bonfires cast turbulent shadows across the city. War drums crash in narrow streets, and somewhere rabbled voices roar an unintelligible song. The air is heavy with smoke.

It is the dawn of the Glorious Twelfth of July, and Belfast's Protestants are celebrating the victory of William of Orange over the Catholic King James II at the Battle of the Boyne almost 300 years ago—a victory that made England irrevocably Protestant.

At daybreak more than 100,000 primly bowler-hatted members of the Orange Order will parade, beginning a holiday season in which two-thirds of Northern Ireland's 1.5-million population proclaim their Protestant heritage and their loyalty to the British crown. But tonight belongs to the street crowds, and there's a manic edge of menace to the holiday mood.

In the Catholic ghettos of West Belfast things are quiet. British troops in battle gear patrol the rubbled streets of Turf Lodge, Ballymurphy, and the Clonard. Indoors, people remember another night of fire, that in August 1969, when Protestant mobs burned dozens of Catholic homes, forcing

James II. Flaunting Protestant domination here, these symbolic fires recall blazes set by mobs in 1969 that destroyed dozens of Catholic houses during riots in Belfast.

hundreds of panic-stricken families to flee.

Since the mid-19th century, scores of similar riots have flashed and faded during the summer solstices of sectarian pride, but 1969 was different. It ignited a vicious war of terror bombing and assassination that in 12 years has killed more than 2,000 men, women, and children, injured more than 17,000, and cost about a billion dollars in property damage. Some 8,000 people have been jailed for terrorist crimes under emergency laws that suspend many of Britain's most precious civil rights.

I watch the Protestant bonfires from a comfortable viewpoint high above the city, in a hotel that has survived 27 bombings.

To the west, firelight outlines the bulk of Royal Victoria Hospital, which developed the mobile coronary care units that now save countless lives in cities across the world. Today its staff is famous for new techniques of combat medicine, and for devising artificial kneecaps for victims of terrorist punishment shootings.

West Belfast is the battle zone, where a grotesque "peace line" of steel and concrete slashes through an eerie wilderness of shattered buildings, separating the modest neighborhoods of "Prods" (Protestants) and "Taigs" (a contemptuous term for Catholics). Sheltering among them, the terrorists of the Irish Republican Army and the Protestant Ulster Volunteer Force and Ulster Defense Association refresh their hatreds at the same poisoned well of Irish history.

Half of Northern Ireland's Protestants are

descendants of Scottish Presbyterians who were settled on confiscated Irish lands by King James I in 1609. James, a Scottish Protestant, ruled when England itself was riven by changing political and religious passions. The Scottish settlers were loyal. The Irish, fighting for independence with military aid from Europe's Roman Catholic kingdoms, were a constant threat to England's security.

The north became a guerrilla battleground, and the gut issues were not purely religion and politics but land and jobs and feeding families. Religion became the badge of both possessors and dispossessed. Northern Protestants guarded their land and power, excluding Catholics from the jobs that came with the industrial revolution. When Britain began to debate home rule for Ireland, Protestants saw their power disappearing in a Catholic Irish Parliament.

Isolation Fed Flames of Dissent

The bloody lines of today's conflict were drawn in the Anglo-Irish war that ended in 1921, when rebel leaders signed a treaty to grant self-government to the southern 26 counties but isolated the six Protestant-dominated northern counties under a separate parliament fiercely loyal to Britain. Denouncing the Irish leaders as traitors for abandoning the ideal of a united and independent Ireland, the Irish Republican Army (IRA) waged a bitter civil war in the south and turned Belfast's Catholic ghettos into a battleground as well.

But today's violence had a very modern cause. Northern Catholics—and moderate Protestants—began a civil-rights campaign to overturn laws and policies that had kept them poor and powerless. Peaceful street protests turned into riots, and the ancient bonfires flared again. And no amount of bloodshed seems likely to quench them.

In the weeks I spent here, I learned that there's far more than the headlines tell about a city and a land that have become datelines for disaster.

I've visited placid seaside resorts where bathing beauties and bagpipe bands compete for the attention of summer crowds. I've walked a splendid northern seacoast with a view of Scotland's mountains only 13 miles away across the North Channel. In the west, I've sailed on broad blue lakes that dream unspoiled beneath heathered hills.

Along the way I've seen factories—35 of them U. S. owned—turning out products ranging from oil-field equipment and textiles to automobile parts and electronic gear. And I've seen new housing developments in which Britain has resettled thousands of families since 1969.

There are severe economic problems.

Wearing their patriotism *with gusto, Protestant marchers in Belfast's July 12 Orange Parade* ***(facing page)*** *declare approval of union with Great Britain. In contrast, many Catholics favor looser ties as a stepping-stone to a united Ireland. The Reverend Ian Paisley* ***(above)****, a Protestant hard-liner, preaches "No Surrender" to Catholic demands for a greater share in government.*

Hands up *became a habit for Belfast shoppers after 1972, when security forces—combating car-bomb attacks—closed downtown streets to traffic and set up pedestrian checkpoints* (**below right**). *By 1976 a thriving center-city mall* (**below**) *was created where brief searches are the only contact with the "troubles" for many grateful citizens.*

The past decade's violence began with attacks on Catholic civil-rights marchers by Protestant police and mobs. But its roots date to 1609, when England's James I settled Scottish Presbyterians on confiscated Irish lands. The fight for power split along religious lines. Protestants passed to their descendants the suspicions of besieged settlers; Catholics, the ire of the dispossessed.

Unemployment is more than 15 percent—nearly double that of Britain—and ranges above 30 percent among males in Catholic ghettos. The "troubles" have cost thousands of jobs. And in Belfast, violence and intimidation have forced thousands of working-class Catholics and Protestants to leave their homes in one of Europe's largest refugee movements since World War II.

From Cave Hill the scars don't show. It is the most prominent of the green highlands that enfold the city, overlooking the sparkling waters of Belfast Lough. I climb there on a bright and windy day, my solitude broken only by a passing jogger, a pair of kite fliers, and two earnest young woodsmen who give me a brief lesson on hunting rabbits with the help of a ferret named Killer.

Looking down on the serried houses of a 19th-century industrial town studded with a

few modern glass towers, I can see the huge cranes of Harland and Wolff, birthplace of the *Titanic* and now one of the world's most modern shipyards. Nearby, at the Short Brothers factory, I've watched skilled workers building an airplane that is helping to revolutionize commuter flying in the United States (page 493).

A Measure of Normalcy

A few miles to the south stands Queen's University, where I've shared ritual strawberries and cream with the half-Protestant, half-Catholic graduating class of '79. To the west I can see the Shankill Road, where I've pushed my way through noisy, cheerful Protestant crowds to buy a crisp Armagh apple, or admire flower shops blazing with the roses for which the north is famous. And a few blocks away lies the Catholic-populated Falls Road, which can be an equally noisy, equally cheerful thoroughfare despite the constant undercurrent of violence.

Both streets funnel throngs of workers and shoppers into downtown Belfast, where everyone must submit to body searches at security posts that ring the business district. Inside the gates, where traffic is banned, new buildings are rising, old ones are being restored, and the streets and well-stocked stores are alive with Northern Irish voices, whose accent is a memorable blend of Scottish and Irish. If there is a way to distinguish Catholics from Protestants just by looking and listening, I never learned it.

The nights are different. From my hotel window I've heard the crash of bombs, the rattle of gunfire, and the constant moaning of police sirens. But I can also hear strident disco music pounding from the penthouse

AIRBORNE EYES in a British helicopter keep watch near Stormont Parliament, home of Northern Ireland's government until 1972. Then Westminster assumed direct rule over the province's 1.5 million people in the midst of continuing civil disorder. Threats of civil war by Protestants of Ireland's six northern counties forced partition in 1920 as the Catholic south split from Britain.

ballroom, which offers dancing "with the Charming Poppet of Your Choice."

Poppets notwithstanding, my heart is won by a pretty Catholic girl from West Belfast, who has come in secret to meet her Protestant fiancé.

"Here's me, born and bred in Belfast, and I was 22 before I ever met a Protestant boy," she says. "We're afraid to tell our families; they'd be destroyed with shame. We'll have to go away to be married, to England or Canada. Anywhere, just so we can find a wee bit of peace."

Peace. The word is on everyone's lips today—if not in everyone's hearts. Solutions abound, each one excluding others, like a fistful of stones.

There are code words for them.

"NO SURRENDER!" identifies the loyalist Protestant majority, which clings stubbornly to union with Britain and swears never to accept union with the Catholic-dominated Irish Republic to the south.

"BRITS OUT!" is the battle cry of the Provisional IRA, or Provos, and its evanescent political wing, Sinn Fein, which forecast unending violence until British troops and government are withdrawn, leaving the island's inhabitants to sort things out for themselves. While this reflects a profound hope to some, most fear it would bring immediate civil war. Nevertheless, the Irish government has steadfastly maintained that only a British initiative to withdraw its guarantee of continuing union with Northern Ireland can end the stalemate and force a gradual linking of north and south into a federated state or a true republic.

Today there are strong indications that Dublin and London are finding a common ground. Charles Haughey, who became Ireland's prime minister in 1979, has strongly condemned the IRA as a terrorist force acting against the interests of the Irish people. By increasing cooperation between security forces on both sides of the border, he has drastically reduced the terrorists' freedom of movement—as evidenced by a British Army estimate that the number of IRA activists has dwindled to about 250.

If violence can be held to a minimum, many experts feel that Britain's prime minister, Margaret Thatcher, will be free to bring economic and political pressure to bear on northern Protestants to reach a compromise with the Catholic minority. Supporting Protestant intransigence has become an expensive luxury for Britain's beleaguered economy, which subsidizes Northern Ireland to the tune of 1.4 billion dollars a year.

Meanwhile, I am learning other codes—how many died, and who killed whom, on Bloody Sunday, Bloody Thursday, Bloody Friday—and sometimes it seems that only an eighth day of some improbable week might be numbered as the Day of Peace.

But I've met some heroes and heroines who live by a very old calendar of hope.

Derek Sloan, for instance. He's a Protestant. His news agency and candy store in the Ardoyne district has been bombed by Protestants and Catholics a total of six times—an ecumenical onslaught against a gentle man

who for more than 11 years has worked with his wife, Anne, on recreation schemes that bring Catholic and Protestant kids together in one of Belfast's toughest neighborhoods.

"It's a wee bit dangerous," he says. "But if you believe in peace, you have to stand up and be counted."

Maura Kiely sums the war up with her own code word: "Evil. But out of evil can come good." Briefly she tells how terrorists murdered her 18-year-old son, Gerard, on the steps of St. Brigid's Catholic Church in Belfast one evil day in 1975.

"There was no reason," she says. "Men waiting in the church grounds fired rifles into the crowd. Gerard and two others were hit. The police said he lived for 20 minutes. I died myself—for a year I was numb.

"Friends and neighbors stood by me, and I got more than 400 letters from all over the world. I realized that I wasn't alone, that hatred and anger were poisoning my life. So I started getting in touch with others who'd suffered the same as me."

The result—the good thing born of evil—was the Cross Group, Catholic and Protestant women whose husbands and loved ones have died in terrorist attacks.

I meet some of them in Maura's parlor.

Eileen O'Neill's policeman husband, Bernard, 36, died with his Protestant partner and six innocent bystanders in 1972 when a massive car bomb exploded on a Belfast street. She weeps now, sharing the more recent pain of Angeline McTier, whose husband, John, a prison officer, was shot while driving home in 1978, leaving her with three young children. Madge Gibson has raised

Tightly woven *as the Irish linen that helped build Belfast, rows of terrace houses* ***(left)*** *sprang up in the 1800s when the city swelled eightfold to 400,000 people. Now thousands of dwellings are deteriorating, with one in seven homes unfit for habitation. Among the fortunate, the Samuel Bulla family* ***(above)*** *move their possessions a few blocks away to one of 3,000 roomier houses, background, completed last year by the government.*

Untouched by the troubles, *more than 150 wooded islands dot the Lough Erne water system in sparsely populated County Fermanagh. Encouraged by more peaceful times,*

boaters and hikers slowly return to the lakes region, along with anglers for salmon, trout, and pike and visitors to Celtic and early Christian monuments.

seven children alone since her husband, James, 42, was shot in his grocery store in 1972. And Mary Lee's ex-soldier husband, Jackie, was shot before her eyes as they left a restaurant after celebrating their wedding anniversary in 1976.

"I met the murderer's mother in court," Mrs. Lee recalls. "She came and shook my hand. Her son had killed three others as well. I could see she was heart-sorry, so I shook her hand back. We're all victims, aren't we? Even if peace came tomorrow, we'd still be paying the price."

Such stories are the commonplace of a conflict that, in the first years, became an orgy of random killings, of homemade bombs exploding without warning in pubs, villages, and crowded city streets.

Much of the violence stopped in 1973, when Andy Tyrie became commander of the Ulster Defense Association (UDA).

Andy Tyrie declared a sort of peace. "Most of the casualties were innocent. We were just driving the Catholics into the arms of the IRA," he says. "There was no future in that. We had to stop and ask ourselves what we were really fighting for.

"I grew up in Ballymurphy when it was a mixed neighborhood. I learned that Prods weren't anything special—we lived in the same houses as Catholics, got the same money for the same jobs."

But when sectarian rioting erupted, he found himself living on the battlefront.

"We were disorganized then. It was very emotional. Guys mixed fertilizer and diesel oil together in their basements, making bombs to blow up pubs. If they'd been organized, it would have been a real bloodbath.

"Now we *are* organized. We're fighting

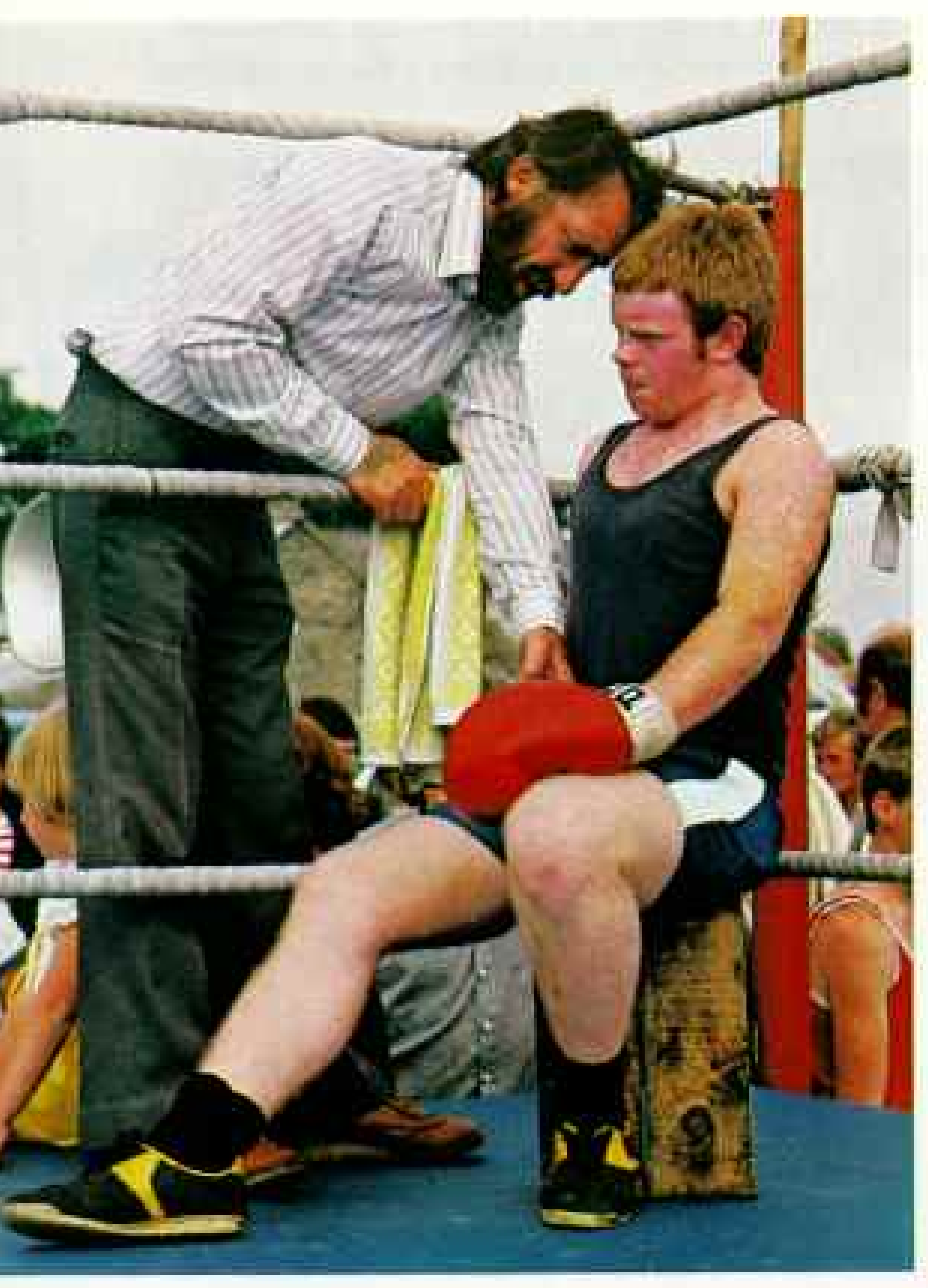
Tolerance earns high marks *at Sion Mills Primary School, where Protestant and Catholic students take a math quiz* **(above)**. *Nearly everywhere else children attend segregated schools. But here the linen company that built the town in the mid-1800s made its workers mix peacefully. In Londonderry a tolerant Catholic majority yearly alternates the mayor's office in the restored Guildhall with the Protestants. This year Catholic Deputy Mayor Joe Fagan will likely succeed Protestant Mayor Marlene Jefferson* **(left)**.

for Ulster and against a united Ireland. That means fighting the Provos, not just killing Catholics."

In March 1978 the UDA issued a manifesto calling for a negotiated independence from Britain and an Ulster government based on a constitution and bill of rights similar to the American codes.

It also contained this stark appraisal of northern affairs: "Without the evolution of proper politics," the manifesto said, "the people of Northern Ireland will continually be manipulated by sectarian politicians who . . . fan the flames of religious bigotry for self-gain and preservation."

It was another way of saying that the war need not have happened.



Words for a winner: *Trainer Paddy Joe Quinn counsels 19-year-old milkman Albert Bell during an amateur bout at last August's Arboe Cross country fair. A natural sport for Northern Ireland's pugnacious spirit, boxing nevertheless trails soccer among popular pastimes.*

In 1965, for the first time since Irish partition, some leaders north and south were discussing ways to bring the six British-ruled counties closer to the 26 counties of the Irish Republic. Then a series of civil-rights protests prompted Britain to force the north's Stormont Parliament to recognize Catholic grievances. The Irish Republican Army was talking of abandoning violence as a way of ending British rule in the north.

It was a time of hope, even though animosities smoldered on both sides.

Paisley Practiced What He Preached

Helping erode such hope, though, was the continuing acrimony voiced by a fundamentalist Protestant preacher named Ian Paisley, who made Belfast's streets a pulpit for his own brand of politics. Paisley's only known act of personal violence was to hurl a Bible at a rival Protestant minister in 1959. But he helped foment sectarian rioting by threatening to rip down an Irish tricolor flag from a political headquarters in Catholic West Belfast. He denounced the northern prime minister, Capt. Terence O'Neill, as a traitor, and he led mobs of cudgel-armed Protestants against civil-rights marchers, beginning a series of attacks that led at last to the fatal riots of August 1969.

Since then he has flourished. He denounced ecumenically minded Protestant churches, won membership in the British Parliament in 1970, destroyed Protestant unity by forming his own political party, and trounced his opponents in the 1979 European Parliament election.

"I have a mandate," he cried after that election, "an overwhelming mandate as the leader of the Protestant people in Northern Ireland!" His victory, he said, was a miracle, and the credit belonged to God.

Today Paisley hurls political thunderbolts in Parliament, but he reserves his biblical firepower for the faithful at Martyrs Memorial Free Presbyterian Church. "Lord, intervene in our behalf!" he roared one Sunday. "Stop the madness of the Irish Republican Army! Stop the cancer of ecumenism in this land! Stop the scourge of popery in our midst! And, O God, grant . . . that Ulster will have another great revival, a turning to our God and Christ, *and may many be the slain of the Lord!*"

Against that pulpit thunder, the voice of the Reverend Ray Davey sounds quiet indeed. He is one of those clerics who reads the Bible's fine print—the bits about forgiving thine enemies and loving thy neighbor. They form the outer limits of theology at Corrymeela, a center for Christian reconciliation he founded in 1965.

In 1969 Corrymeela volunteers helped evacuate hundreds of terrified women and children from the flaming riot zones of Belfast, and rallied Catholics and Protestants of Ballycastle to feed and shelter them. Since then, Corrymeela's Family Weeks have brought together groups from both sides of the peace line.

"These are only part of our many community activities, but the boat rides, beach trips, hikes, and good food give them a chance to relax," Ray says.

"Many are fearful of each other at first, but after a day or so they begin to mix and talk about common problems like high food costs and housing. There's very little discussion of Protestant-Catholic issues nowadays—just people coming together."

Seacoast's Serenity Is Therapeutic

People have been coming together for centuries on the north coast, where the narrow channel between Ireland and Scotland was a highway, not a barrier. Many prehistorians believe that Ireland's first inhabitants crossed from Scotland; Scotland itself was named for the Scoti, as Romans called the northern Irish who brought Christianity and the Gaelic language to the Scottish Highlands and isles.

With a group of Belfast kids who have never seen the ocean, I explore the spectacular Giant's Causeway, a 60-million-year-old lava bed whose cooling created a massive formation of six-sided pillars so symmetrical that Irishmen for centuries believed they were laid down by a race of giants.

The beauty of the seacoast combines with Corrymeela's atmosphere of sanctuary to produce a small miracle now and then.

Mary G., for instance, laughed aloud at a joke. Then she cried. She hadn't done either since her husband was assassinated by mistake by one of his coreligionists.

"I was afraid to come," she tells me as we walk one evening along the shore. "I thought it would be all hymns and preaching. But now I'm afraid to go back home—I feel alive here." Feeling alive may be the most painful thing of all. She is young, attractive, but remarriage is out of the question with seven children to raise. She worries about her oldest sons, who live in that curious Belfast underworld where fledgling terrorists wreak vengeance on youngsters who are reluctant to join their movement.

Later I see her sons, tough young men, lustily singing nonsense songs with a group of children. Somehow it seems that they have been released into boyhood.

"I'd like to come back here every week," one of them says. He tries for an explanation and fails. "I'd just like to come back."

I meet him again on Sunday morning at Corrymeela's Agape breakfast—*agape* being a Greek word that means much more than love, and breakfast being either a communion or a meal, depending on your convictions.

Ray breaks and shares the homemade wheaten bread; people help themselves. There's a brief prayer. It's about love. Afterward Ray spells out his feelings.

A veteran of three years in Nazi prison camps, he sees his "congregation" as unwilling prisoners in a war they detest.

"You keep wondering what you can *do*," he says. "Perhaps we can change young people's attitudes. But is that enough? The Protestant hard-liners attack Corrymeela as a 'springboard of terrorism' merely because we try to bring both sides together. But what the *hell*"—he uses the word with full ministerial authority—"does that have to do with Jesus of Nazareth?"

A Ray of Hope in Derry

In Londonderry—or Derry, as Irishmen prefer to call it—I found a political version of Ray Davey's hopes. I met a Catholic named Pat Devine, who in 1979 also happened to be the mayor—a combination inconceivable in the years when a Protestant minority ruled the city by ruthlessly gerrymandering the majority Catholic vote.

A decade ago Northern Ireland abolished the existing town council and ordered a voting system that assured proportional representation. Thus the Catholic majority

can automatically retain the mayoralty.

"But we don't," Mayor Devine said. "We alternate with the Protestant parties. They've got to have a part in decision making. We know what it's like to be powerless."

Nothing in Londonderry's history made it a likely testing ground for reconciliation. Its fortress walls were built in 1619 to resist rebellious Irishmen, and in 1689 the Protestant inhabitants withstood a 105-day siege by the Catholic army of James II—a feat that earned the title of Maiden City for the handsome little town on the River Foyle's banks. On marshy ground beneath the walls, a Catholic community called Bogside became a ready target for Protestant jeers each year during parades commemorating the siege. In August 1969 the Bogsiders reacted to the insults, triggering violence that set off the massive riots in Belfast.

In 1972 the city won a different sort of fame when Catholic crowds demonstrated against the internment without trial of hundreds of terrorist suspects. British paratroopers opened fire, killing 13 men and youths. That Bloody Sunday caused more rioting throughout the north. Bombs shattered the Guildhall, seat of city government, and military roadblocks made Londonderry once again a city under siege.

New Changes, New Hopes

When I met him, Mayor Devine—a joiner by trade—was surveying with satisfaction the results of a seven-million-dollar restoration of the Guildhall. Under a Catholic working majority, the city's tensions have eased. Many of the roadblocks are gone. New housing estates financed by Britain have liberated most Catholics from the Bogside slums. Equal employment opportunities in new textile mills have helped reduce the discrimination that for decades forced Catholic workers to emigrate. And IRA violence has diminished.

"We hope we've drawn support away from the terrorists by giving people something they *can* support," Mayor Devine said. "And we're proving that the people of Ireland—Protestant and Catholic—can learn to live together."

Time was when Ulster Presbyterians found it difficult to live with England. Chafing under British trade restrictions and bitterly resentful of the special privileges and powers of the British-ruled Church of Ireland, more than 200,000 of them sailed to the United States between 1718 and 1775. Entire congregations took ship, and many of them wound up on the Appalachian frontier, where they battled Indians instead of Irish rebels. Later, they and their Scotch-Irish descendants played a prominent part in the American Revolution.

At least four signers of the Declaration of Independence were of Ulster stock. The declaration itself was first printed by John Dunlap, who learned his trade in a printshop in Strabane, 13 miles south of Londonderry.

Revolutions Inspired Revolt

The American Revolution, and the French Revolution that followed, inspired many Protestants who stayed behind. They helped foment the abortive anti-British uprising of 1798. Its failure destroyed the liberal movement in the north, and destroyed Protestant and Catholic unity as well.

In 1914, when Britain's Parliament passed a home-rule bill that gave self-government to Ireland, thousands of members of the Ulster Volunteer Force, armed with smuggled rifles, were ready to fight the British to remain under British rule. And British troops mutinied when ordered to disband the UVF. Only the beginning of World War I averted a constitutional crisis.

In 1916 more than 5,000 Ulster Volunteers were killed at the Battle of the Somme—an enduring testimony that Ulster Protestants took loyalism seriously indeed.

After the Irish revolution of 1919-21, Belfast's ghettos became bloody battlefields. And when the civil-rights movement was born on a wave of 1960s idealism, it ignited the passions of a recent past.

Jigs and reels fly *from John Loughran's fiddle when the blind musician from Pomeroy sits down with his four-year-old neighbor, Mary McCullagh. In return for acting as his eyes while John tends a small flock of sheep, Mary is taught to play a ukulele, tin whistle, and fiddle. "Oh, Mary's a great girl altogether, now she is," John brags.*

. . . in pain as a woman that travaileth: they shall be amazed one at another; their faces shall be as flames.

ISAIAH 13:8

MIDSUMMER MIDNIGHT. Once more Belfast burns. Now it is early August, and militant Irish nationalists have declared a weeklong observance of the war's anniversary. For days children have ransacked ruins for wood and broken furniture to build enormous bonfires, and now they leap bright faced around the roaring flames. From the shadows older youths dash with rubble and junk to throw hasty roadblocks across empty streets—tokens of the barricades of hijacked buses and trucks behind which Catholics fought off police and Protestant attackers with petrol bombs and stones in 1969.

Some of the young are *Fianna,* junior warriors recruited by the IRA to create disruption. Others are free-lance troublemakers. Now most adults are indoors. It is another night for remembering.

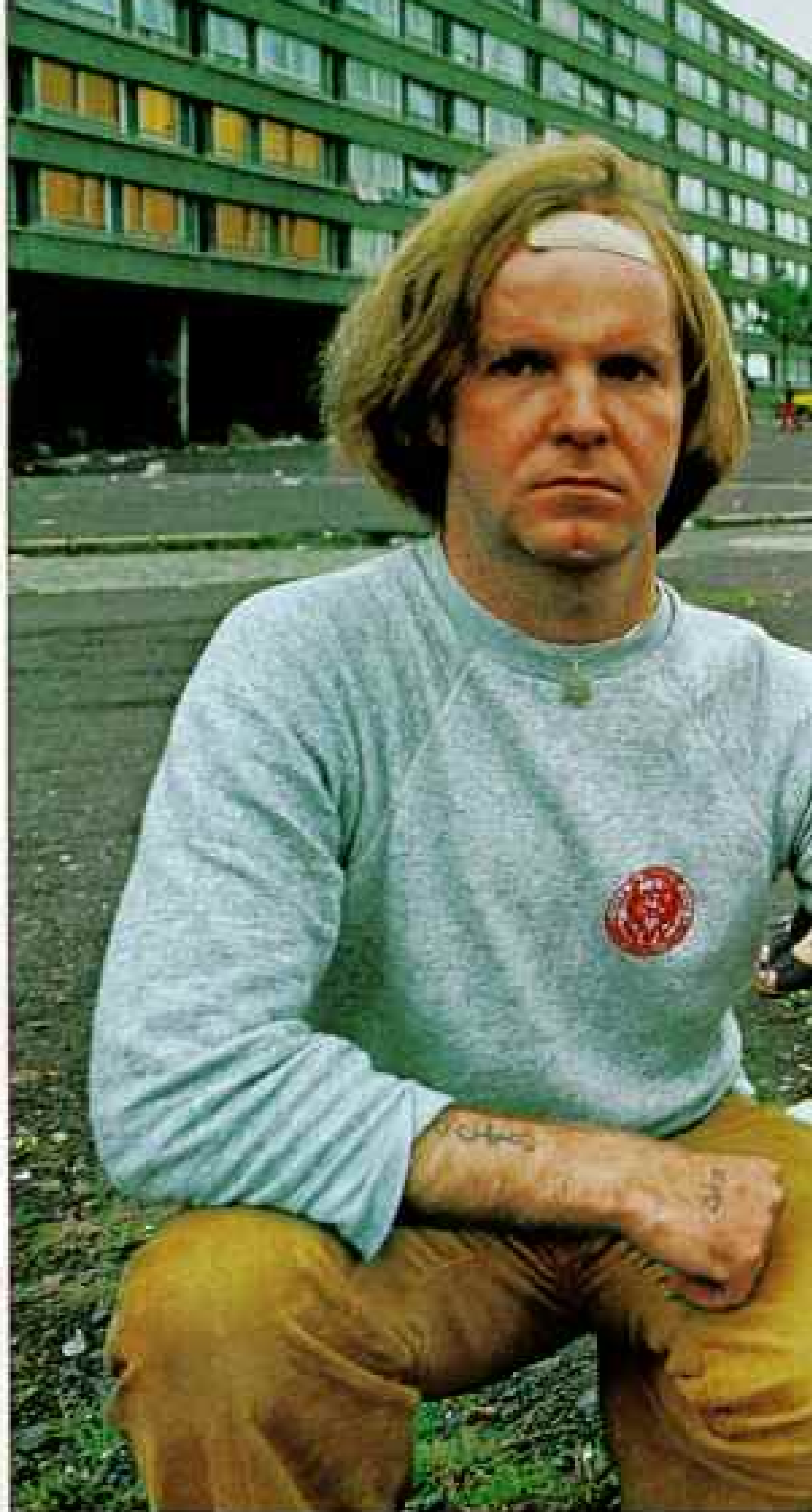
"I was 12 when it all began," says a young mother. "The whole Lower Falls was burning, our house where I'd been reared, and our church too. The whole sky was red. It's funny—just the day before my aunt and I were up to the Protestant shops on Shankill Road, buying flowers for the Virgin."

Now she has two children of her own. She lives in Turf Lodge, one of many decaying, overcrowded public-housing estates in the ghetto. Although hundreds of new homes stand empty in Craigavon, 22 miles away, Catholics won't occupy them; they do not consider the area "safe." It's a relative term.

"Vandalism—it's like a monster here," she says. "I've been flooded out by kids stealing the pipes to sell. Three babies next door got the dysentery because of it. The hoods have taken over. They hijack *our* vans, *our* shops. In the beginning it was all *our* cause, *our* country, but I don't believe in it any more. Women take the brunt of it—they're our kids that are out on the streets, and we not knowing what trouble they're in.

"It's hard to take sides in a vicious circle."

Part of that circle are the British soldiers who patrol the neighborhoods, making frequent searches for terrorist suspects and weapons. They were greeted as protectors in



***Awaiting trial** for their actions, members of the Divis Demolition Committee (**above**) protest dilapidated public housing by destroying vacated apartments. Inadequate heating, leaky pipes, broken toilets, and rat infestation make the Belfast high rises unfit to live in, says Sean Stitt, at left. The government plans to raze two of the buildings, put up in the mid-1960s, and to renovate the remaining ten.*

*In another protest, social activist Father Desmond Wilson (**right**) says Mass at his home in a tough Belfast neighborhood. He resigned from his parish in 1975 to more strongly advocate programs for the poor.*

Changing industry in Northern Ireland

SHAKING OFF a deep dependence on three troubled industries—textiles, agriculture, and shipbuilding—Northern Ireland seeks new ideas for growth. An innovative, spacious airplane (**above**) is helping revolutionize commuter travel and boosted business for Short Brothers' 6,500 workers. Outside Belfast the government gambled millions on a dream of John De Lorean, a former General Motors executive, to build a better sports car (**below**) while creating 2,000 jobs. And at Harland and Wolff, planners hope that new facilities to build liquid-petroleum gas tankers (**left**) will buoy the foundering, government-run shipyard.

1969, but having suffered 442 killed and 3,600 wounded in IRA attacks, they often react like combat troops in an enemy land.

In her scrupulously tidy Turf Lodge home, a mother of four shows me a bullet hole in her stairs: "The soldiers came through shooting from the hip one night after somebody fired at them," she tells me. "I was screaming and lying on top of the kids in the living room.

"But there's more than that. The Provos shot a 17-year-old boy outside my door two years ago. I could hear him crying for help. My husband wouldn't let me go to him for fear I'd be shot as well. Sometimes you're more afraid of your own than you are the Prods. I'm on tranquilizers all the time. I can see my own 15-year-old slipping away. Haven't we had enough?"

Her teenage son is silent.

I remember him later, after meeting two young Catholics who were just about his age when the war began. One of them has served three and a half years for terrorist offenses, and was one of more than 350 "blanket men" in the H-Blocks of Long Kesh who still refuse to wear prison uniforms, serving their time unwashed and naked in tiny cells smeared with human waste in an effort to force British captors to grant them the status of "political prisoners."

Now he works for Provisional Sinn Fein, a legal political party that disclaims links to terrorists but espouses their cause.

"The British call us criminals," he says. "We call ourselves prisoners of war."

The second youth belongs to a group called the Republican Clubs—the Workers' Party. It represents the pacifist views of the "official" Irish Republican Army, which were rejected by the Provos in 1970.

He's a social worker, and I meet him on

August 14, at a Belfast playground where he has arranged a soccer tournament between Catholic and Protestant teams.

"It seems a good way to spend the war's anniversary," he says. "These kids have the most to gain from peace. Maybe they'll be voting for a president of Ireland someday.

"Who knows—it might even be me."

A New Breed of Police

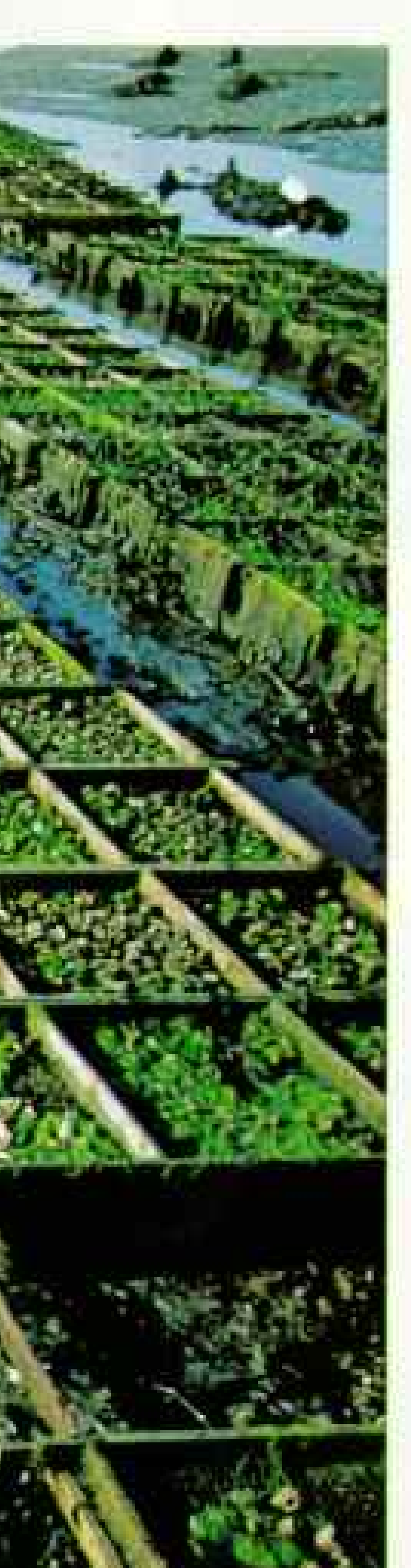
I carry that cheerful thought to the incredibly peaceful lakelands of County Fermanagh, where the northward-flowing River Erne broadens to form a 300-square-mile region of limpid waterways, dotted with ancient islands, surrounded by milk meadows of translucent green, and navigated mostly by flotillas of innumerable birds.

At Enniskillen, a tidy old town that bridges the narrow channel between Upper and Lower Lough Erne, I meet a crew of recruits learning a very tough trade at the Royal Ulster Constabulary (RUC) training center. Their police studies include a distillation of the painful lessons learned in a decade of unrest.

"We have to prepare them for trouble—the terrorists have killed 130 police officers and wounded 3,750 in the past 12 years," says Chief Inspector Basil Elliott, deputy commandant. "But we're training them for peace as well—and that includes a heavy emphasis on community relations."

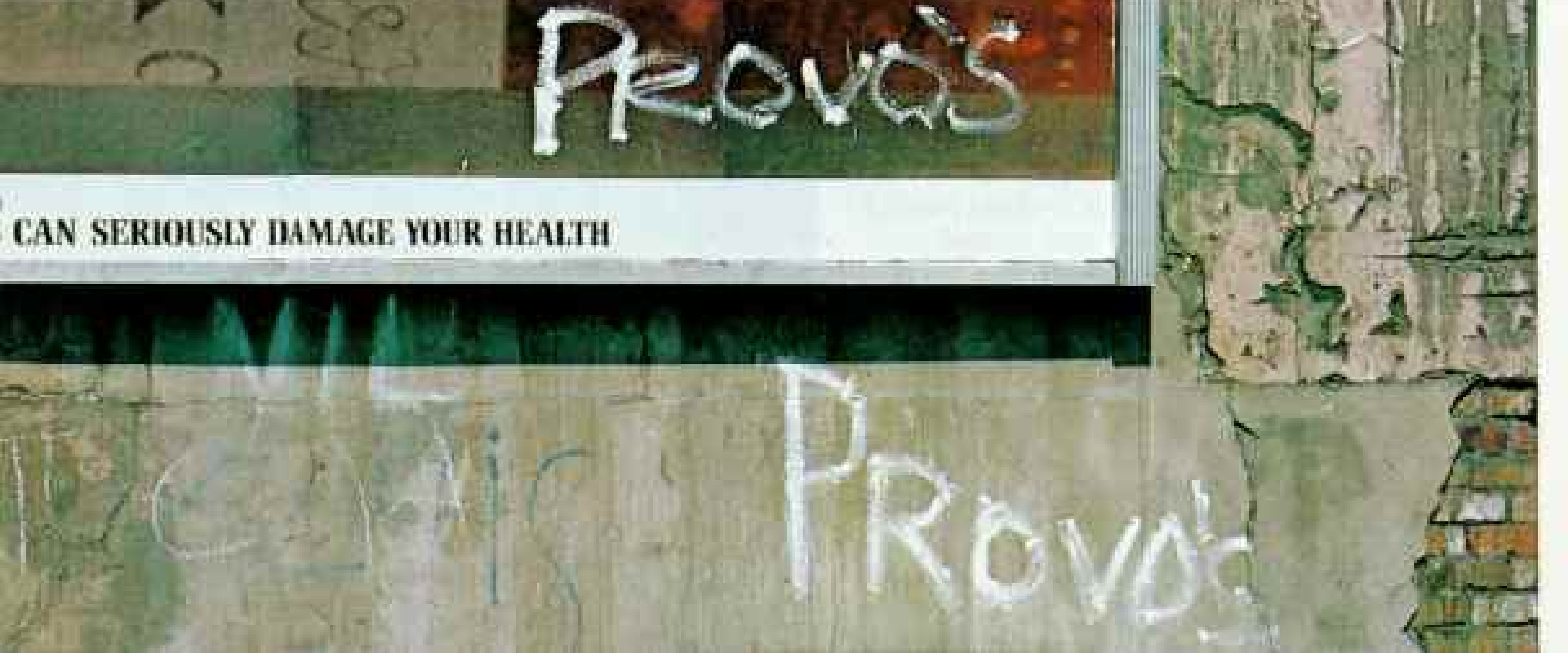
Today, the RUC's 7,000 professionals are slowly living down the debacle of 1969, when a small and largely rural police force crumbled in exhaustion and anger under attacks from Catholic and Protestant mobs, and poorly trained reservists became participants in riots they were sent to control.

"That's in the past," inspector Elliott says, a bit impatiently. "We've learned from



***Bunk beds** for oysters at Cuan Sea Fisheries on Strangford Lough (**left**) keep crabs away from baby oysters in lower trays as workers harvest adults. The new oyster farm brightens a somber seafood industry faced with diminishing stocks of prawns, herring, whiting, salmon, and cod.*

*At Belleek Pottery in County Fermanagh, trays of eggshell-thin china (**right**) head for a kiln. The 124-year-old firm weathered the recession and political turmoil of the 1970s that drove unemployment in Northern Ireland past 15 percent and pushed British economic subsidies to 1.4 billion dollars a year.*


Provo's
CAN SERIOUSLY DAMAGE YOUR HEALTH

Procession of sorrow *follows the coffin of 16-year-old Michael McCartan, who was shot last July after painting slogans* (**left**) *on a billboard near his home in Belfast. The policeman charged with his murder said he thought the brush in Michael's hand was a weapon. The youth was "rough and ready," say his parents, but not a member of the terrorist Provos—the Provisional Irish Republican Army.*

Michael's father, Charles, survived a bombing of a local pub in 1974 and a beating in 1976 as he walked home with his wife, Molly. In February 1980 Molly's brother William was assassinated on a street corner. "You have to learn to forgive," said Molly. "If you don't, you'll have a lot of bitterness. Then someone will start the ball rolling again."

But the ball rolls on. In January 1981 gunmen gravely wounded Catholic activist Bernadette Devlin McAliskey and her husband; a week later, Provos took credit for the killing of Sir Norman Stronge, a Protestant and former Speaker of the Northern Ireland Parliament, and his son.

it. Now we all need to stop living in it."

But the past has an eerie presence on the lakes, where a vanished race carved fearsome gods on island shrines centuries before the first monks arrived to make Fermanagh a center of Christian learning. On White Island, you can visit an array of pagan and early Christian images whose vacant eyes speak more of fear than faith. And nearby there is an island named for Badb, a fertility goddess who nourished her appetites as the carrion bird of battle. Lough Erne itself, a legend says, is the water grave of a slain tribe. At sunset its surface mirrors the mingled colors of glory and of blood.

In the Wake of Violence, Shame

In such a sunset I returned from a peaceful cruise to hear news of the war's bloodiest day. Terrorist bombs had killed 18 British soldiers a few yards from the Irish border at Warrenpoint in the east. And another bomb had killed Lord Louis Mountbatten and three other members of his boating party at

Mullaghmore, in the republic to the west.

The IRA triumphantly proclaimed a mighty blow for Irish freedom, but in the republic there was an outpouring of shame, and the tricolor was lowered to half-staff in honor of Britain's dead.

One of the boat victims was a 15-year-old Enniskillen boy named Paul Maxwell. I attended his simple funeral and watched as townspeople followed his coffin down sunlit streets to the burial grounds. Protestants and Catholics prayed together as Ireland's ancient soil filled a newly made grave.

Perhaps there is more comfort than I know in telling prayers for the dead. But I prefer ancient words of prophecy, which Irishmen and others of the world may someday make come true:

The children which thou shalt have,
after thou hast lost the other,
shall say again in thine ears,
The place is too strait for me:
give place to me that I may dwell.

ISAIAH 49:20 □

The quiet horror *of a Catholic ghetto fills the canvas of Belfast artist Brendan Ellis, whose disturbing images of city life dramatize the human side of Northern Ireland's troubles. "The whole place is full of menace," Ellis said of Turf Lodge, a run-down housing project depicted in "The People That Face the Mountain." Dogs snarl and newspapers blow like wild birds as one child grips a brick and the other stares vacantly into space. "I never try to paint a political point," said Ellis, who grew up on the Catholic Falls Road. "I just try to be sympathetic to the people."*

Still, the future of both Protestants and Catholics remains tangled in conflicting loyalties that force even the most peaceful of men and women to take sides. "You want to stay out of it," said one family man. "But when they kick you, you want to kick back. And that's the truth."

A GRIM STRUGGLE FOR SURVIVAL

The Imperiled Mountain Gorilla

By DIAN FOSSEY

IT WAS DIGIT, and he was gone. The mutilated body, head and hands hacked off for grisly trophies, lay limp in the brush like a bloody sack.

Ian Redmond and a native tracker took the initial shock. They stumbled on the spear-stabbed and mangled body at the end of a line of snares set by antelope poachers. Stunned with grief and horror, Ian composed himself and set out to find me in another part of the forest. An outstanding student helper, he shared my aim to balance research with the goal of saving the imperiled mountain gorillas that I was studying from my base camp in the Virunga Mountains of Rwanda, in central Africa.

For me, this killing was probably the saddest event in all my years of sharing the daily lives of mountain gorillas, now diminished to only about 220 individuals—a reduction by half in just 20 years. Digit was a favorite among the habituated gorillas I was studying: In fact, I was unashamed to call him "my beloved Digit."

And now, through our sorrow, anger welled up—rage against the poachers who had committed this slaughter. Yet poaching is only one of many pressures—human encroachment, land clearing, illicit collecting, tourist presence—that have brought the mountain gorilla to the edge of extinction.

Digit's sad end in 1977 was sheer tragedy, yet in the course of my research, such devastating events have been balanced by many rewarding beginnings in the enlargement of our understanding of these animals.

One fresh start had come late in 1972—the sixth year of my study—when a new "man" entered my life. He was a cantankerous, grizzle-haired silverback, a likable tramp who showed up in the range of Group 5, a gorilla family that lived close to camp.

A student helper rushed in to tell me about the interloper. "I think he's a lone silverback, an older one." (A male gorilla is called a silverback when, at about age 11 to 13, the hair turns gray to silver across his back.)

"Nonsense!" I replied. "Old silverbacks never travel alone. They always stick to their own groups."

I was certain that the animal we came to call Nunkie would turn out to be one of Group 5's younger, peripheral silverbacks, those destined to break away from their home groups to win outside females and start families of their own.

How wrong I was! Nunkie, whom we estimated to be in his mid-30s, was a complete stranger. He didn't match our nose-print sketches (of lined indentations above the

Steadfast dedication *to his family cost Digit his life in 1977, when the mountain gorilla held off six poachers and their dogs. His death underscores man's unrelenting intrusion upon the wild gorillas' habitat in central Africa, where the author lived among these huge but shy animals for 13 years. Having done much to reveal the gorillas' peaceful nature, she now confirms a darker side of their behavior.* DIAN FOSSEY

nostrils) or photographs of known gorillas.

How Nunkie turned things around—for my research and for the groups I was studying! He opened our eyes to the way gorilla families form and grow. The studies shed new light on previously suspected gorilla behavior, from simple intergroup transfers to the deadly drama of infanticide.

For 13 years I lived with mountain gorillas on the misty slopes of the Virunga volcanoes, which form a section of the borders between Rwanda, Zaire, and Uganda (map, page 507).* In a study area of 25 square kilometers around my forest camp 3,000 meters up on Mount Visoke, several groups of these largest of the great apes have become habituated to my presence.

Early in my research, which the National Geographic Society has supported throughout, I discovered that these powerful but shy

*Previous GEOGRAPHIC articles by Dr. Fossey appeared in the October 1971 and January 1970 issues.

CRAIG R. SHOLLEY

and gentle animals accepted and responded to my attentions when I acted like a gorilla. So I learned to scratch and groom and beat my chest. I imitated my subjects' vocalizations (hoots, grunts, and belches), munched the foliage they ate, kept low to the ground and deliberate in movement—in short, showed that my curiosity about them matched theirs toward me.

The returns, in new knowledge of gorilla behavior, have exceeded my expectations.

Persuasive stranger *to the gorillas of Dian's study area, Nunkie—a lone silverback, or graying male—created a new family by luring six females away from at least three other groups and siring six babies in eight years. Wild gorillas like Nunkie may live 60 years, grow 5½ feet tall, and weigh 350 pounds or more. Their powerful arms may span seven feet.*

I've learned what intelligent and sociable animals these are. Fathers pluck infants from their mothers to groom them, and once I saw an old male tickle a youngster with a long-stemmed flower.

On the negative side, I have had to bury gorilla friends killed and dismembered by poachers, and I've seen how man's encroachment threatens the very survival of *Gorilla gorilla beringei*, already declared a rare subspecies and existing today only in the Virunga Mountains.

Over the years familial units in my study area, where a succession of students have assisted me as field observers, evolved toward different fates. Nunkie formed an influential new group, one of three dozen we have observed, identified simply by number, and studied. Group 4, under maturing Uncle Bert, suffered decimation that virtually wiped it out. Group 5, led by aged and experienced Beethoven, matched losses with gains and held together as a prime example of group stabilization.

At the outset it is important to know that establishing the genealogy—the family tree, if you will—of each gorilla group was crucial to my study (pages 506-507). Transfers

between groups, births and deaths, switches in pecking order—these events of population dynamics constantly altered group composition. Understanding the reasons for this fluidity in dramatis personae has been a major goal; however, the shuffling of names and numbers may complicate the picture.

Nunkie, as I have said, gave new perspective on how numbers change within groups, which may range from five to twenty individuals. During his first month in the study area, Nunkie snatched away a young female from Beethoven's Group 5. He dropped her in a few weeks. Over the ensuing months a phantom wanderer, suspected of being Nunkie, seized three more females from Group 5 and was thought to have killed an infant during a violent interaction.

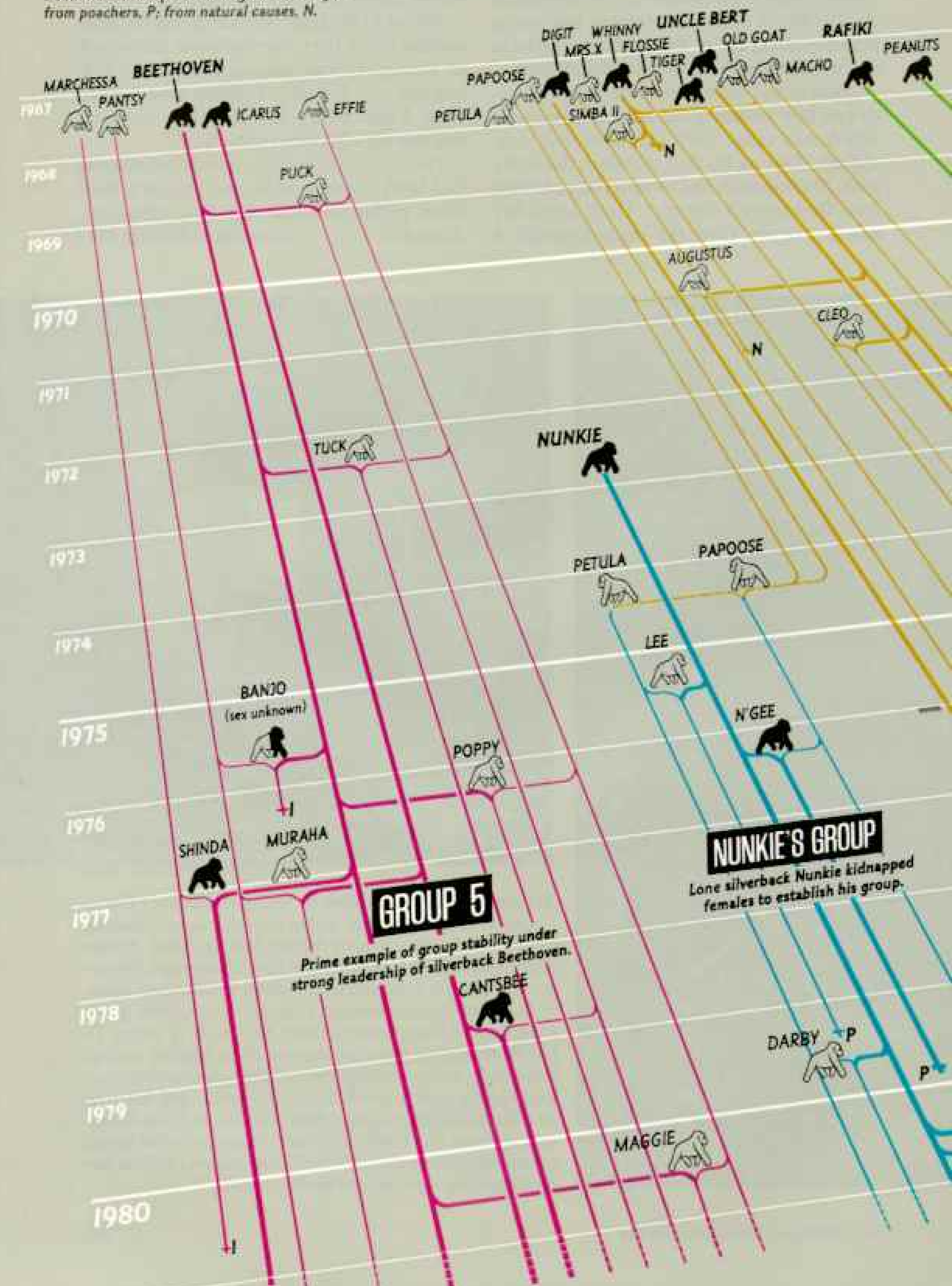
About a year later Nunkie seemed to realize that Uncle Bert, the dominant silverback of Group 4, was inexperienced. He kidnapped two females, Papoose and Petula, from Uncle Bert's family. They have remained with Nunkie to this day.

Petula, lowest ranking female in Group 4, had been sexually neglected by Uncle Bert since giving birth to her first offspring, Augustus. *(Continued on page 511)*

PETER G. VEIT (LEFT); CRAIG R. SHOLLEY

Accepted without question *by young members of Group 5, one of several families living near Karisoke Research Centre on Rwanda's lush Mount Visoke, Dian Fossey* (**left**) *coaxes Tuck to turn around for a photograph. She informs the group of her approach with a belch vocalization, one of Gorilla gorilla beringei's signals ranging from harsh pig grunts of disapproval to sharp hoot barks of alarm. To put them at ease, she also imitates chest beating, eating, scratching, and grooming. She can then observe their natural feeding habits, track their movements, and listen in on their bickering and play. Now teaching at Cornell University, Dian has temporarily left the center in the hands of assistants. Researcher Peter G. Veit* (**above**) *follows her good example with an affectionate Pablo.*

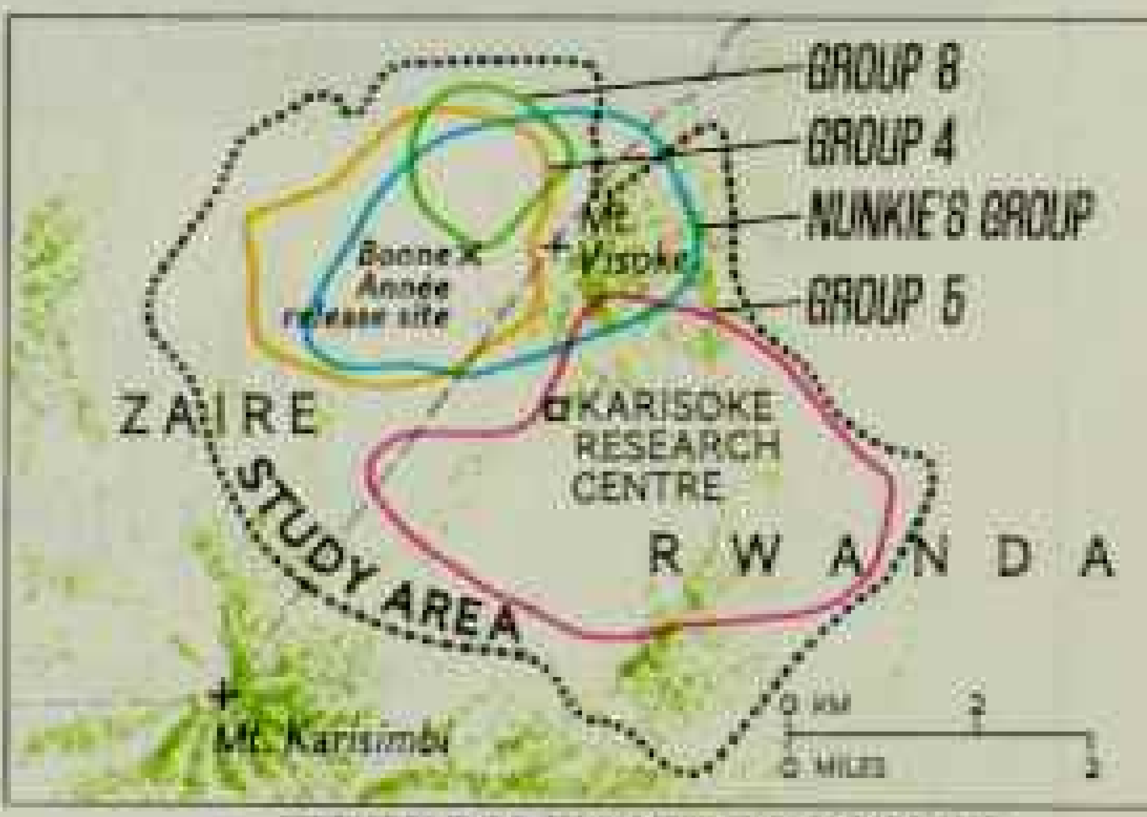
Bold lines and solid symbols denote males; thin lines and open symbols denote females; horizontal lines show parentage and birth date. Gray dashed lines show travel outside the 4 groups. Death from intraspecies killing indicated by I; from poachers, P; from natural causes, N.



The rise and fall of gorilla families

*THEY SELDOM FIGHT over food, territory, or sex—but gorilla leaders will always risk battle to maintain the cohesiveness of the group. Through force of character, they hold together families of supporting males, breeding females, and young (**left**). Thus the loss of a leader like Uncle Bert, killed by poachers in 1978, may destroy a family, as it nearly did Group 4. In contrast, Group 5 prospered under aging Beethoven's steady hand. Dian counted some 220 gorillas in 35 groups of 5 to 20 members. Of nine groups in her 25-square-kilometer study area near camp (maps, **below**), she closely observed four, whose key members are charted.*

Group decimated after the death of Uncle Bert.



COMPILED BY JOHN R. TREIBER FROM STUDY BY DIAN FOSSEY
DRAWN BY ISKANDAR BADAY, NATIONAL GEOGRAPHIC ART DIVISION

The gorilla habitat (upper map) and group ranges shown as of spring 1980.

Death of Marchessa

PHOTOGRAPHS BY
PETER G. VEIT

SHE WAS FINISHED. A violent attack by a male in her group had ended what disease had begun. Marchessa, aging matriarch of Group 5—one of the endangered gorilla families on the Virunga volcanoes of Rwanda—was dead.

But her attacker was not yet done. In a bizarre ritual of abuse, the silverback Icarus continued to punish her body, as these photographs reveal.

Shortly after Marchessa drew her last breath, and perhaps perplexed by her stillness, Icarus jumped on her belly **(above right)** *with the full force of his 300 pounds. Other group members looked on but did not interfere. Not much later the silverback looked over his shoulder* **(above left)**

before dragging her body across the trampled forest floor, as he did repeatedly. Her mouth hanging open in a death grimace, wide-eyed Marchessa (**right**) *was beyond suffering.*

As a student temporarily in charge of the Karisoke Research Centre on Mount Visoke, I could not fully explain this sad episode—the first recorded instance of an adult mountain gorilla doing to death another adult. But a closer look at the tragic sequence of events may yield a few clues.

The grim drama began on the morning of last August 5, when I found the members of Group 5 feeding quietly near their night nests. Marchessa, a longtime mate of the dominant silverback Beethoven, lay

totally immobile under a vernonia tree.

The peaceful mood changed. Icarus, son of Beethoven and dominant female Effie, began to hoot and beat his chest near Marchessa. At 3 p.m. he dragged her from under the tree. She lay on her back, devoid of muscle control, her eyes glassy and rolling, her breath coming in deep gulps.

Suddenly Icarus pounded hard, with both fists, on Marchessa's chest. Minutes later he repeated the attack. At 3:31 Marchessa let out her only—and last—vocal sound, a death rattle, as if through stuffed nostrils. She had stopped breathing, and I took it she was dead.

Icarus, however, was unrelenting in his aggressive displays and attacks. Only when he began to drag Marchessa away would her aging mate, Beethoven, rush in to drive him off.

Now Shinda, Marchessa's 3½-year-old runt offspring, came over and clung to his mother, moving away only to avoid Icarus's continuing violence. Shinda suckled Marchessa in the waning afternoon. With darkness I had to break off observation.

Next day, fellow student John Fowler and I found Icarus still tormenting Marchessa, even though she had been dead for nearly 18 hours. Almost every display of chest beating **(left)** *led to his pounding or jumping on her body. Shortly before noon, however, the group wandered off to feed; Icarus was the last to leave. Porters carried away Marchessa's body.*

An autopsy performed on Marchessa by Dr. Pierre Vimont-Vicary of the Ruhengeri hospital revealed numerous parasitic cysts in her spleen. I believe this invasion surely had weakened the aging animal and might soon have killed her. Certainly she was ill when Icarus began the attacks that assured her death.

By his displays and assaults on Marchessa, Icarus gave vent to his puzzlement and frustration at her lack of response. I share Dian Fossey's presumption that Icarus knew Marchessa's death would enhance his power within the group. Beethoven would lose a breeding partner, to the eventual advantage of Icarus's bloodline. Reproductively, the aging silverback would be pushed aside.

Shinda stayed with Beethoven after Marchessa was gone, the young male's chances for survival slimmed by her loss. Beethoven, too, seemed diminished. Often we heard him whimpering—a sound never before recorded from silverbacks. * * *

(Continued from page 505) Silverbacks at times neglect subordinate females in favor of the more dominant and senior ones. Petula may, indeed, have been wasting breeding time in Group 4—and if I have learned anything about wild gorillas, it is that they are marvelously controlled by internal, or instinctive, clocks that warn them of interference in natural cycles of reproduction.

Nunkie bred immediately with Petula, and after 11 months she gave birth to the first offspring (a female) that he sired within the Visoke study area. Ten months later Papoose produced Nunkie's second offspring, a male. Building his new family, Nunkie in just eight years has sired six infants among half a dozen females taken from at least three other groups.

We found Nunkie, as his harem and responsibilities grew, spending a lot of time high on Mount Visoke. This was not an area where food was plentiful, but the choicer terrain in the lush saddle between Mounts Visoke and Karisimbi was preempted by established groups—increasingly so as vigilant patrolling curtailed poaching and resistance grew to the human encroachment of land clearing and herdsmen. The higher slopes gave Nunkie's group a fixed, dependable home range, essential for the stabilization of a family group.

Nunkie's phenomenal rise to power gave me once again three main groups habituated to my presence. Two of four groups I had regularly contacted since 1967 had disintegrated by 1978. Of those, Group 9 split up after its dominant silverback died, and Group 8 fell apart because of the death of its aged leader, my specially cherished Rafiki.

Infant Killing May Be Necessary

The collapse of Group 8 threw a spotlight on the grisly practice of infanticide. The matriarch Koko died, and Rafiki with a new mate, Macho, sired a female infant, Thor. Rafiki died before Thor was a year old. The old male left behind a silverback son, Peanuts, who tried to take his father's place safeguarding Macho and his infant half sister. But during an interaction with Group 4, Thor was killed by Uncle Bert.

Though victims usually die almost instantly as the result of one severe and crushing skull bite, accompanied by a deep bite in

the lower groin, the initial concept of gorilla killing gorilla was too horrid for me to accept. Yet I now believe infanticide is the means by which a male instinctively seeks to perpetuate his own lineage by killing another male's progeny in order to breed with the victim's mother. In some cases the stratagem seems necessary to maintain a healthy degree of exogamy, or outbreeding. Infanticide has accounted for the deaths of 6 out of 38 infants born over a 13-year period.

Rafiki's mate, Macho, stuck with Peanuts for five months. Then, after fierce interactions between Peanuts and Uncle Bert, dominant silverback of Group 4, Macho joined up with him. Peanuts was cut adrift as the only individual left from decimated Group 8.

As if the fragmentation of Group 8 was not loss enough, the tragedy that soon overwhelmed Group 4 provided a casebook example of group disintegration.

With Uncle Bert as leader, and with the help of two younger males, Digit and Tiger, Group 4 accepted another male, Beetsme. This was the first—and so far only—recorded male immigration to a group. Digit, now maturing into a full-fledged silverback,

***Safe and secure** in Puck's arms, five-month-old Cantsbee enjoys the tranquillity of a midday rest with his mother. During their first six months, young gorillas rarely*

impregnated the adult female Simba II. Digit helped Uncle Bert defend the group, and the two silverbacks were amiably compatible. Although the presence of Tiger, more closely related to Uncle Bert, would prevent Digit's ever becoming the dominant silverback, I thought it unlikely that he would abandon Group 4 as long as he was needed.

In the daytime on New Year's Eve 1977, Digit was indeed needed. As watchdog of his natal group, he held off six poachers and their dogs who unexpectedly ran into the gorillas at the end of their trapline set for antelope in the saddle area west of Mount Visoke. Allowing the other 13 members of his group to escape, Digit took five spear wounds, yet in ferocious self-defense managed to kill one of the poachers' dogs before he died for his group.

Uncle Bert led the fleeing group to the safety of Visoke's slopes. The bloodstained poachers were left to celebrate their victory.

After Ian Redmond discovered Digit's mutilated body, we captured one of the killers. He revealed the names of his five accomplices. All but two were imprisoned.

I still mourn Digit. In my first ten years at Visoke, he was the only poacher-killed

leave their mothers' touch. They suckle until nearly two and sleep in their mothers' nests until about three. Females give birth every 3½ to 4½ years.

AMY VEDDER

Leading from behind, silverback Icarus nudges Group 5 along. Within annual ranges

gorilla from our study groups. Gentle, trusting, loyal Digit, now only a memory in a mound before my cabin. Digit, a father who was never to see his sole offspring, Mwelu.

A few weeks apart, Simba II and Flossie, an older member of Uncle Bert's harem, each gave birth to female infants. The name Mwelu, given to the offspring of Simba II and Digit, is from an African word meaning "a touch of brightness and light."

Following Digit's death, the summer days passed harmoniously for Group 4, the youngsters cavorting in the massive *Hagenia* trees while the adults snoozed and sunned under bright blue skies. For months now, because of increased patrols, we had seen no signs of poachers.

But the idyll suddenly collapsed in a disaster with permanent repercussions for the already devastated gorilla population. Poachers shot and killed Uncle Bert and his mate Macho. The adults were coming to the defense of their three-year-old son, Kweli, who had been shot through his shoulder in a capture attempt. Led by Tiger, Kweli escaped with the remnants of his group onto Visoke's slopes.

The recapitulation is grim: Over the entire study period, six of the 80 individual gorillas we regularly worked with had been killed by poachers. But evidence in 64 skeletal specimens collected throughout the Virunga Mountains raised the suspicion that poachers were involved in two-thirds of the total deaths.

Apes Threatened by Outside Pressures

The mountain gorilla is legally protected within Rwanda's Parc National des Volcans, where the Karisoke Research Centre is located. In overpopulated Rwanda, however, more agricultural land and meat for food constantly are sought. The park area has been reduced, and pressures relentlessly continue on the reserve and its wildlife.

Money from many sources flows in to help save the gorilla. Unfortunately, manipulation of these funds is all too prevalent. One local official is alleged to have been instructed to kill a gorilla so he could hold it up

DIAN FOSSEY

of five square kilometers, groups travel about 400 meters a day to feed or nest.

as an "example" and elicit sympathetic generosity from visiting conservationists.

Tradition and circumstance complicate the poacher's motivation in gorilla killing. Sometimes he inadvertently catches gorilla young in traps set for antelope or buffalo. Other times, bolstering his courage with hashish for a hunt after buffalo or elephant, he meets a gorilla and kills the formidable "foe" for killing's sake. Not infrequently, a poacher is promised money to capture a young gorilla for exhibit in a foreign zoo or for sale as a pet to local Europeans.

One of the gorillas' truest friends, the *substitut* (sheriff) of Ruhengeri, Paulin Nkubili, ended—with harsh punishment—the practice of selling gorilla skulls, hands, and feet as souvenirs. Mr. Nkubili has impartially punished both black and white violators of protection laws.

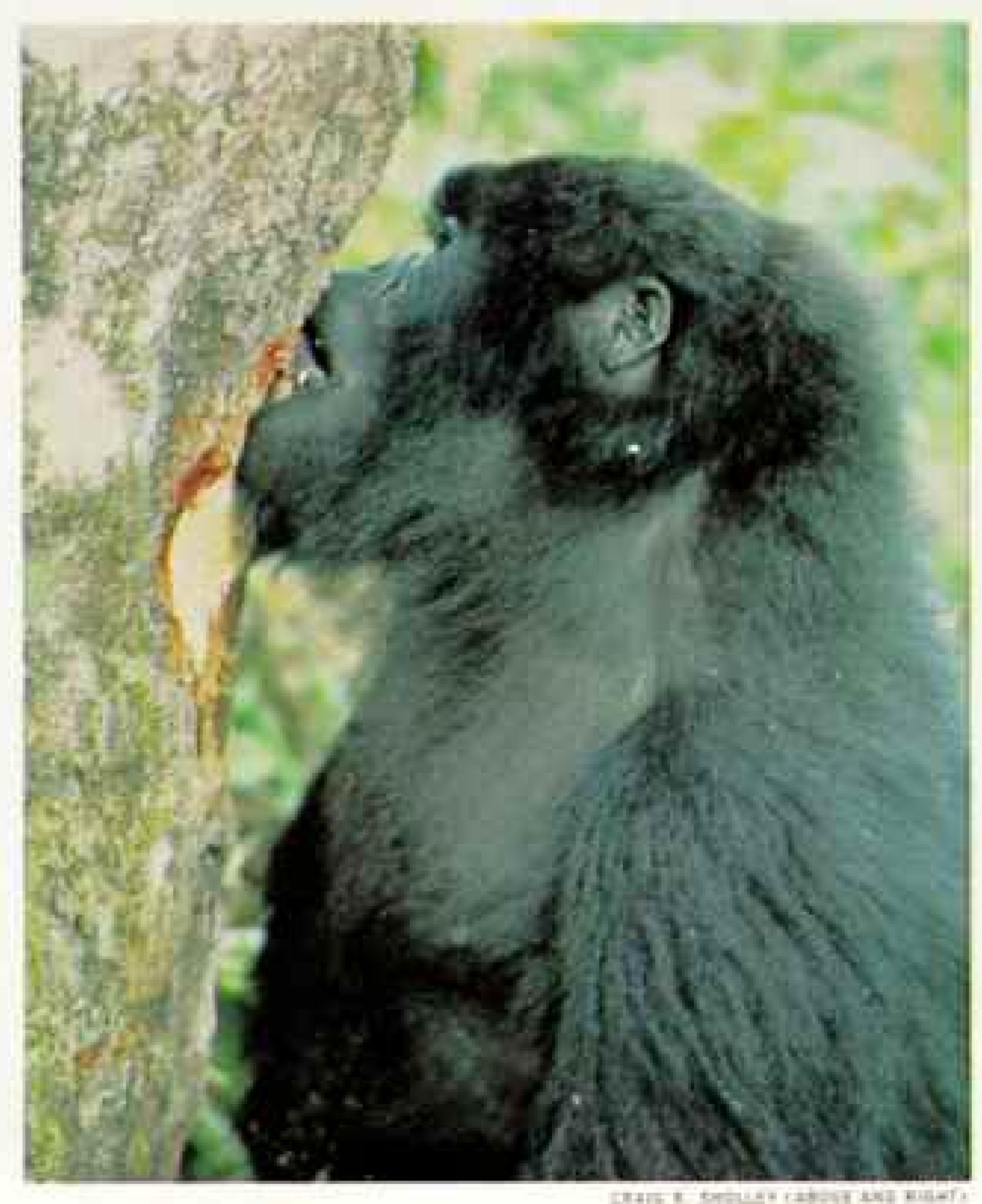
After Uncle Bert's death, Group 4 could not, without their silverback leader, continue as a cohesive social unit. Tiger, ready to try the leadership role, nested with the whimpering, newly orphaned Kweli during the agonizing weeks of the injured youngster's decline. Three months after the killing of his parents, Kweli died from bullet-wound complications combined, I think, with acute depression. He was buried between his mother and father, who lay next to Digit. All three adults, in effect, had died so that he might live.

The contest for Group 4 leadership was not over. Tiger didn't have the physique to cope with Beetsme's challenges. At 12 years the oldest silverback (though still a year from sexual maturity) left in the group, Beetsme sought absolute sway over Uncle Bert's dwindling family. We were constant witnesses to Beetsme's aggression: His charges, whacks, biting, and grappling were concentrated against Flossie, and more particularly against her newly born infant, Frito. Could Beetsme have been aware that by killing Uncle Bert's offspring he could return Flossie to estrus and readiness for his own future breeding purposes?

And so the Greek tragedy unfolded: Beetsme managed to kill Frito only 22 days

The only tools *mountain gorillas use are teeth and hands—unlike chimpanzees, who manipulate a variety of objects. An unidentified female* (**right**) *applies her sharp incisors to tree bark, one of the tastiest items in her mainly vegetarian diet. Besides feeding on Galium vines, wild celery, thistles, nettles, and other ground foliage, gorillas also sample insects, snails, and slugs. Quince* (**below**), *a Group 5 female, wears evidence on her belly of a sweet tooth for hard-to-excavate roots.*

After three hours of morning foraging, a group normally takes a break to sun, sleep, or socialize. Playful N'Gee (**facing page**), *a three-year-old named for the National Geographic Society, roughhouses with his mother, Papoose. N'Gee disappeared a few months later, the victim of poachers.*



CRAIG R. SHOLLEY (ABOVE AND RIGHT)

AMY VEDDER

after Uncle Bert's demise. It was Visoke's fourth known infanticide. Two days after Frito's death, Beetsme began copulating with Flossie at her invitation. This was Flossie's way of reducing the antagonistic interactions within the group. But because of youth, inexperience, and lack of blood ties, Beetsme was destined never to become Group 4's leader.

Surviving a Close Shave

We routinely combed the gorillas' favorite feeding places in the saddle between Mounts Visoke and Karisimbi for poachers, and cut animal traps almost as soon as they were set out. One afternoon Ian Redmond and a Rwandan tracker were starting back to camp when they spotted three poachers setting traps with fresh-cut saplings. Quickly, Ian and the tracker dropped out of sight; they intended, after the poachers left, quietly to destroy the poachers' whole line of traps.

Three spear blades suddenly bobbed into view above the knoll where the men were hiding. Ian began to rise to inform the three poachers of his presence. Then, with the instinct of a trapped animal, one poacher dropped his machete. Gripping his spear with both hands, he plunged it downward toward Ian's heart. Ian, totally unarmed, threw up his arm before his chest. (Later he claimed it was a posture picked up from an old kung fu television show.) Undoubtedly the move saved his life, but his left wrist took the full force of the spear thrust. The poacher fled with his comrades.

After binding the wound, Ian and the tracker destroyed the traps before returning to camp. Ian went to Ruhengeri for medical attention, then to England for further treatment. Eventually his wrist mended.

As an outcome of this encounter, I was advised by Rwandan officials to desist from cutting traps, counsel I obeyed reluctantly, especially since gorillas were starting to reoccupy the saddle area.

Through this entire period of violence and readjustment, the benefits of a long-term study became increasingly apparent: It opened up questions and suggested answers about mechanisms of group structure that evolved long before the seemingly extensive, but actually very limited, 13-year period in which I have studied these groups.

The main issue was tantalizing: What part have human interference and the gorillas' own behavioral patterns played in the past to create the particular group compositions in place when I came on the scene? Certainly, our work has documented the startling rate at which social change has been accelerated, even magnified, by man's intrusions on the wild gorilla range.

By the end of 1978, and within the span of a single year, the leaderless Group 4 was destroyed, leaving only young Tiger and Titus, then 11 and 4½ years old, along with the young silverback Beetsme. Surprisingly, they took up company with the lone silverback, Peanuts, who gathered a female and a juvenile from a fringe group to begin a reformation of Group 4.

In fact, within two years after the nadir of its fortunes, Group 4 is—precariously—regenerated, and it is Peanuts who has taken charge as the new unit's silverback leader.

To rebuild itself, Group 4 has needed new blood—which brings me to New Year's Day 1980, when a live but weak young gorilla, confiscated from poachers, was delivered to me in a potato basket. Hoping to sell the illegally captured animal for $1,000, the poachers instead ended up in jail.

During the weeks in which the youngster (later named Bonne Année) was restored to good health, she slept in my cabin and was thoroughly pampered (page 523). But I was determined that the waif would be reintroduced to the wild, and I coached her in tree climbing and in selection of forest foods.

Group 4 was the logical choice as a foster family for Bonne Année: Having no infant members and no strong blood ties, Group 4 offered the infant the best chance of acceptance and security.

For myself, time was also a factor prompting immediate action. It was March 1980, and I was overdue to take temporary leave from Africa to assume an academic position at Cornell University.

Bad luck foiled us with Group 4. The day we attempted release, the group fled its usual haunts in a violent interaction with an unknown fringe group. Rendered excitable, possibly hysterical, Group 4 eluded us, and anyway its members would have been in no mood to accept a young stranger.

Next day we offered Bonne Année to

Group 5, this being really against my better judgment because of the family's strong blood ties and close-knit mother-infant relationships. With John Fowler, a student, carrying the baby, we climbed into a tree near the resting group.

Beethoven, the reigning silverback, scrutinized Bonne Année intently but made no move toward her. When the young female Tuck and her mother, Effie, moved toward us, Bonne Année slowly left John's arms and climbed down to join her kind.

"The baby wants to be a gorilla," I murmured in relief.

Bonne Année and Tuck briefly embraced. But then Tuck and Effie began fighting for possession of the infant, tugging at her limbs, each dragging her away from the other, both biting her. Bonne Année screamed in pain and terror. Rain started pouring down.

I managed to grab Bonne Année, and passed her up to John. Amazingly, the youngster shortly descended again to Tuck and Effie, determined to be a free-living gorilla. But the two females, joined by the silverback Icarus, resumed their cat-and-mouse torture of Bonne Année.

Dragged by Icarus down the rain-soaked slope and dropped, the battered baby feebly crawled toward our tree and I again passed her up to John, who hid her under his rain jacket. Then Icarus began to climb into the tree! I'll never forget the feeling of Icarus's hot breath penetrating my sodden boots. He stopped, deterred by the sight of two humans, both above him.

For an hour Icarus and Tuck kept us trapped. Finally, the tormentors followed the feeding group out of sight. We fled back to camp with Bonne Année. Her wounds proved not to be serious.

Young Orphan Finds a Home

I had to leave for America with the fate of Bonne Année unresolved. But soon I was overwhelmed with joy to receive a letter telling that our goal had been achieved. Stuart Perlmeter, another student at camp, recounted how he and Jean-Pierre von der Becke, a Belgian park adviser, had led Bonne Année to the area where Group 4 was feeding. Jean-Pierre had marked Bonne Année with dung from the group, so that human odors on the infant would be overridden by familiar gorilla scents.

To the limb of a fallen tree, Stuart secured a feeding sack he had devised: Fruit placed inside the burlap bag could only be retrieved by the infant's thrusting her head into a hole cut near the top.

Bonne Année stuck her head into the bag and started eating the chunks of pineapple and banana. Stuart and Jean-Pierre moved out of sight. Bonne Année whimpered once (no doubt on finishing the fruit and finding herself alone), and all the members of Group 4 moved toward the infant.

BOB CAMPBELL

Another victim** of poachers, Uncle Bert* ***(above) *left behind five offspring, including baby daughter Frito. In the subsequent power play, common after the death of a group leader, Beetsme, a contending silverback, killed Frito. He acted instinctively, the author believes, ensuring the dominance of his future bloodline. Of 38 babies born in 13 years, infanticide claimed six.*

An hour later Stuart and Jean-Pierre returned to find Bonne Année playing with Titus, until then the youngest member of the group. Three feet away, the silverback Peanuts presided over the goings-on.

When Bonne Année saw her human friends and moved downslope in their direction, Peanuts blocked her path, threatening, as if to say, "This infant belongs to Group 4 now!"

And so success crowned the very first effort ever to reintroduce a captive gorilla to the wild.

Beethoven Key to Group's Harmony

In contrast to the near destruction of Group 4, Group 5 has been a heartening example of a well-stabilized family unit. To maintain a group's durability over time requires a strong silverback, support from a maturing male, and enough females to allow regular breeding opportunities.

Over 13 years, under the steady leadership of the old silverback Beethoven, 32 different gorillas have been part of Group 5. Five of the 13 present members belonged to the group as I first knew it in 1967.

Notwithstanding gains and losses from births, deaths, transfers, silverback breakaways, and one disappearance, the group never required female immigrants for expansion, a testament to group stability.

Aging Beethoven, after leading his group for an estimated 40 years, had a vigorous backup in his silverback son, Icarus. From the occasional violence with other groups, Beethoven often emerged badly wounded. He fell into the habit of avoiding trouble, or of outright flight. But feisty Icarus, always gung ho to pit his strength against all challengers, drew attention to Group 5 with his prolonged hoots and chest beats.

Relations between father and son stayed harmonious until, around his 12th year, Icarus attained sexual maturity. Reaching this stage, subordinate males such as Icarus have never been observed trying to mate with older females; these "belong" to the dominant silverback. But as Beethoven weakened, antagonism intensified between

A. WILLIAM WEBER

DIAN FOSSEY (ABOVE AND BELOW)

the two males on the days each month the senior females were in estrus. Harsh and agitated vocalizations, much like pig grunts, along with charging, created a great deal of friction within the group.

Year by year Icarus faced an escalating problem. If he survived, he unquestionably would succeed to the leadership of Group 5 upon Beethoven's death. He was therefore unlikely to leave it. Nevertheless, in his first three years of sexual maturity, Icarus would have access to only one or two adult females and sire but two offspring among the younger adult females. His father, Beethoven, over the past 13 years has been master of a ten-female harem that has given him 20 youngsters, ten of which survive.

How many more years Icarus would have to accept this limited reproductive role would hang on how much longer Beethoven lived and on the fate of the females that he, Beethoven, was able to keep for himself. I was sure that Beethoven wouldn't relinquish to Icarus mating privileges with the two oldest females, Effie and Marchessa.

***A deadly snare** set for small antelope gripped young Lee's leg so tightly that she could not pry it off. A white coating of medication **(above)** came too late to heal her gangrenous foot, and she was buried **(top)** in a graveyard for poaching victims. Borne to camp across a meadow **(left)**, Macho joined her mate, Uncle Bert, in the same graveyard that soon received their son, all victims of poachers, who may account for two-thirds of gorilla deaths.*

So until an unexpected—and shattering—event upset this balance, Icarus for his breeding success had to count on the group's three younger females or the acquisition of mates from other groups.

At the age of 9½ years, Pantsy, Beethoven's oldest daughter within the group, gave birth to an infant, Banjo, that Beethoven had sired. At six months, Banjo disappeared: I believe the baby was killed and—on the basis of bone splinters collected from dung—I think it may have been partially eaten by other members of its family.

Pantsy almost at once started mating with Icarus. A year later Pantsy gave birth to Icarus's first offspring, daughter Muraha. I named Muraha for a new volcano that erupted across the border in Zaire. The volcano soon fizzled out, but not Muraha! From the day of her birth she was exceptional in vitality development, dexterity, and alertness. Her bright eyes seemed to say, "Look out, world. Here I come!"

Surviving ups and downs, Group 5 moved about contentedly, subtly divided into two mini-groups, Effie and her brood of four and Marchessa with her three. Such clusterings help lessen friction within a gorilla familial unit.

Effie and her younger offspring—Puck, Tuck, and Poppy—were a devoted quartet. Puck, at eight years an adult, earlier had shown immense curiosity about us as ever present observers, and about the strange equipment we carried. Photographers became human octopuses trying to guard their lenses, film cartridges, tripods, batteries, and light meters from Puck's persistent inquisitiveness.

The young gorilla would adapt long lenses for use as telescopes or microscopes. Many of our contacts ended like Easter egg hunts, as I sought to retrieve purloined photographic gear.

Notable for boldness as well as curiosity, Puck had always been "known" to be a male. We often saw the animal engaged in play mountings of female and immature gorillas. The young adult's canines grew like those of a male, and the hair on the back of its head was slightly silvered.

But at the age of ten, the blackback Puck gave birth to a male infant! The newborn "impossibility" won the name Cantsbee, from my first shocked words when I heard the news.

Family Hierarchy Provoked Tragedy

The Icarus-Beethoven relationship now has taken a new turn. Just eight months ago came tragic news: the killing of Beethoven's long-term mate Marchessa. It is sad to us but understandable—perhaps even inevitable—in terms of the inflexible rules of gorilla familial hierarchy.

Students Peter G. Veit and John Fowler, who maintained the Karisoke Research Centre after I left, wrote to me in the United States about Marchessa's death and Icarus's role in it. On pages 508-511 of this report, Peter has described the event. However troubling and puzzling, it surely underscores the power of gorilla kinship ties.

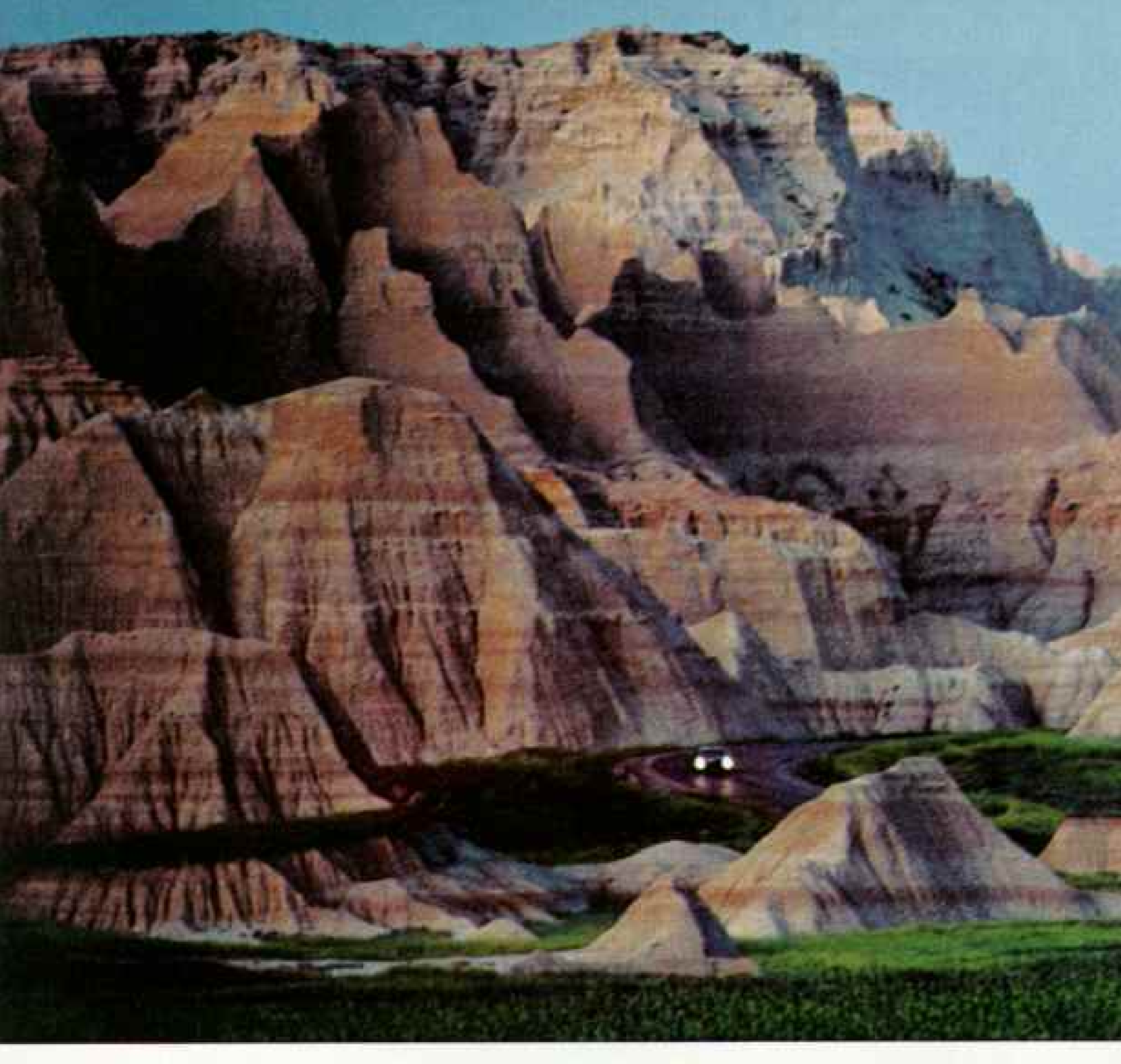
Yet, what was Icarus's cognizance of his actions? In assuring the death of Marchessa, I believe that Icarus responded to the instinct to protect his own genes—to guarantee that aging Beethoven would not breed again with Marchessa.

Now Icarus commands the entire group, and can mate at will with any female other than his mother, Effie—there an innate taboo exists.

Though it can be exceedingly arduous, long-term research such as ours at the Karisoke Research Centre carries with it great rewards—in discoveries and in correcting mistakes stumbled into through false assumptions. The births of Cantsbee and, more recently, of Effie's latest, Maggie, help replenish the population of surviving mountain gorillas. Perhaps we will find—we may hope, at least—that the gorillas' own strategies of group growth and maintenance will circumvent group disintegration caused by man's encroachment. □

***Thoroughly spoiled** by Dian, weak Bonne Année grew strong again under the author's care after police confiscated the young gorilla from poachers. She thrilled her human friends even more by leaving them to live with Group 4, the first captive gorilla ever returned to the wild.*

STUART PERLMETER



South Dakota's Badlands:

WE WERE on the north rim of the Sage Creek Basin, looking out over the mazes of South Dakota's Badlands, when two dusty station wagons pulled into the turnoff and stopped nearby.

A group of towheaded, sunbrowned tourists erupted from the cars, plainly excited by the rugged vistas before them: flayed and scalded castles and battlements, so blighted that almost nothing green can grow there. The tourists were all exclaiming in something other than English.

A small boy scampered toward me, followed by his mother. I smiled at him, saying: "Welcome to the Badlands, cowboy." He skidded to a stop to ask his mother something. She smiled down at him and replied: "*Das amerikanische böse Land, Toni*—the American bad land, Toni."

And so German was added to my lexicon of Badlands names. One of my Mexican

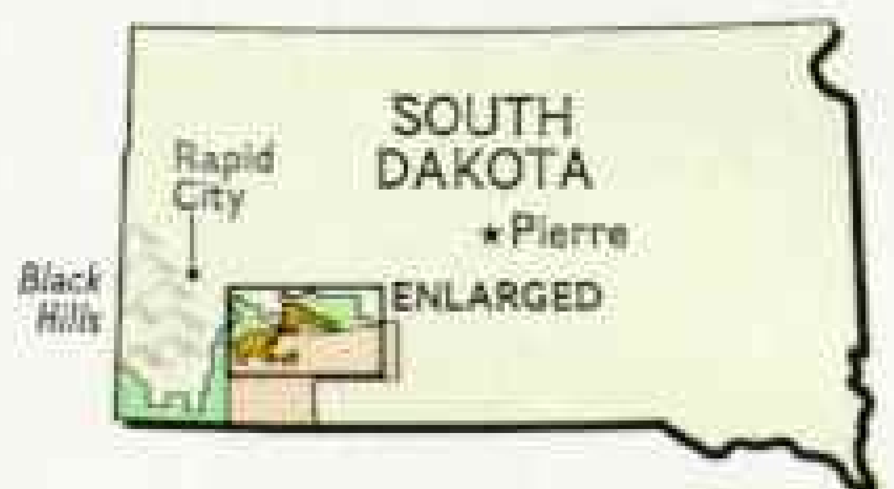
Castles in Clay

By JOHN MADSON
Photographs by
JIM BRANDENBURG

friends says the place is *un mal pais*, an evil country. In Lakota Sioux it is *makosche shicha*, or bad land. The early French fur traders and trappers cursed it as *les mauvaises terres à traverser*, the bad lands to cross. Cowboys who have hunted livestock there have shorter ways of saying it, but never around children.

To many of us it's a region of stark, exciting beauty, a good place that's gotten a bad name. It's the most spectacular eastern

Open pages *in the chronicle of earth history, naked strata of geologic debris loom high over a westbound car as it crosses the eastern tract of Badlands National Park. Sculptured by water and wind from fossil-rich sediments up to 38 million years old, the stark and riven landscape was feared and avoided by early pioneers. Despite its bad name, however, this unique wilderness in the heart of America holds much that is good.*



Easy to miss, *the buttes and peaks of the Badlands Park lie in a depression and are seldom visible above the horizon to motorists passing on the north.*

Before federal protection, the park area was a fossil collector's paradise. As a boy, Clarence Jurisch ***(below)*** *of Scenic found ancient animal skulls "lying around in heaps." In 1939, the north section was declared a national monument, an area enlarged and upgraded to national park status in 1978.*

part of the storied West, the real thing!—an uncurried, wild and woolly part of the old original.

Badlands are more than just mud that's been rained on. Typical badlands lie in semiarid country where rains are infrequent but often torrential, followed by long periods of drying that bake and temper the eroded shapes. The Badlands of South Dakota are deep alluvial and volcanic ash deposits that have been carved into spectacular forms by millions of years of water and wind. Beginning about 35 million years ago, rivers rushed down from the newly risen Black Hills and spread their burdens of sand, mud, and gravel on the flatlands. South Dakota poet laureate Badger Clark would marvel:

> *. . . the old, old rhyme*
> *That was traced in the score of the strata marks*
> *While millennia winked like campfire sparks*
> *Down the winds of unguessed time.*

For millions of years the floodplain was built up faster than it could be eroded away. Then the balance shifted, and the deep beds of sediment were attacked by the elements. In the Badlands the result is a chaos of free sculpture: spires, pinnacles, and fluted ridges in a belt almost a hundred miles long and fifty miles wide. The heart of this is Badlands National Park: 244,000 acres of primordial landscapes.

It's a sudden place. The rolling grasslands of the South Dakota plains may end, and the Badlands begin, in a matter of inches. My old friend Bob Henderson was once chasing a coyote with his pickup truck over the open rangeland southwest of Kadoka. The coyote ran up a long slope and vanished over the horizon with Bob hot on his trail. At the last moment Bob realized there was something wrong with the sky up ahead and turned sharply, passing just a few yards from the brink of a hundred-foot cliff.

Such an abrupt break between rolling plains and badlands is typical. But because badlands are usually below the tableland from which they have eroded, like mountains in reverse relief, they can be difficult to find. I have ridden for miles over featureless pasture searching for badlands I knew were there, but was unable to find. Then I'd top out on a long rise and come on a tumult of spires and battlements, hundreds of feet high, just below my feet.

The weathered skin of the Badlands is a crumbling, friable material, an inch or more deep, not to be trusted. Climbing a dry, steep slope is like walking on a surface strewn with ball bearings. It's even worse when wet, with the consistency of wet soap. You don't sink into it. You slide on it.

Menagerie Frozen in Time

With each rain the Badlands are renewed. As their malleable surfaces are subtly reworked by water and ice, the weathered skin is peeled away to reveal new shapes and others of great antiquity.

Fossils are constantly emerging. Every rain, thaw, and puff of dust-laden wind helps reveal another tooth or bone. Which is one reason these Badlands may be the finest repository of Oligocene mammal fossils in the world, for they occur in a region where they are sure to be revealed.

The most common large mammal in the ancient Badlands was the oreodont, a pig-shaped ruminant. There were ancestral horses, tapirs, camels, deer, rhinos, as well as the creatures that preyed upon them all. Best known and most spectacular of the predators were saber-toothed cats. But of all the dream haunters that ever roamed the Badlands region, two must have given even the sabertooths reason to stand aside. One was the giant, wolflike *Hyaenodon*, which was the size of a black bear. The other was a huge hog related to today's swine. Some of these giants, such as *Dinohyus*, stood five feet at the shoulder.

The largest of the Badlands beasts was among the earliest and is found in the deepest beds. Titanotheres appeared about 50 million years ago as dog-size creatures that evolved rapidly into behemoths that somewhat resembled modern rhinos. One skeleton at the South Dakota School of Mines and Technology (following page) measures about seven feet tall and fifteen feet long.

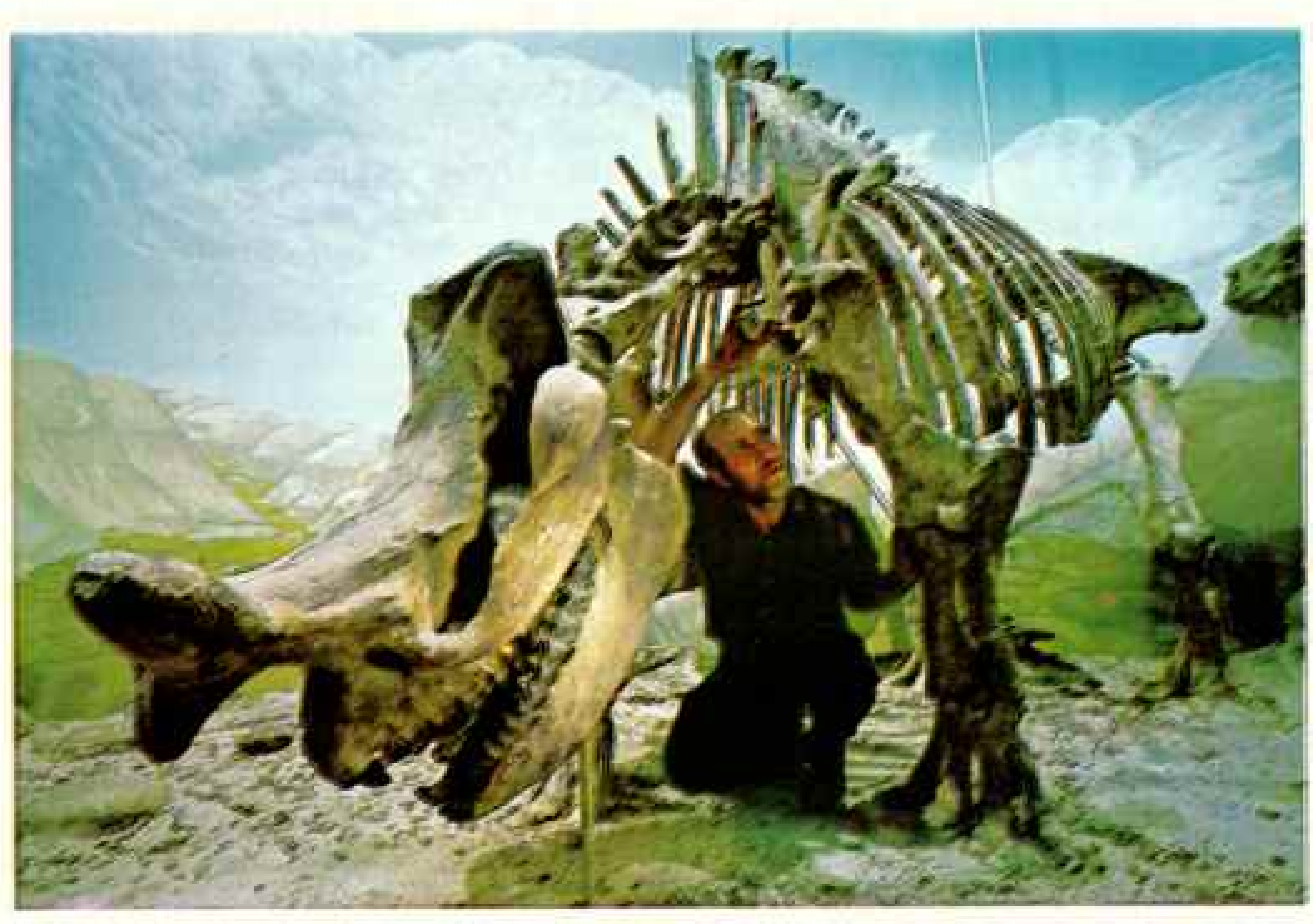
Fossil land turtles abound in the Badlands rocks. Their forms have endured for millions of years in the tough matrix, but a fossil turtle shell may last only a few years after being exposed to weather.

Clarence Jurisch is a Badlander who owns a small museum in the village of Scenic and has hunted fossils for most of his 81 years. We were prowling the high places one day when he stopped at the edge of a lofty wall and pointed to a nearby pinnacle. High in the crumbling flank of the tall column was a fossilized turtle about three feet long, half exposed and lying on its back.

"It's a good one," he said, "and it's just as well that nobody can get it. A while back I was keeping an eye on a turtle that was weathering out of a road cut. A fine specimen. Some idiot came long, dug it out, and broke it open just to see what was inside!"

Hunting fossils is prime sport, but they must not be touched. Only a paleontologist with a collector's permit can lawfully remove a fossil from Badlands National Park.

Vic Vieira, then chief ranger of the park, said: "The most valuable fossils here are the ones left in place. Sure, they probably won't last long, exposed to the weather. But while they do, they may be of great scientific



In the bones of Thunderhorse, *myth and science converge. Awed by findings of large, fearsome skulls, Badland Indians spawned the legend of a great beast that came from the sky to kill buffalo. In Rapid City, Dr. Philip Bjork, director of the South Dakota School of Mines and Technology's Museum of Geology, examines a skeleton of Thunderhorse, whose scientific alias is titanothere. Largest animal of the Badlands' Oligocene epoch, which ended 23 million years ago, the rhinoceros-like creatures were annihilated when climate transformed this once subtropical floodplain. Before serious erosion set in,*

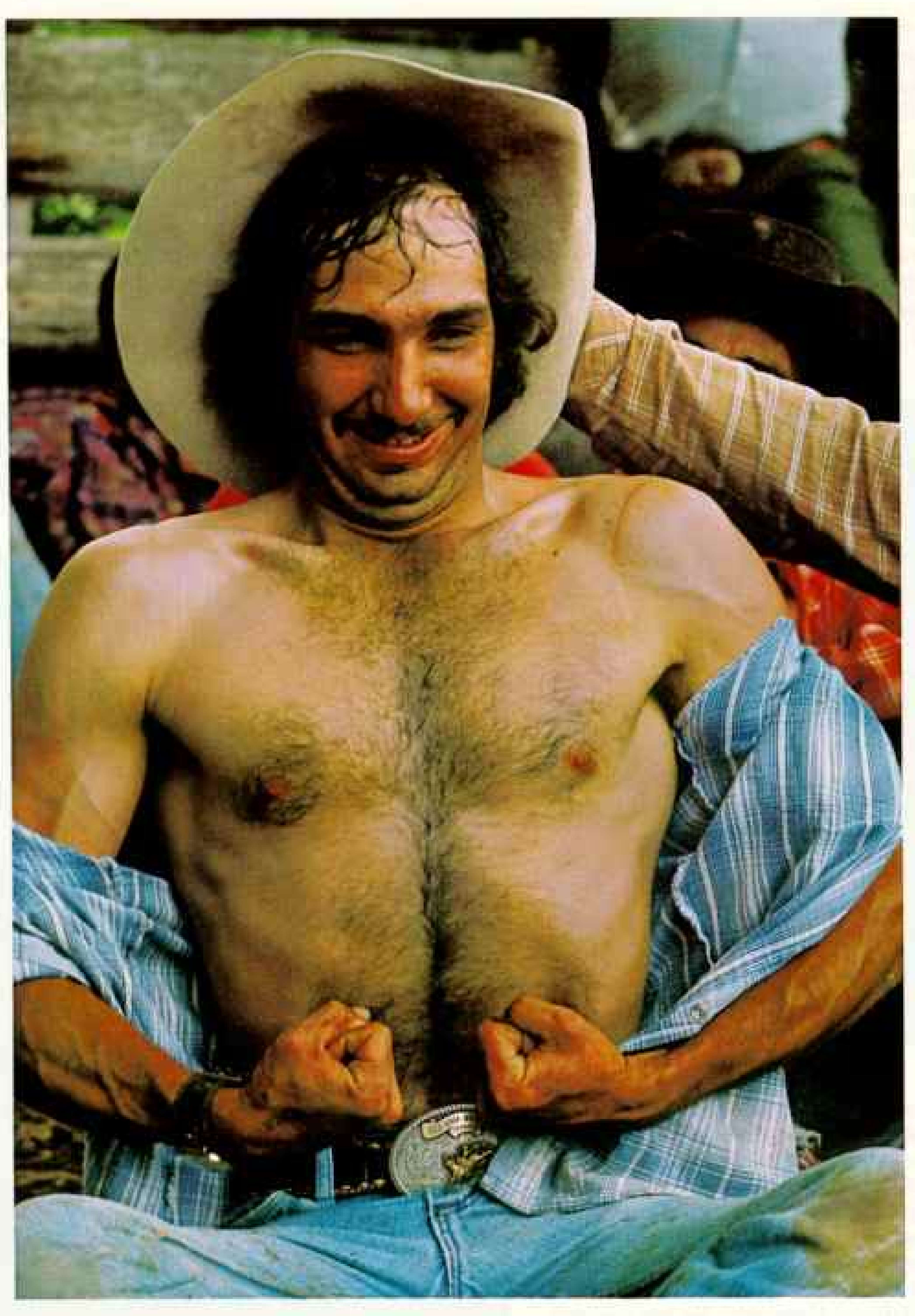
value. They may also be found by people seeing fossils in the natural state for the first and only time. It could be the highlight of their vacation."

Descendants of the Badlands' prehistoric horses and camels, American originals, emigrated to the Old World over the Bering land bridge millions of years ago. They used the same route by which deer and other big game had arrived in the New World millions of years earlier. When horses finally returned—thanks to the conquistadores—after an absence of 10,000 years, the region teemed with large mammals. There were deer, elk and bison, pronghorn antelope, black and grizzly bears, gray wolves, coyotes, cougars, and bighorn sheep.

This primitive abundance ended with the finding of gold in the Black Hills. Adventurers swarmed into the region. And since adventuring is hungry work, especially with pick and shovel, there was great demand for fresh meat. Elk and bison were gone by the 1890s, and bighorn sheep and pronghorn

outpourings of mud from the nearby Black Hills and volcanic ash from the then young Rocky Mountains preserved the bones of hundreds of now extinct species. With a dentist's drill **(above)** *an associate of Dr. Bjork frees from its mudstone tomb a skull of Mesohippus, a collie-size ancestor of today's horse. National Geographic Society research grants support such work. Tortoiseshells are continually unearthed* **(right)** *by the eroding wind and rain.*

More than a cemetery, the Badlands today provide sanctuary for pronghorn antelope **(facing page)***, bison, prairie dogs, and a profusion of other wildlife.*



Cowboys and Indians *are one and the same in the Pine Ridge Reservation's cattle country, south of the Badlands Park. After a day of branding for his grandfather—John Pourier, a part-French, part-Sioux tribal rancher—Fred Heathershaw* (**above**) *shows off the form that won him a trophy buckle for bull riding in an Indian rodeo.*

Badlands grit and sawdust pervade the 72-year-old Longhorn Saloon in Scenic (**right**), *whose ceiling displays area ranch brands and bullet holes—tokens of a die-hard tradition.*

were on their way out. An official game survey in 1919 concluded: ". . . the entire region seems void of all wild animal life."

Only a protected status could restore that vanished wildlife, but efforts to create a national park failed in 1922 and 1928. Then, in 1939, President Franklin D. Roosevelt established Badlands National Monument, which was enlarged and upgraded to Badlands National Park in 1978.

From 1939 on, Badlands wildlife made strong gains. Pronghorn and deer had never vanished entirely, and by the 1950s they were common. With the range recovering from years of overgrazing, it was felt that bison might make a comeback, and 28 head were reintroduced into the monument in 1963. Two months later, 12 Rocky Mountain bighorn were brought in.

The bighorn have not increased much, but bison have prospered mightily. Too mightily. In 1979 there were about 500 bison in Sage Creek Basin. By May they were strolling through fences, to the mutual discontent of the Park Service and area ranchers. Many were sent to the Pine Ridge Sioux, and the herd now stands at 350.

Real Horsepower Reigns Supreme

It was cowboy and Indian country in the old days, and still is. The up-and-down parts may be barren rock and clay, but the more level parts usually wear good grass. The chancy ranching there has bred a strain of strong, hardworking people.

Badlands ranchers have an abiding belief in horses, subscribing to the old axiom that if God had meant man to walk, He'd have given him four legs. According to my friend Bill Hustead: "There's a saying around here that folks south of the White River have three times as many horses as they need, but those north of the river have only twice as many."

These cattlemen spend a good part of their working lives in the saddle. It's the nature of the place, which may be tough on men and horses but is pure hell on trucks and transmissions. As one old rancher told me: "A good horse will last, but I can't get more than a couple of years out of a pickup."

Roundup time can be rough. Several years ago Bill Hustead drove out from his home in Wall to help a friend gather cattle in the Conata Basin. He arrived at the ranch well before daylight and found the rancher standing outside the house, taking a long draft from a brown bottle.

"You just getting up, or just getting home?" Bill asked.

"Just got up," was the reply. "A long time ago I learned that if I don't take a drink before breakfast I can only eat one pancake. If I take a drink, I can eat two. And I got a hunch this is gonna be a two-pancake day."

"He was right," Bill reflects. "We rode all day and then some, getting in long after dark, plumb worn out."

The Badlands spreads, unlike some streamlined western outfits, still draw on the old cowboy skills. Early last summer I dropped by the D/O ranch on the White River, where Lloyd O'Rourke and his neighbors were branding. The most modern concession to the actual scorching was a propane burner for heating the iron; most of the job was being managed with rope, horse, and main muscle, the men wrestling and throwing the bawling calves in a pall of dust and heat. The temperature was edging 100°F by noon; before the day's work ended, it would be 107°. Under hats pulled low against the sun, the faces streamed sweat; some were heat-reddened palefaces, others were the clear deep bronze of the Sioux.

One of the ropers was John Pourier. I'd first met him in February just before his 81st birthday, as he was coming in from feeding cattle in his drifted pastures. Now he was sitting his favorite roping horse with the ease of a man 50 years younger. His clever casts never seemed to miss, and he was heel roping calves as fast as his branding team could take them.

Pourier is a top hand, a bridge between

Powerful medicine *still for many Sioux, blessings of the four winds, the buffalo, and hundreds of other spirits are invoked for a healing ceremony by Frank Fools Crow, ceremonial chief of the Oglala Sioux. Like many of Pine Ridge's 16,000 Sioux, the octogenarian chief has reconciled Christianity with a pantheon of nature-based spirits, who counseled him to become a medicine man during a vision quest in this rugged land long ago.*

eras. His grandfather was Baptiste Pourier, second son of a mountain man who left St. Charles, Missouri, in 1822 and went to the Rockies with an early fur brigade. Baptiste himself had left St. Charles in 1857, at 15, and headed up the Oregon Trail. He became a scout and interpreter out of Fort Laramie from 1870 to 1880, through some of the bitterest years of the Indian wars.

Gen. George Crook called him "Big Bat" when they served together at the Battle of Rosebud Creek in 1876 in Montana.

He knew mountain men Jim Bridger and Jim Baker. He had smoked with many of the great warriors and married Josephine Richard, a granddaughter of White Thunder Woman, who was aunt to Red Cloud, chief of the Oglala Sioux.

John Pourier's gracious wife, Pearl, is a descendant of Gen. Alfred Terry, commander of the 1876 Yellowstone expedition that included the Seventh Cavalry under Lt. Col. George Custer. So in John and Pearl Pourier the bloodlines of two great war chiefs, Red Cloud and General Terry, have converged in one family.

Another Badlander with its history in his blood is Clarence Jurisch, the son of Nebraska settlers who came to the Badlands in the summer of 1889. It was poor timing. By 1890 the ghost dance was under way with the Sioux offering up prayers for the messiah that would cleanse the country of white men and bring back the buffalo, and newly arrived settlers were on dangerous ground. Clarence and I were standing one day on Sheep Mountain Table when he said:

"Big Bat Pourier told me he watched my mother and her folks come into this country. He was up on high ground with a telescope and saw a dozen Sioux riders, all wearing breechclouts, catch up with my family's wagon. Bat was too far away to help. All he could do was watch. The Indians rode beside the wagon, trying to stop it, but granddad whipped up the horses and drove faster. Bat always figured that saved them. If they had stopped, they'd have been killed."

That was the next to the last summer for the Sioux as a free people. Chief Big Foot and his band of Miniconjou Sioux came into the Badlands through little-known Big Foot Pass, eluding the soldiers, but on December 29, 1890, the soldiers found him in the final, tragic episode at Wounded Knee Creek.

Tales of Thunderhorse Live On

The Badlands extend deep into the past of the Oglala Sioux, and physically into their Pine Ridge Reservation. The Sioux attributed the existence of the Badlands to Wakan Tanka, Creator of All Things, who had destroyed a tribe of evil hunters in a cataclysm whose form was preserved as a lesson to men. The bones of titanotheres were thought to be those of Thunderhorse, a huge horse that sometimes came to earth during

Best of the Badlands *for wildlife, Sage Creek Basin's rolling rangeland supports 350 head of bison, prairie-dog towns, and many of the area's animals that roamed before the coming of man. The iron-rich yellow mounds seen here are among the park's oldest formations.*

thunderstorms and killed the buffalo.

In spite of such mythology, a National Park Service official history indicates that the Badlands held no special spiritual significance for the Indians. Maybe so, but it's hard to believe that such strange, wild landforms could fail to impress the early Sioux with some religious meaning. Not far away are the Black Hills, said to be holy ground for the old Sioux. The Badlands were born of those Black Hills; did they inherit none of their medicine?

If anyone would know, it would be Frank Fools Crow, an Oglala ceremonial chief and medicine man. I had read that, against the wishes of some authorities, he was still leading young men into Nebraska for certain rites of the sun dance as late as the 1960s.

I found him behind his home near Kyle on the Pine Ridge Reservation. It was a hot day, and he was resting in the shade of a tree near a large brush arbor, an open shelter roofed with cedar boughs and supported by painted posts. He lay on the ground even though two chairs stood nearby. He sat up as I spoke, smiling a greeting.

He is still strongly built (he was a famous horseman when he rode Thoroughbreds in races for Big Bat Pourier), with a look that commands attention. I cannot recall ever seeing another face that held such strength and peace (page 532). I introduced myself, and he replied in English, a courtesy, for he prefers to speak in Lakota dialect.

Was it true, I asked, that the Badlands held no real spiritual meaning for the Sioux except, perhaps, as a place where young men might seek vision? Fools Crow smiled gently, and slowly shook his head. Thinking he may not have understood the question, I repeated it. Once again, he gave only a slow headshake. Perhaps he was unable or unwilling to answer me, or it may have been a denial of a false report. I never found out.

Maybe he didn't know. Maybe no one does.

I had brought a gift for Fools Crow—a silver peace medal hung from a necklace of bone and trade beads. The old man beamed as he put it around his neck. He went into the house and returned with a heavy belt of blue beads worked on white buckskin, saying that a gift from a friend must always be honored with a gift in return.

A postscript to that day: As I was leaving, one of Fools Crow's close friends, Eli Menchaca, told me it is Fools Crow's dream to see the Black Hills restored to his people. Some time later I asked a friend whether those hills were really as sacred to the Sioux as we are led to believe.

"Well," he said, "when the white man found gold in the Black Hills, it was something like a modern corporation striking oil under the floor of the Vatican."

Almost a million people drive through the Badlands each year. Few stay long. The average visit is only about three and a half hours. Then it's off to nearby Mount Rushmore, whose carved presidential heads are in sharp contrast to nature's haphazard sculptures in the Badlands.

I enjoy the long vistas of the Badlands as

Living doll, *little DeVonna Lone Hill* (**left**), *grandniece of a Sioux park ranger, far outshines the beads-and-buckskin images* (**below**) *that some of her tribe make for Wall Drug Store. The huge store's fortunes are based on the traveling public, 20,000 of whom may stop in on a peak summer day. In their haste to reach the Black Hills—sacred to the Sioux—many tourists bypass the Badlands, just minutes away.*

ANNIE GRIFFITHS (RIGHT)

much as any other tourist, but I am unable to stay on the overlooks. I have to get down into the heart of it, get back behind the pictures on the postcards, and on a blazing day last June I came as close to distilling the essence of the Badlands into one time and place as I ever will.

That day I walked on shales tinted by the weather long before they were covered by the first sediments. I labored over broken strata of the Oligocene and earlier ages, sometimes spanning millions of years with a single stride, and climbed to a Miocene ridge no more than 13 million years old, one of the younger, higher parts of the Badlands.

Looking north toward the Pinnacles, I wondered how anything could travel in the chaotic maze at the upper end of Sage Creek Basin with its broken and eroded grassland, valleys, gullies, and tables. Yet, as I watched, a coyote trotted across a small grassy table and vanished. Not far beyond, a bull buffalo wallowed in a dry wash.

An hour on that open ridge was enough. Just under the rim was a narrow shelf with several large junipers. I retired there for a shady siesta, though mildly alarmed to find my half-gallon canteen almost empty. I felt

Monuments to erosion, *bladelike ridges called clastic dikes were left standing as surrounding soft rock washed away. Nature carved most of these landforms in less than five million years—a brief geologic episode for such drastic results. In perhaps another million years, what we know as the Badlands will inexorably have been eroded away.*

the deep hanging silence that pervades such places when the temperature passes 100°F. The sunlight just beyond had a peculiar incandescence, as if particles of air were smoldering. Strange to recall that not far from here I had taken another walk several months before. It had been minus 12°F then, with thigh-deep drifts of powder snow. I had worked up a light sweat, and when I stopped to make camp, the numbing cold struck through my parka.

From my perch that hot June day I quietly

watched two pronghorn down where the land began to level out. Off to the right above a lofty Matterhorn made of clay, a golden eagle climbed into the sun and vanished. A team of turkey vultures wheeled around the ridge without flapping a wing. That eagle could take lessons from them.

On the way out, with the sun orange against the west faces of the formations, I was escorted by two white-tailed jackrabbits, a pronghorn, and a cloud of lark buntings. I tried to whistle and found my pucker had dried out, but a western meadowlark took over and did a much better job of it, singing me campward, back to the grove of cottonwoods where deep sands brim with cool, sweet water.

That evening a neighboring camper emerged from his refrigerated trailer and said, "Well, it was certainly a beastly day, wasn't it?"

Yes, I thought, it had been a fine, beastly day, one spent in excellent company and a special place. I wondered how he knew. □

Singapore: Mini-size

By BRYAN HODGSON

NATIONAL GEOGRAPHIC SENIOR STAFF

Superstate

Photographs by DEAN CONGER

NATIONAL GEOGRAPHIC PHOTOGRAPHER

Flags of everyday life *flutter from bamboo poles affixed to public housing in Singapore. An office building shares the skyline in the hardworking island republic that enjoys new prosperity while honoring ancient ways.*

I CROUCHED BEHIND a grimy altar, deafened by crashing gongs, and watched in fascination as the Chinese spirit medium hurled lucky coins and small rice bags over his shoulder to a scrambling crowd. The two-hour ritual was almost over, and the grace of the gods was up for grabs.

Earlier, I'd seen him leaping convulsively around the temple, speaking in tongues, lashing the air with a murderous snake-head whip, and slashing at his back with sharp swords that raised cruel welts but drew no blood. He'd seemed a fearsome figure, and I'd stayed well out of his way.

Now he came suddenly out of his trance, and saw my distinctly ungodlike countenance among his pantheon of carved idols.

He grinned.

"Cha pah bway?" he asked, which means roughly, "Have you eaten yet?" It's a traditional Chinese greeting, and the polite answer is always yes. In my case, it was true. I'd had the most luxurious Szechuan dinner of my life not long before in downtown Singapore, capital city of the most modern, prosperous, and probably the best fed nation in Southeast Asia.

But the spirit medium wouldn't take yes for an answer. And so, in a nondescript village only ten miles from the city, I shared rice porridge and fermented bean curd with Mr. Cheh Wang Teck, the happy-go-lucky practitioner of a Chinese cult so old and complex that it really doesn't have a name.

It was a dramatic contrast to the hectic, Western-style prosperity that marks the emergence of Singapore as the miniature superstate of Southeast Asia. But behind that modernity, I'd learned, lay a rich lode of Chinese village culture. That culture played a vital role in helping the republic's 2.4 million citizens—76 percent of them Chinese—transform their 238-square-mile tropical island nation from a slum-ridden former British colony into a bright, modern land

Shielded from pain *by a deep trance, a spirit medium has his cheeks skewered by a rod during a traditional ceremony of a Chinese cult. The Chinese constitute 76 percent of Singapore's population; Malays and Indians add to the ethnic mix.*

Founded by Sir Thomas Stamford Raffles as a British trade depot in 1819, Singapore became fully independent in 1965.

***Master planner** of Singapore's destiny, Prime Minister Lee Kuan Yew (**left**) has mapped his country's course for 22 years and lifted Singapore to world-class economic status as a financial and trade center. Fronted by the Singapore River, the skyline of the business district (**below**) mirrors the spectacular growth of the past 15 years. About the size of Chicago, this nation of 2.4 million boasts the second highest living standard in the Far East, after Japan. Unemployment stands at a low 3.3 percent, and a 125-million-dollar surplus cushions the national budget. Still, critics chafe that Lee's People's Action Party has a monopoly on political power, and dissidents not uncommonly land in jail.*

Emperor of finance, *Tan Chin Tuan* ***(above)*** *commands the influential Oversea-Chinese Banking Corporation as chairman of the board and also directs companies involved in trading, metals, and insurance. He stands before a table inlaid with a map of Singapore and marked with branches of the bank. One of Asia's largest financial centers, Singapore lures big business with easy money flow and tax breaks. At a Rollei plant* ***(left)*** *fine cameras are assembled by women, who make up nearly half the work force. But as the larger family disintegrates, elders are no longer around to care for the young, or to be cared for as they grow feeble.*

of skyscrapers and high-rise public housing. Today Singaporeans enjoy high employment, low inflation, excellent health, crime-free streets, and a per capita income exceeded in the Orient only by Japan.

They also live obediently under an all-pervasive bureaucracy that monitors everything from the size of their families to the length of their hair. I'd found Singapore impressive, but hardly the romantic "instant Asia" promised by the glossy tourist brochures. Earlier I'd said as much to a young sociologist from the Ministry of Culture, and received a prim rebuke: "You're like all Westerners," she sniffed. "You prefer Orientals to be poor, dirty, and quaint."

Sharing a Litany of Gods

But now, in this ramshackle temple that was something less than squeaky clean, I felt like an honored guest. While Mr. Cheh's wife, Tina, translated in fluent, mission-school English, he explained tonight's festivities in peppery Hokkien dialect.

This was the birthday of Kuan Ti, the scarlet-faced god of war and patron of businessmen. In his trance Mr. Cheh had been possessed by the god, who had shown his pleasure by preventing the ceremonial swords from drawing blood. Self-mutilation was common practice among spirit mediums. Tomorrow his welts would be gone.

We talked until cockcrow. He told me the names of other gods, many of whom were once the real-life heroes or mandarins of past Chinese dynasties. Now they formed a sort of celestial bureaucracy, whose favors could still be gained in the same ways that Chinese villagers have always used in dealing with earthly bureaucrats—by obedience, flattery, and appropriate ritual.

When I left, a false dawn silhouetted tattered coconut palms. Tina gave me oranges from the altar. "Kuan Ti won't mind," she said. "He's been suitably honored."

Minutes later I was passing beneath the deserted palisade of new skyscrapers that marks the Golden Shoe, Singapore's financial district. On an impulse I parked near the Singapore River and walked through the few square blocks of Chinatown that have survived relentless urban renewal.

By day, it is a vivid scene of food stalls and shoppers, blaring with incoherent noise from scores of booths where latter-day pirates sell illegally made copies of Western rock-band records. But now it was silent, and I could sense the timeless mystery of a city whose name once conjured up the romance of the Orient.

Old men dreamed on cots in front of tumbledown shop-houses. Upstairs, behind latticed windows, the lamps of family shrines flickered faintly on banners of laundry drying on bamboo poles hung over the street. On Sago Lane the funeral shops were shadowy treasure-houses of Mercedes cars, luxury yachts, and elaborate mansions, all made of gaily colored paper (page 554). Soon they would be burned so that departed spirits could enjoy an adequate standard of living in heaven—not so different, I thought, from the material wealth that modern Singaporeans aspire to in real life.

At Boat Quay, broad-bellied bumboats creaked gently on the murky tide. Old warehouses—called godowns—awaited cargoes of smoky Malaysian rubber, rice from Thailand, pungent Indonesian coffee, and mysterious baskets that exhaled the odors of pepper and tea and dried fish. Aboard the bumboats, crewmen cooked morning rice, living as their forebears had done since 1819, when a shrewd Englishman named Sir Thomas Stamford Raffles saw the strategic value of a swampy island at the southern tip of the Malay Peninsula. He turned it into the cornerstone of Britain's Asian empire, a fabulous crossroads of the Orient.

Where Global Trade Routes Converge

As the sun rose, I came to the waterfront and gazed at the modern crossroads that Singapore has become. Fleets of freighters lay anchored in the roadstead, ringed by the refineries, shipyards, and container terminals that make this one of the world's busiest ports. Welders' torches glittered on a sweeping elevated highway that will link the city with the new airport at Changi, designed for international flights that ultimately will carry 30 million passengers a year.

Singapore has 10,000 citizens per square mile, one of the highest densities in the world. As the morning rush hour began to choke the streets, most of the population seemed to be heading downtown. I sought breakfast in the Telok Ayer Market, a

All the street's a stage *when a Chinese "wayang," or street opera, plays to the delight of spectators in Chinatown* (**left**). *Fortune generally favors good guys like the sword-bearing actor* (**below**). *A child echoes his gesture* (**bottom**).

Though time's relentless script has spared the wayang, urban renewal has re-sketched Chinatown. All but a few blocks of its wood-and-tile buildings have yielded to a public-housing spree; every 20 minutes a new unit is added to complexes that now shelter 70 percent of the population.

graceful Victorian structure where street hawkers serve freshly cooked Chinese, Malay, and Indian fast food to a stream of office workers, waterfront hands, cabdrivers, and executives in banker's gray.

I ordered prawn omelet, pig-organ soup, plus the statutory bowl of rice, and thought about the contrasts of Singapore: mandarin gods and modern bureaucrats, ramshackle temples and gleaming shrines of high finance, paper treasures and palpable wealth, bumboats and supertankers.

Somehow they fit together. Beneath Western-style glitter, I thought, Singapore could be a Chinese village in disguise.

"In many ways we represent a third China—quite distinct from the People's Republic and Taiwan," a businessman told me some days later. "But I'd be grateful if you did not link my name with that idea."

He has good reason to be sensitive. Such thoughts are officially condemned as "Chinese chauvinism" by Singapore's leaders, who prefer to describe their nation as a "rugged society," where Malay and Indian minorities—15 and 7 percent respectively—live and work in harmony with the Chinese majority. In fact the minority groups have had little success in competing with the shrewd and energetic Chinese.

Chinese Prospered Wherever They Went

And in Southeast Asia that's an explosive issue. Today more than 12 million so-called overseas Chinese live as tightly knit and often fiercely resented minorities in nations in the region. They are descendants of poor, ill-educated emigrants who fled grinding hunger and paralyzing corruption in China in the 18th and 19th centuries. Fanatically hardworking, they prospered mightily under colonial masters. Chinese merchants came to dominate much of the local trade and industry in the Nanyang, as they called these lands of the southern seas.

But they looked to China as their spiritual home. They took vengeance on the corrupt Ch'ing Dynasty by contributing funds to the Nationalist revolutions of Sun Yat-sen and Chiang Kai-shek in 1911 and the 1920s. And after World War II many of them joined the Communist cause of Mao Zedong, and waged bloody guerrilla campaigns on the Malay Peninsula.

A postwar wave of nationalism released pent-up racial and political animosities against the overseas Chinese. Denounced as both capitalists and Communists, thousands of them died in race riots. Vast numbers were disenfranchised or dispossessed.

Led by a Modern Mandarin

Only in Singapore have the overseas Chinese attained political autonomy. And they owe it to a brilliant, British-educated leader named Lee Kuan Yew, who has ruled the island with a mandarin hand for 22 years (page 545). Lee rose to power by campaigning against the devils of British colonialism. He forged an explosive coalition of Communists, traditionalists, and rabble-rousing labor leaders into his People's Action Party (PAP), which forced Britain to grant self-government in 1959. Then he led Singapore into the new nation of Malaysia in 1963.

But Malaysia's largely Muslim native population was already hostile to the 2.9 million Chinese who shared the peninsula. They feared that Singapore's 1.4 million Chinese would tip the precarious population balance and deny them political and economic power in their own land.

They expelled Singapore into shaky independence in 1965. Tearfully, Lee Kuan Yew rallied his people to a formidable task: They must go it alone, he said, a tiny nation beset by enemies, devoid of natural resources, a hostage to fate.

It was an overstatement. Singapore possesses two noteworthy natural resources. One is its magnificent harbor at the entrance to the Strait of Malacca, historic gateway for trade between the lands of the Indian Ocean and the South China Sea (map, page 544). The second is human—a people to whom hard work has always been a way of life.

Lee has ruled with a blend of ruthlessness, charisma, traditional Chinese principles, and distinctly modern skill. He shattered all serious political opposition by jailing his former Communist co-conspirators. He broke the power of labor unions, granting employers the right to hire and fire at will—then won a standing ovation from angry workers with a passionate appeal to patriotism and the Chinese work ethic.

Public order brought multinational corporations on the run. Singapore has flourished as a center of banking, shipbuilding, offshore-oil technology, refining, aircraft maintenance, electronics manufacturing, and international trade.

The statistics of success turn many Western economists green with envy—and make Eastern Communists blush. Consider:

- Unemployment is a mere 3.3 percent; inflation hovered at only 4 percent until oil prices boosted it to 8 percent in 1980.
- Wages have been increasing by 20 percent yearly since 1979 by government decree, and strikes are almost nonexistent.
- Gross national product has tripled to nine billion dollars since 1965; international trade jumped 31 percent in 1979. Though Singapore imports everything it needs except pork and eggs, 1980's balance of payments showed a 500-million-dollar surplus.

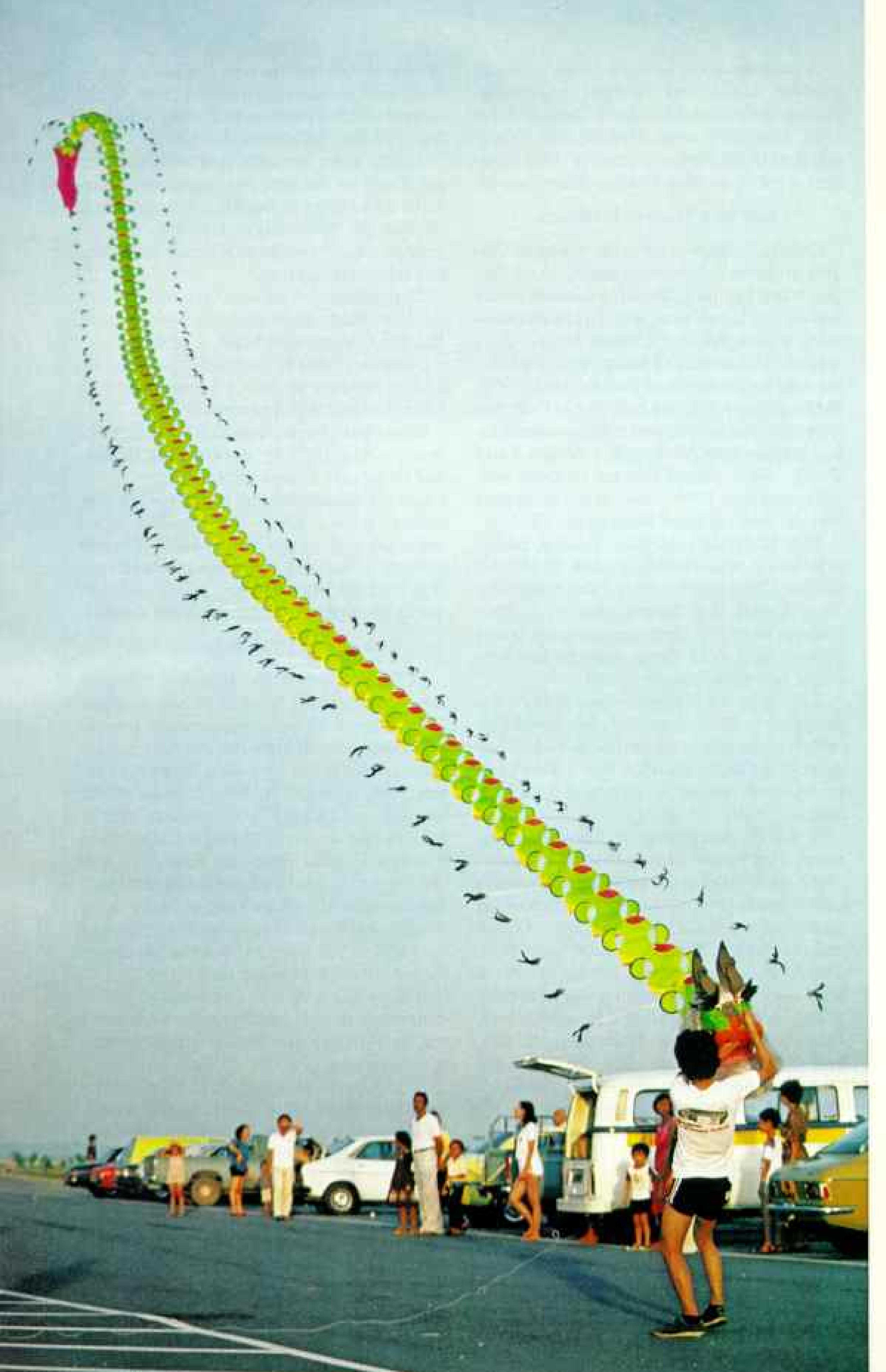
Enforced Savings Rebuilt a City

In human terms the statistics translate into a remarkable level of public comfort. Two out of three Singaporeans live in government-built high-rise apartment complexes surrounded by parks, shopping centers, and schools. To help finance public housing, employers and workers jointly contribute as much as 38 percent of wages to a unique Central Provident Fund. Workers can borrow against the fund to buy their own apartments—as 20 percent of them have done—or to invest in government-approved industries. And they get back the balance of their contributions when they retire.

Meanwhile, per capita earnings of $3,500 enable one in four families to own a private car, and 90 percent to own refrigerators and television sets.

In the high-rise villages, this prosperity translates into a vivid blend of old and new. Walking through the huge Telok Blangah

A sidewalk supper *provides nourishment of a secular kind during a religious festival. Merchants donate food for this temple fund raiser. Streetside food hawkers such as these are licensed and subject to strict laws in this regimented society, where cleanliness is strictly enforced; littering is punishable by fines of as much as $250.*



***Flights of fancy** are launched every Sunday from East Coast Parkway, where Singapore's sea breezes loft kites like this 72-foot-long paper dragon (**left**).*

*The flight path takes a different turn when hobbyists stroll to a Tiong Bahru coffee shop with their pet songbirds, hang cages on a trellis, and listen to the impromptu concert while sipping Chinese tea or thick Indonesian coffee (**below**). The cages are shifted periodically so the birds can meet others and improve their repertoires.*

BOTH BY MICHAEL S. YAMASHITA

housing estate one evening, I came upon a gong-clashing, drum-thundering Chinese funeral in full spate in the open space below a modern apartment tower. On another evening the complex resounded with the sound track of "Chameleon," a Hong Kong-produced soap-and-dope opera that keeps all Singapore glued to TV sets once a week.

And on my way to dinner one Sunday at the home of a friend, I hiked up five flights of open stairwell (elevator service adds a vertical dimension to Singapore's incessant traffic jams) and explored along the balconies. Through open doors I could see a haze of joss-stick smoke from family shrines and hear the international anthems of the electronic age blaring from hi-fi sets. Youngsters in jeans pored over English-language textbooks, while grandmothers perched impassively in Chinese fashion on Western-style sofas.

My host that evening was Keng Ah Wong, a shipyard worker turned antique dealer, whom I had met in his dusty treasure trove of a shop a block away from the tourist glitter of the Orchard Road hotel district.

As he showed me some of his prized collection of brocaded robes, temple carvings, and elaborate dragon-chased silver, he slipped a cassette into a glittering new tape deck, and

MICHAEL S. YAMASHITA (ABOVE)

So that the dead may drive *in heaven, a paper car is whisked to a Chinese funeral, where it will be burned with paper houses, yachts, and TV sets. Sackcloth and straw sandals are traditional funeral wear* (**facing page**). *Ground burial is prohibitively expensive in space-starved Singapore, so cremation is commonplace.*

If not venerated, the dead may be malicious. At the Hungry Ghosts Festival (**right**) *neglected spirits return to haunt the living, but may be mollified by prayers and by burning fake money.*

the tiny apartment swelled with the incredible dignity of Buddhist temple chanting.

"I hate to part with these old things," he said. "They are the last link with a culture that is dying. We are more prosperous now, and healthier, and better educated. But I am not sure our lives are richer."

Rich and poor alike, Singaporeans live in a world of almost surrealistic cleanliness and good behavior, prompted on every public wall by slogans of a watchful state:

"Keeping our city clean is a national objective," says a poster campaign, backed by a well-enforced law that can impose a $250 fine for discarding a cigarette. "Males with long hair will be served last" indicates Lee Kuan Yew's disdain for the laid-back lifestyle. And if the city nowadays wears a slightly demented look, it's because a new poster campaign to "Make courtesy our way of life" has adopted the manic little manikin who usually burbles "Have a nice day."

"Two is enough" is the upbeat slogan of a dramatically successful family-planning program, which has halved population growth in 11 years. Its target: zero growth and a population of 3.5 million by the year 2030—which could still make Singapore the world's most densely packed nation.

"Three children would mean six million —a population disaster," says Dr. D. Irene Pakshong, executive secretary of the Family

Berth of a nation: *Ships lounge in Singapore's port, among the world's busiest and a center of rubber, spice, coffee, and rice trade. Nearby oil refineries snare Mideast*

Planning and Population Board, which concentrates on a hard-sell message: Small families have more money to spend. There are also harsh incentives. Fees for a third pregnancy jump by as much as a third in government hospitals. Parents cannot always select desirable schools for a third child.

Birth control is largely women's work. Twenty-one percent of them have been sterilized, compared to one percent of males; abortions, averaging 15,000 a year, have become a birth-control method of choice.

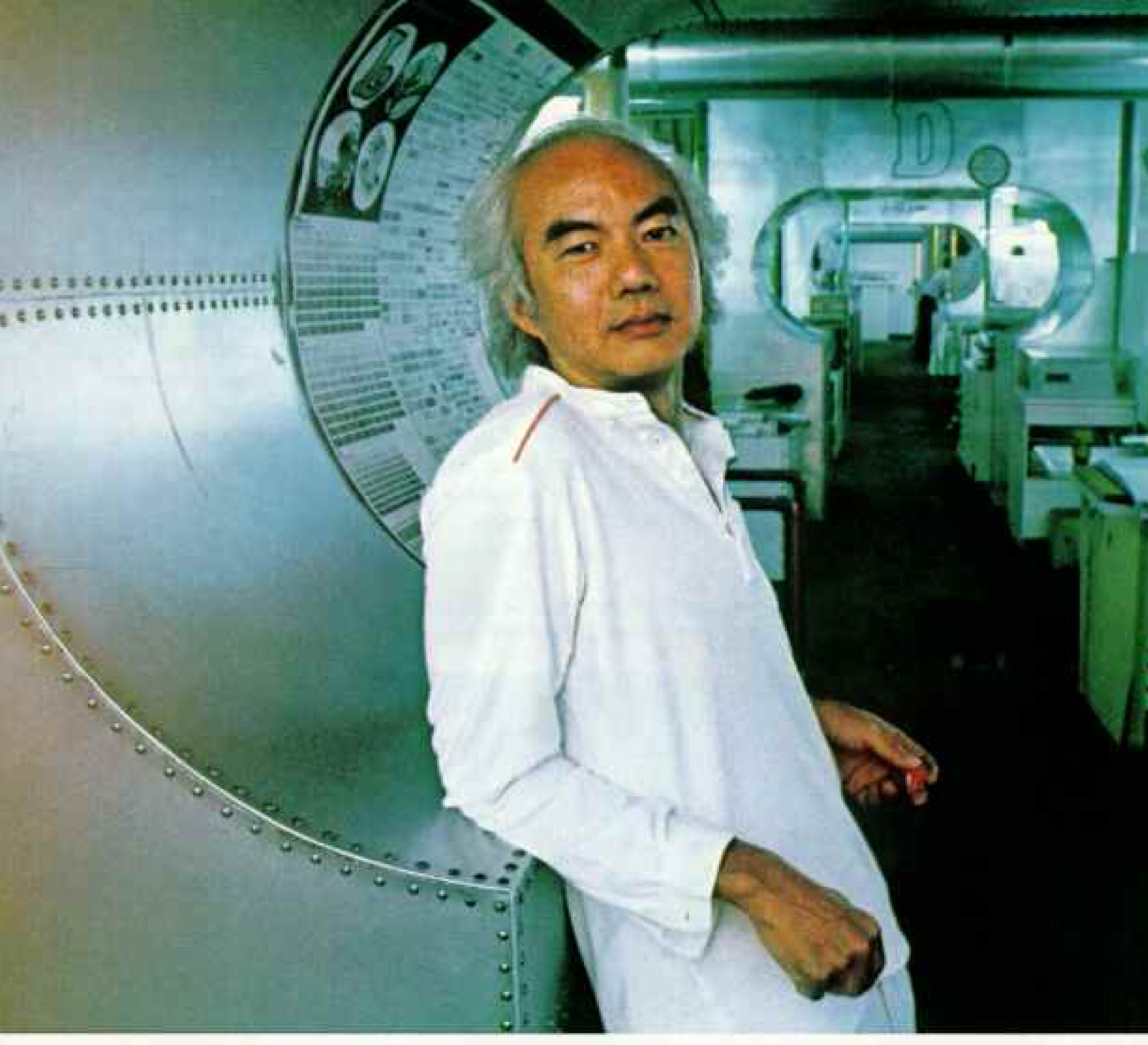
For many families the choice means an extra wage earner and paycheck, bigger apartments, and a share of the glittering array of luxury goods that draw millions of tourists to Singapore's duty-free shopping plazas.

Government leaders have begun criticizing the "ugly Singaporean," a materialist who—as one parliament member put it—wants "one wife, two children, a three-room flat, four wheels, and a five-figure salary."

And Lee Kuan Yew, who has engineered the new consumer society, decries its destructive effect on filial piety, the cornerstone of Chinese society for centuries.

"Filial piety means much more than raising dutiful children," a career woman told me. "Confucianism teaches that respectful children make obedient citizens—and in that regard, Lee Kuan Yew is a *very* Confucian man."

and Southeast Asian oil for processing. In the foreground, work proceeds on one of several land-reclamation projects that have added 13 square miles in 15 years.



"Will Singapore turn *into a nation of workaholics?" asks architect William Lim* **(above)**. *"Our obsession with economic development needs to change toward creativity." The*

My friend had been educated Chinese style at Singapore's Nanyang University, founded in 1956 by rich Chinese merchants who wanted to preserve old learning. Like most Chinese-educated Singaporeans I'd met, she was quick witted, caustic, and outspoken—a dramatic contrast to the blandness I'd found among Western-style bureaucrats and businessmen.

She dismissed a Western notion of Confucius as a quasi-comical author of fortune-cookie aphorisms. Indeed, she said, the 2,500-year-old philosophy of K'ung Fu-tzu, as he was called, has been political dynamite in China for centuries: "His ideas were beautiful. He dreamed of a serene and orderly world in which the mandarins were stern but benevolent fathers who earned the loyalty and obedience of their citizen children.

"But of course human nature doesn't work that way. Mandarins and landowners became corrupt—with help from British and American opium traders. Chinese peasants were powerless, ruled by warlords and empty-headed aristocrats.

"That's why the Chinese emigrated to Southeast Asia. That's why we supported revolutionaries on the mainland, including Mao Zedong—we could see the same corruption surviving under Chiang Kai-shek.

"People wonder why we're so obedient to Lee Kuan Yew. Well, we still have the

creative and commercial meld in the elegant Lucky Plaza shopping center (**above**), *where duty-free imports lure some of Singapore's annual flock of two million tourists.*

Confucian idea that those in authority have the mandate of heaven and must be obeyed—unless a successful revolution happens to provide a revised mandate."

Confucian precepts of paternalistic government are featured regularly in dutiful press accounts of Lee's programs.

"Action Plan to Instil Filial Piety" announced a program to give schoolchildren the moral values said to be lacking at home.

"Weed Out Industries That Use Manpower Poorly" declared a high-wage policy designed to force cheap-labor factories out of business. It makes employers contribute sums equal to 4 percent of their payroll to a Skills Development Fund.

"Rewarding the 'Plus' Performers" heralded a government-supported pay raise of 10.5 percent for hard workers, versus only 7.5 percent for the merely adequate.

Lee Kuan Yew stunned the academic community by annoucing that hundreds of foreign professors—as high as 60 percent of an expanded faculty—would be imported to boost education standards at the National University of Singapore.

In an hour-long tongue-lashing (entitled "Producing the Educated Man" by the morning *Straits Times*), he said he was abolishing the campus trade union since "there is no place for petty xenophobics and little empire builders." The National University

would absorb the Chinese-language Nanyang University, whose students weren't proficient enough in English. Henceforth arts and humanities would take a backseat to technical and professional education.

Afterward education minister Dr. Tony Tan provided the bottom line: "It is a wishful academic myth to believe that students enter the university seeking to be taught how to think critically and independently. They must worry about making a living."

In a follow-up story headlined "An Air of Uneasy Silence on Campus," the *Straits Times* could mention only the anonymous grinding of academic teeth. Even that mild criticism was considered daring. Singapore's editors are poignantly aware that Lee Kuan Yew has abolished at least two newspapers for breaches of his standards of political faith and morals. But in private, many Singaporeans are more outspoken.

"The sort of university the government is talking about is designed to produce economic digits, not the educated man," fumes architect William Lim, whose Ivy League hackles rise at the thought of an urban environment produced by engineers with little feeling for human dimensions.

Chafing in a Political Straitjacket

Mr. Lim represents the growing but largely unpublicized feeling among many Singaporeans that authoritarian planning and government have served their purpose, and that Singapore must come of age.

Most outspoken is Cornell-trained Dr. Chan Heng Chee of the university political science department, who warns that a growing political apathy could be more dangerous to Singapore than political dissent.

"Politics in Singapore is regarded as a risky and above all unprofitable involvement," she says. "We have become a petitionary society. We should allow more bargaining, but we don't. The great danger is that the second generation of leaders will not be able to deal with the changing politics of Southeast Asia because they have had no political experience at home."

I liked best a commentary written by a young newspaper friend of mine named Nancy Chng. It appeared in the *Straits Times* on National Day, a time usually reserved for sturdy rhetoric, and it caused a sensation in the big village of Singapore.

"There is no point in any leader harping on the fact that the new generation will be soft and to lament that we have not gone through the painful but rewarding struggle for national independence," she wrote. "There's a higher goal that we should keep in mind, that beyond the national boundaries there are responsibilities that we as human beings need to cultivate."

Like most young Singaporeans, she's acutely aware of the pall of suffering and death that still hangs over much of Southeast Asia after three decades of ideological war—aware that prosperity in today's world should be coupled with conscience.

Part of that awareness stems from the knowledge that her 79-year-old father arrived as a 12-year-old refugee from Swatow (Shantou) in 1915. For him, Singapore was a land of opportunity.

Today's refugees must go farther afield. Shortly before I left Singapore, I visited an old British Navy compound jammed with 3,000 Vietnamese and Cambodian boat people. Singapore's government allows them to land only if they are guaranteed a home by another country. Many of them, I learned, are overseas Chinese.

"I thought I would find a welcome from my relatives here," one of them told me. "But I must go to Germany instead. We are not people any more—just a political problem." I mentioned this to a young Singaporean volunteer worker, who was struggling with a mountain of government forms.

"This is all I can do to help," he said. "I think we should be doing more. It's not enough just to be prosperous. We must ask what our prosperity should be about." □

A blue-jean Sunday *slips by a young couple on nearby Sentosa Island. Youth remains Singapore's most bankable asset. Education stresses earning a living. Nearly all students attend classes in English, the language of commerce, though the government pushes study in Mandarin, Tamil, and Malay—languages of tradition. Western educated, but Asia oriented, Singapore hopes to keep a healthy, prosperous balance between both.*

CATHAY PACIFIC

The Changeless

By ANNE and JACK RUDLOE Photographs

WHEN SPRING COMES to the Atlantic coast, you can see them lying at the water's edge: strange dark creatures resembling horse hooves with sharp tails. First sight often brings a cry: "What on earth are those?"

Horseshoe crabs, of course—but the reply is not wholly accurate. Despite their popular name, these arthropods are not true crabs but are more closely related to spiders, scorpions, and ticks. Paleontologists refer to these triumphs of survival as living fossils, for their appearance has changed little since Devonian times some 360 million years ago.

They have watched continents shift and mountains rise from the sea. They were ancient when dinosaurs first roamed the earth. Only a few other animals, such as the cockroach and the coelacanth, a rare Indian Ocean fish, have carried on virtually unchanged from their prehistoric forebears.

Another favored question of the first-time

Horseshoe Crab

by ROBERT F. SISSON NATIONAL GEOGRAPHIC NATURAL SCIENCE PHOTOGRAPHER

observer: "Are they good to eat?" The answer from most people who have tried is "No." Still, horseshoe crab remains have been found in the kitchen middens of long-departed coastal Indians. The Indians of Roanoke Island, North Carolina, were tipping their fish spears with horseshoe crab tails when English settlers established their ill-starred Lost Colony in 1587. For years, spreading ground-up crabs on fields as fertilizer was common, and some

Primeval face *basically unchanged for 360 million years is presented by an inch-wide juvenile horseshoe crab* ***(above)****. In an awesome spectacle, adults teem on a Delaware Bay beach during spring mating, spawning an egg feast for laughing gulls* ***(following pages)****. For mankind, study of the crab's blood and eye functions has led to medical breakthroughs.*

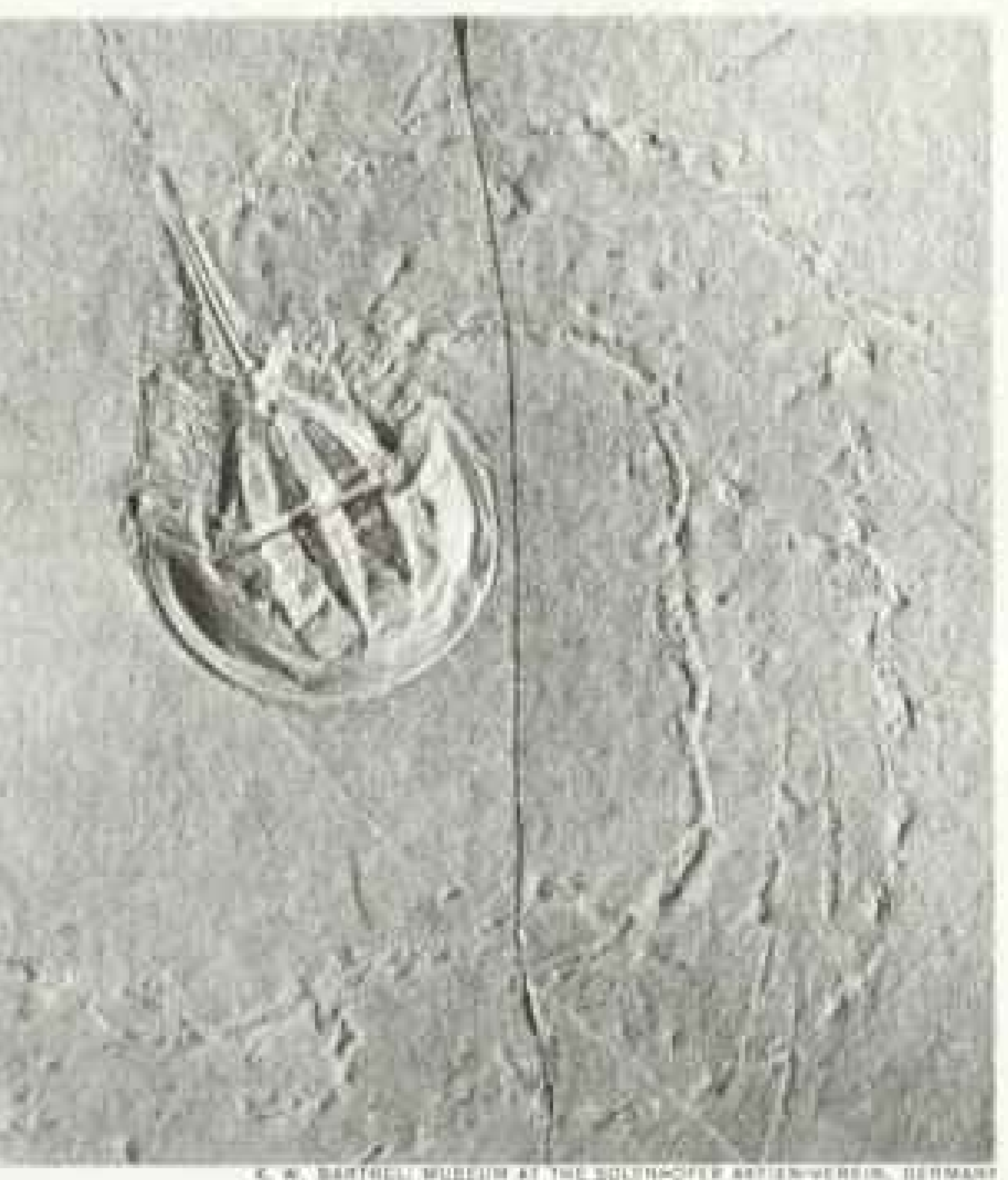
tidewater farmers still follow the practice.

Once there were many species of horseshoe crabs, but only four survive. Three species range along the shores of Southeast Asia and nearby islands. Their American cousins populate the Atlantic coast intermittently from Maine to Yucatán.

Many commercial fishermen of Chesapeake Bay and other areas, cashing in on the new business of airfreighting live eels to Europe and the Far East, bait their traps with horseshoe crabs. Other watermen view them as pests, accusing them of devouring soft-shell clams and young mussels.

But medical science has found these humble animals to be valuable allies. Researchers from the Johns Hopkins University Medical School made an important discovery in 1964. Working at Woods Hole Marine Biological Laboratory in Massachusetts, they found that horseshoe crab blood clots when exposed to endotoxins, chemical poisons released from some bacteria. Such clotting can be used as an alarm signal when testing substances intended for human internal use.

Each year thousands of horseshoe crabs are harvested and hauled alive to pharmaceutical laboratories, where they donate some of their blood to benefit humans.



K. W. BARTHEL; MUSEUM AT THE SOLNHOFER AKTIEN-VEREIN, GERMANY

Death tracks spiral *from a horseshoe crab fossil—some 145 million years old—found in German limestone. From seas that once covered Europe, the animals dispersed to Asia and North America.*

Crab Extract Tests Medical Safety

Gathering material for a doctoral thesis on horseshoe crabs, I journeyed many hundreds of miles with my husband, Jack, from our Gulf coast home at Panacea, Florida, to the chill waters of Maine.

One stop was in South Carolina, where we visited a field station run by Travenol Laboratories, Inc., makers of such health-care products as kidney dialyzers, transfusion sets, and intravenous solutions. Dr. Fred Pearson, a company executive, told us his firm uses an extract made from crab blood cells in a coagulation test to check for the presence of endotoxins.

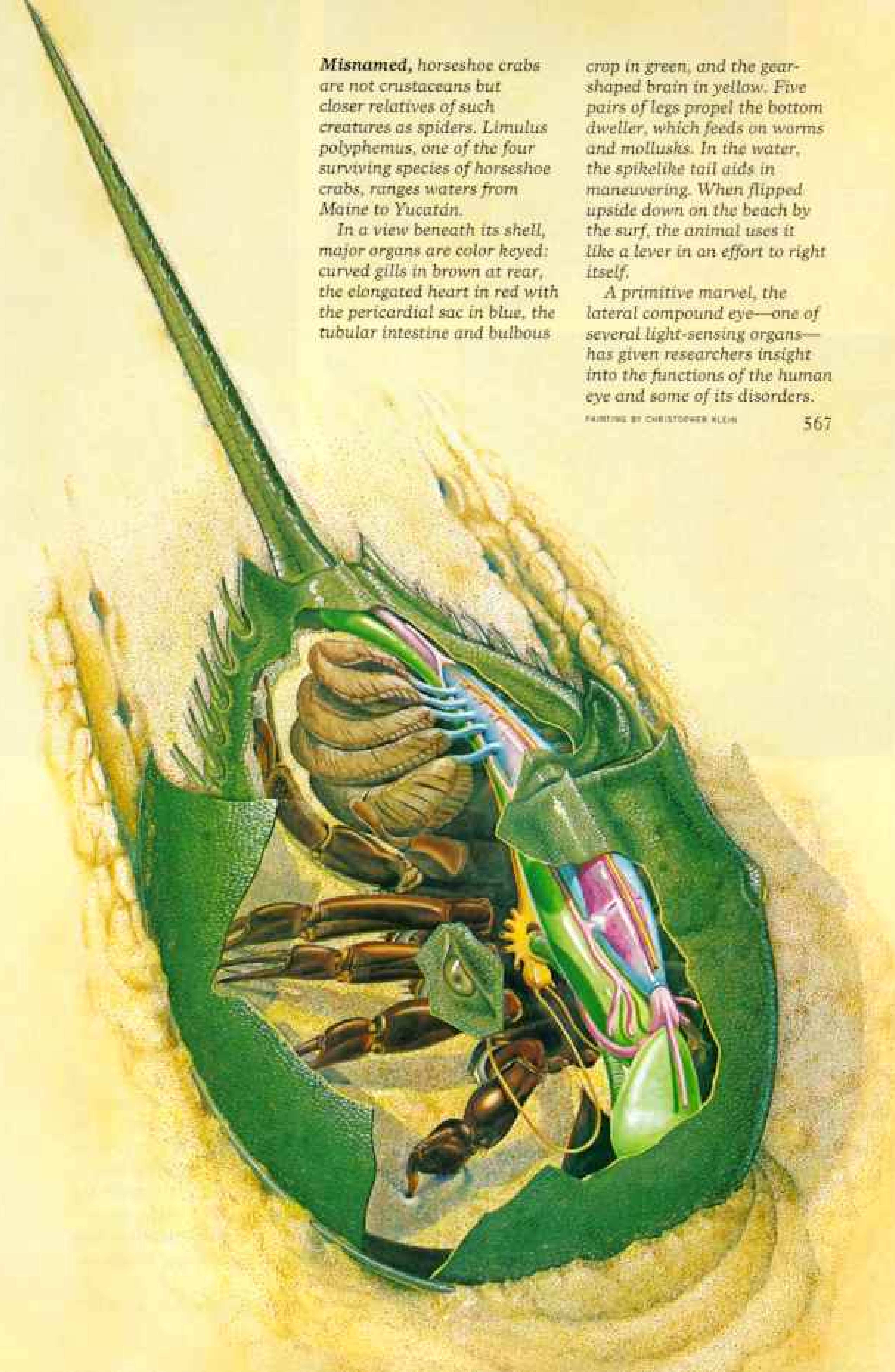
"Anything we manufacture that will be put into the human body must be certified safe before we can sell it," Dr. Pearson said. "This test is also being used experimentally to diagnose meningitis."

Aboard a shrimp trawler in Port Royal Sound on a Travenol collecting trip, we watched the nets bring up dozens of big horseshoe crabs, some weighing ten pounds.

Back on shore, technicians extracted cloudy white blood from the crabs and bottled it. Exposure to air turned the blood a bluish color. The blue comes from hemocyanin, a copper-based molecule that carries oxygen throughout the crab's circulatory system. The crabs were then returned to the sea, apparently unharmed.

In another area of medical research—the human eye, its functions, its failings—horseshoe crabs play an equally important role. Scientists named the American horseshoe crab *Limulus polyphemus* after the one-eyed giant of Greek myth. *Limulus* (meaning "sidelong") actually has nine eyes: one oval lateral eye on each side of its shell, two small ones in the center, and five light-receptive organs beneath its shell.

With this elaborate equipment the crab forms a crude image of its undersea world. Although light may serve to guide movements, the exact role of the visual system



Misnamed, *horseshoe crabs are not crustaceans but closer relatives of such creatures as spiders. Limulus polyphemus, one of the four surviving species of horseshoe crabs, ranges waters from Maine to Yucatán.*

In a view beneath its shell, major organs are color keyed: curved gills in brown at rear, the elongated heart in red with the pericardial sac in blue, the tubular intestine and bulbous crop in green, and the gear-shaped brain in yellow. Five pairs of legs propel the bottom dweller, which feeds on worms and mollusks. In the water, the spikelike tail aids in maneuvering. When flipped upside down on the beach by the surf, the animal uses it like a lever in an effort to right itself.

A primitive marvel, the lateral compound eye—one of several light-sensing organs—has given researchers insight into the functions of the human eye and some of its disorders.

PAINTING BY CHRISTOPHER KLEIN

Peak spring tides *signal mating time as the crabs move in from the depths. Males, which are smaller, restlessly patrol the shallows and give chase as outnumbered females break through the "stag line." With modified claws, the males grasp them and are towed ashore.*

There, chaos ensues. A squadron of suitors vie to fertilize the eggs of a lone female partly buried in their midst on a Florida beach ***(above)****. Some of the eggs, dislodged as she begins to heave upward from the shallow nest, rest atop her shell. Moving with the tide, the crabs spawn repeatedly.*

Predators like laughing gulls ***(above right)*** *gorge on eggs washed free by the surf. But the sand protects thousands more* ***(top)****, most timed to hatch in a few weeks, when another flood tide will help rupture the eggs and carry the young to sea.*

in the animal's behavior remains unknown.

For more than 50 years the lateral eye of the horseshoe crab has been studied. By recording electrical impulses from the crab's optic nerve, Dr. H. Keffer Hartline of Rockefeller University discovered many principles underlying the functioning of all visual systems. For his pioneering work with *Limulus*, he shared a 1967 Nobel prize.

Syracuse University's Dr. Robert Barlow continues the retired Dr. Hartline's work in his mentor's old lab at Woods Hole.

"More is known about the lateral eye of the horseshoe crab than any other sensory system in any animal," he declared. "The simple organization of the crab's eye, compared to a cat or human eye, makes it easy to record and analyze the electrical signals the eye uses to send information to the brain."

Dr. Barlow gave us a demonstration that seemed, in its bizarre fashion, to bridge the

eons from primordial darkness to space-age technology. Fastened to a platform was a live horseshoe crab. Part of its shell had been cut away to expose the white, stringy optic nerve leading from a large, multifaceted eye to the brain. Electrodes connected the crab to a computer, an oscilloscope, and other electronic gear. As Dr. Barlow adjusted controls, the images of nerve impulses flickered across the screen.

"This kind of research with *Limulus*," said Dr. Barlow, "has provided important insight into how the human eye perceives lines, borders, and contrasts. These patterns of light sensitivity, as recorded in this manner, have also guided our research in such eye diseases as retinitis pigmentosa, which causes tunnel vision and can lead to total blindness."

During the horseshoe crab breeding season we visited Rutgers University's oyster research station north of Cape May, New Jersey, where Delaware Bay meets the Atlantic. "This bay has probably the largest population of horseshoe crabs on the Atlantic coast," marine biologist Dr. Carl Shuster told us as we followed him down the beach. "At Cape Cod and other places to the north, you find them by the thousands, here by the hundreds of thousands."

As far as we could see, the beach teemed with crabs intent on breeding. Flocks of screaming gulls wheeled in the bright June sky, swooping down to seize jellylike crab eggs exposed by the tide. Waves of sandpipers ran before us, joining in the feast.

As ebb tide began, the females thrust themselves out of the sand and dragged their tenaciously attached males back into the surf. They would move only a short distance from shore to wait 12 hours for the next high tide, then reemerge to lay more eggs. Soon

Like crystal balls *a mere three millimeters in diameter, translucent eggs showcase developing crab embryos* (**left**)*. A newly hatched larva, nurtured by retaining part of its egg yolk, shows the nub of a tail* (**below**)*.*

Successive molts pace growth. Often mistaken by beachcombers for the animal itself, the shell splits around the front rim, and the crab, compressed within, walks out and expands about 25 percent (**bottom**)*. Molting slows with age, making this crusty old crab* (**below**) *a more permanent home for snails and barnacles.*

the beach was empty except for a few hundred stranded crabs lying on their domed backs, twitching their spidery legs and trying to right themselves with their swordlike tails, or telsons.

In the spring, when the horseshoe crabs head for the beach to spawn, the male clutches the larger, egg-laden female with his fistlike grasping claws. When they reach the water's edge the female digs in to lay her eggs while the waves foam about them.

As many as a dozen males may jostle around the mating pair, each seeking to couple with the female and spread his white sperm as she deposits thousands of tiny gray-green eggs in sticky clusters. Possibly only the first male to reach a female succeeds in fertilizing her eggs.

By spawning and burying her eggs at full and new moons, the times when maximum gravitational pulls cause especially high tides, the female protects her progeny. Some mysterious instinct brings her to the beach at those times, and for two weeks the water will not reach the nests again.

The embryos develop in one of the harshest of all marine environments, their sand-covered nests enabling them to withstand broiling heat and torrential rains. By midsummer on the Florida Gulf coast, almost anywhere we dug along the high-tide line, we found nests filled with half-developed eggs or tailless hatchlings only an eighth of an inch wide.

Not even the most vicious storms can destroy these ancient, persistent creatures. When a fierce summer squall struck the breeding ground near our home, Jack and I rushed down to the beach where pounding waves scoured away the protective sand.

Tank tread seems to furrow a Florida beach as a horseshoe crab returns to the sea (**below**). *Stranded at low tide, it plows a bow wave of sand while digging in to escape the sun's heat* (**above**). *Virtually inedible, condemned for feeding on clams, ground up for fertilizer, and crushed for eel bait, these living fossils still seem well armored against extinction.*

Thunder crashed as I waded through the surf, struggling to pull a small plankton net.

A giant graybeard of a wave rushed in at eye level, knocked me down, and nearly snatched the net from my hand. Exhausted, I struggled ashore in the driving rain and crouched behind a fallen tree where Jack washed the contents of my net into a bucket.

There in the floating seaweed, swarming like bees, were several thousand hatchlings swimming in dizzying spirals. As we suspected, the surf was full of baby horseshoe crabs riding the waves to freedom.

Release of hatchlings by storm action is the exception. Larval escape from nest to sea normally takes place in relatively calm waters by night, when the moon is full and succeeding high spring tides cover the nests and soak gently into the sand. Crawling and kicking, untold millions of larvae make their way to the surface and are returned to the ocean with the receding waves.

Despite Odds, These Ancients Survive

Feeble swimmers, adult horseshoe crabs walk on the ocean bottom, moving with the tides to and from the beaches. On shore their legs carry them laboriously across the sand. Jack and I checked their movements by affixing numbered plastic tags to their shells. Cooperative beachcombers who found the tagged crabs notified us of time and location. Our data indicate that most Florida crabs never travel more than four miles from their spawning place.

By the time they are adults, horseshoe crabs commonly exceed two feet in length. They have few natural predators. Loggerhead turtles rip through their legs and tear out their flapping gills. Forty crabs were once found in the stomach of a 12-foot tiger shark caught off Sarasota, Florida. Otherwise, man is without a doubt their worst enemy—destroying their habitat, polluting their waters, using them as fertilizer and eel bait, and often just mindlessly crushing the crabs he finds on beaches.

Still, considering its history and its high rate of reproduction, *Limulus polyphemus* will very likely survive, waiting patiently until our bones join those of the woolly mastodons, dinosaurs, and other creatures that once strutted their time upon the earth and then were seen no more. □

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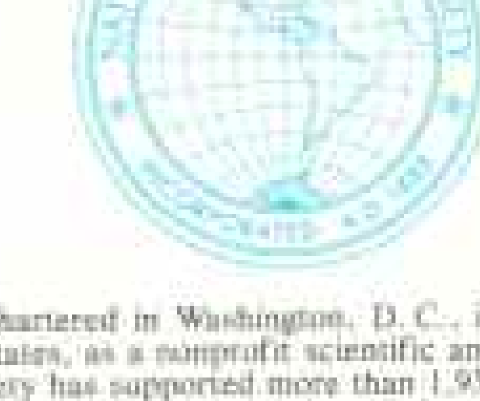

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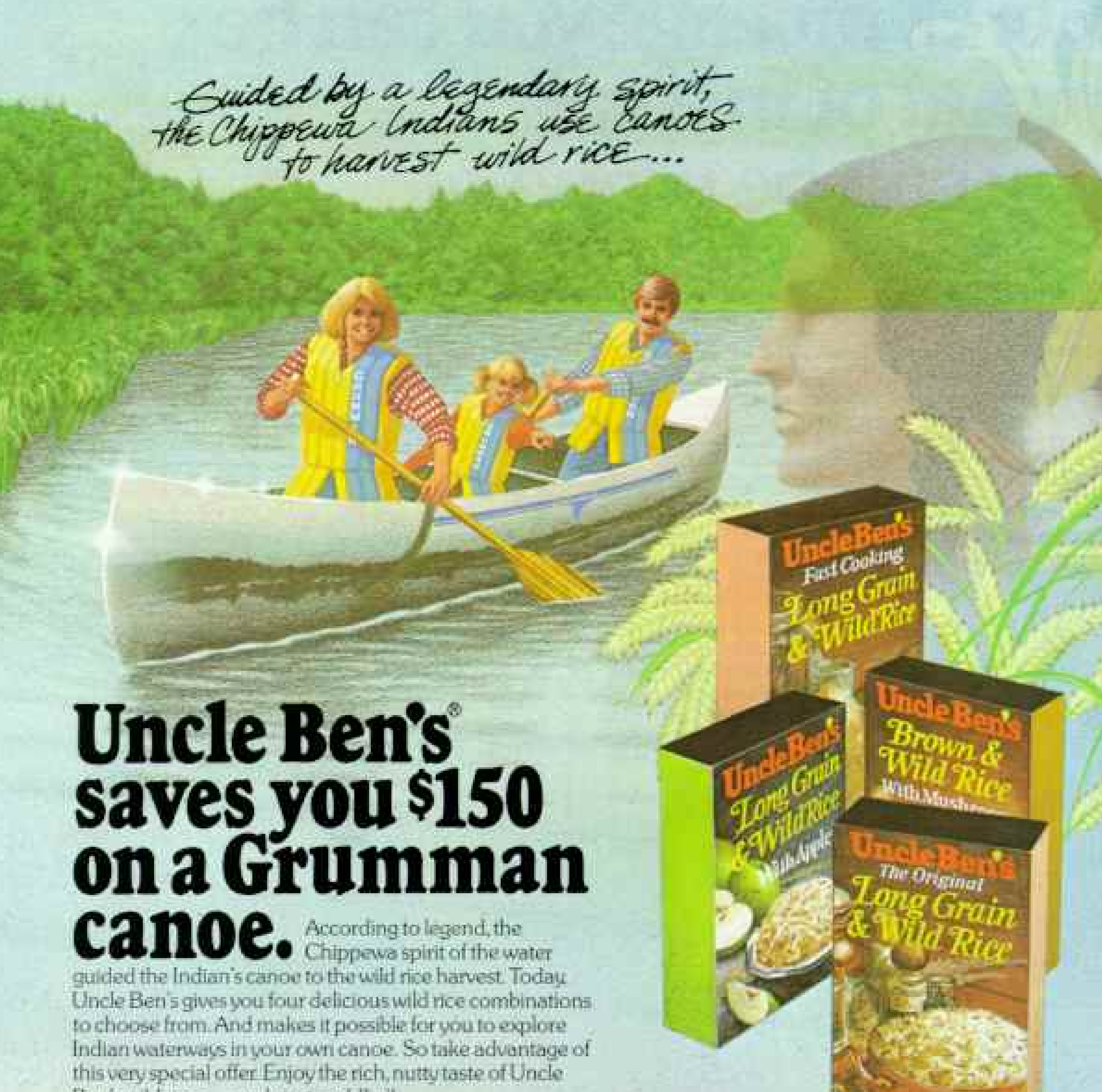

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Coming into Saturn's orbit

THE KEY elements of a GEOGRAPHIC article, from research to illustrations, were represented in person at California's Jet Propulsion Laboratory as Voyager 1 rendezvoused with Saturn (**left**). The GEOGRAPHIC team—(**top**, from left) article researcher Lesley Rogers, writers David Jeffery and Rick Gore, photographer James Sugar, art researcher Ross Emerson, and illustrations editor Elie Rogers—kept up with the encounter hourly and have since continued sifting the latest scientific results to bring a chronicle of discovery to a coming issue. Share this space odyssey; nominate friends for membership below.

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Play a record. Play a cassette. Play the tuner. Any way you play it, it's Mitsubishi.

The vertical *linear-track* turntable allows the X-10 to sit on a small bookshelf. It needs only 10" of shelf depth.

And we've integrated an AM/FM stereo tuner and cassette deck.

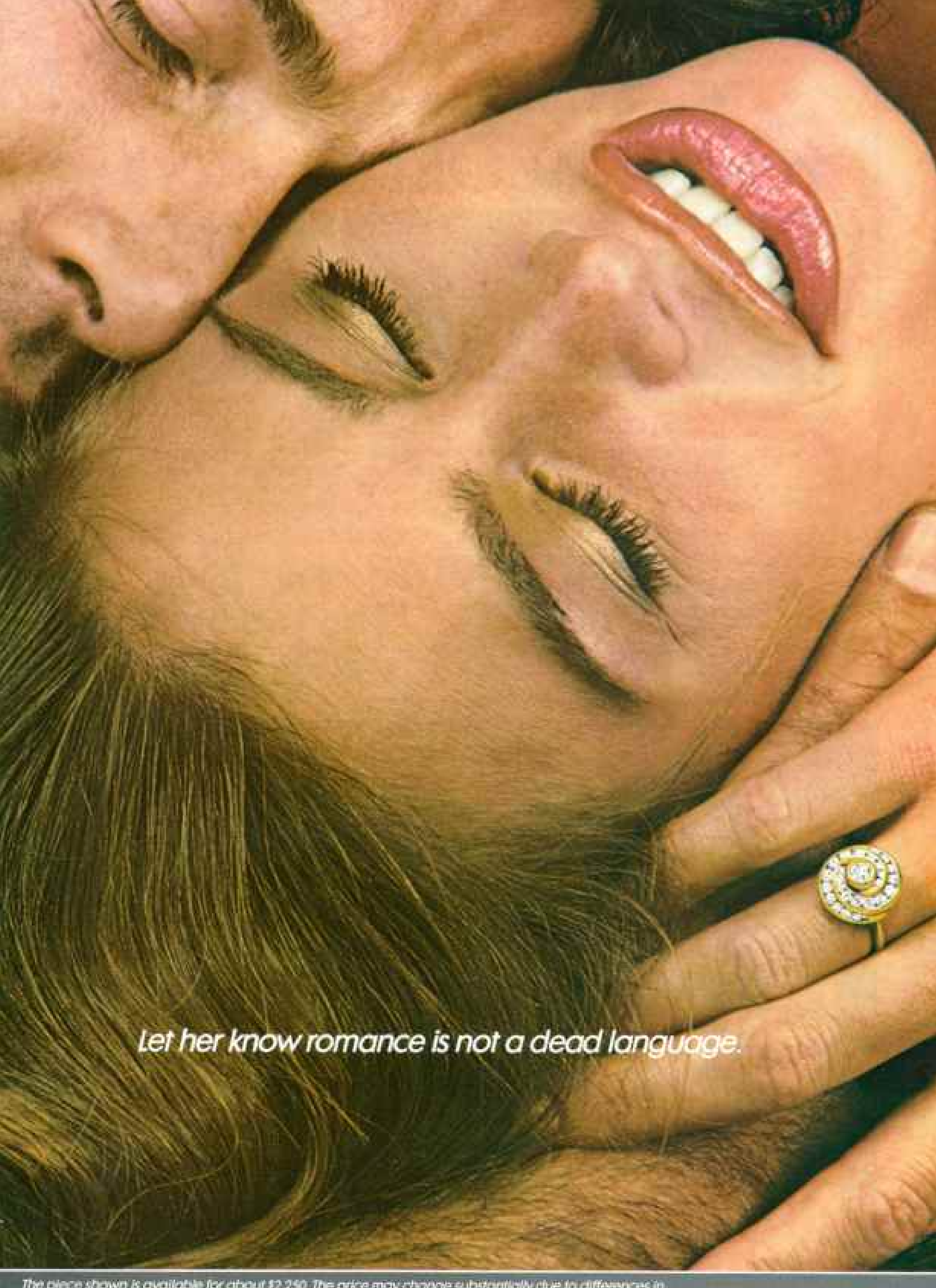
Hook up the speakers, plug it in, and turn it on. The InterPlay X-10 is stereo at its upright best.

For your nearest dealer, call toll-free (800) 447-2882 or in Illinois, (800) 322-4400 and ask for operator X-10.

Shown here with optional CX-10 Cabinet and SX-10 Loudspeakers

MGA/MITSUBISHI

MITSUBISHI ELECTRIC SALES AMERICA, INC. 3010 E. Victoria St., Compton, Ca. 90221



The piece shown is available for about $2,250. The price may change substantially due to differences in diamond quality and market conditions. Your jeweler can show you other diamond gifts starting at about $450.

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Georgia Department of Industry & Trade, Tourist Division
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"When it comes to cleaning air, I'll match this Bethlehem 'dust catcher' against any in the steel industry."

Baghouses operate like giant vacuum cleaners. Huge fans pull the dust-laden air through filter bags. The 5,000 bags hanging in No. 2 baghouse, each a foot in diameter and 33 feet long, filter 1,600,000 cubic feet of air every minute. The bags are shaken periodically, causing the particles trapped in the bags to fall into bins. The particles are then collected, pelletized, and disposed of on a plant-site landfill.

Tom McAuliffe is a combustion engineer at Bethlehem's Steelton, Pa., plant.

"Back in the sixties," says Tom, "the plant changed over to electric furnaces and immediately installed its first baghouse. That \$2½ million system still collects about 85 percent of the emissions generated by the steelmaking operation.

"But in the early seventies, the EPA came up with tougher clean-air targets. And that's when we added No. 2 baghouse, which we built 'top of the line.'

"The original baghouse collects the particles in the air that's pulled out of the furnaces. No. 2 baghouse collects the particles that escape when the furnace cover is off, or that leak out through the cover from the spaces around the electrodes.

Five times as much money to collect one-sixth as much dust

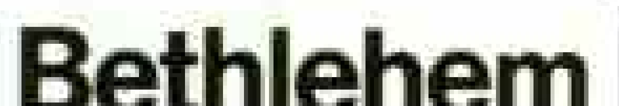
"No. 2 baghouse cost about five times what No. 1 cost—\$13 million versus \$2½ million. It's six times larger and pulls six times more air through its bags every minute. But in all that air there's only one-sixth the amount of dust that's in the air cleaned by No. 1."

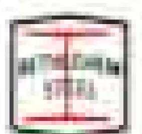
Bethlehem's commitment: To do what is necessary to protect public health

We are actively engaged in taking the appropriate steps to control pollution at our plants, mines, quarries, shipyards and other facilities. We've made substantial progress and now control more than 95% of our major air and water pollutants.

In our view, before new and tighter environmental regulations are implemented or proposed, our nation should stop... carefully assess the situation ...review our accomplishments ...and ask how much additional clean-up is necessary, practical and affordable.

Our position is clearly explained in our booklet, *Steelmaking and the Environment,* which includes our *Statement on Environmental Quality Control.* If you would like a copy, write: Public Affairs Dept., Room 476 MT, Bethlehem Steel Corp., Bethlehem, PA 18016.





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Isn't it time to give a real tax break to savers?

On the average, Britons save 13% of their disposable income. West Germans save 15%. Japanese, 26%. But Americans save only 5.5%!

A major reason people in other nations save more is that they are given tax incentives by their governments.

The U.S. actually discourages savings, by taxing the interest that is earned.

Isn't it time Congress gave savers a real tax incentive? We think the annual tax-free limit on savings interest should be raised to $1,000 for individuals and $2,000 for joint tax returns.

This would encourage more savings, which would help stabilize the economy and bring inflation under control.

What do you think? Please fill out the ballot, and let us know. If the ballot has already been removed from this page, you can still vote at your nearby Savings and Loan Association.

If we all speak up, Washington will listen.

The Savings & Loan Foundation

BALLOT

Question: Should the first $1,000-$2,000* of interest on your savings be tax-free?

*$1,000 for individuals, $2,000 for joint tax returns.

Yes No

Please fill out this ballot and drop in the ballot box in your nearby Savings and Loan office, or mail to The Savings and Loan Foundation, Inc., Dept. G3, P.O. Box 461, Washington, D.C. 20044

Name ______

Address ______

City ______ State ______ Zip ______

If we all speak up, Washington will listen.

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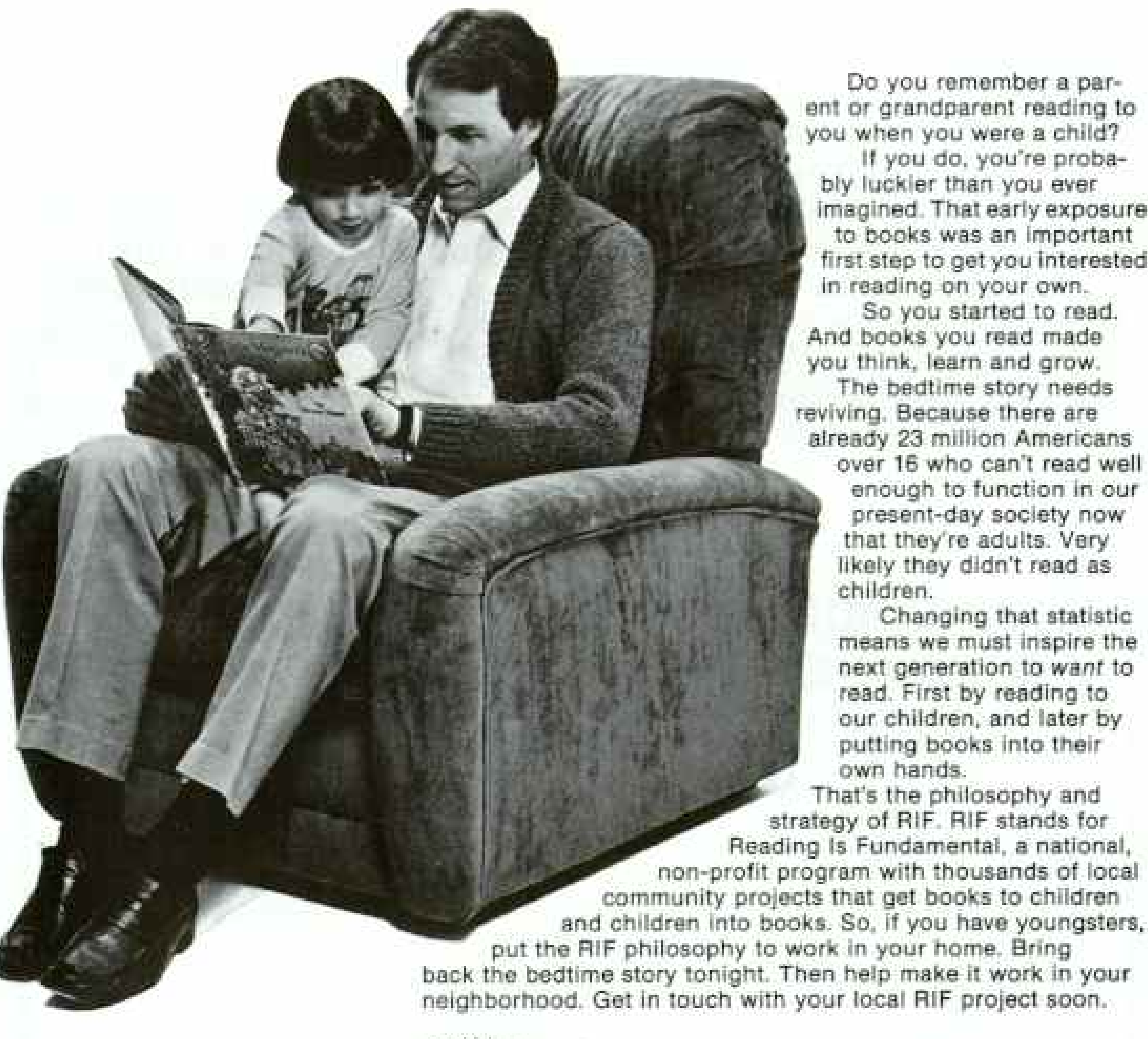
Bring back the bedtime story.



Do you remember a parent or grandparent reading to you when you were a child?

If you do, you're probably luckier than you ever imagined. That early exposure to books was an important first step to get you interested in reading on your own.

So you started to read. And books you read made you think, learn and grow.

The bedtime story needs reviving. Because there are already 23 million Americans over 16 who can't read well enough to function in our present-day society now that they're adults. Very likely they didn't read as children.

Changing that statistic means we must inspire the next generation to *want* to read. First by reading to our children, and later by putting books into their own hands.

That's the philosophy and strategy of RIF. RIF stands for Reading Is Fundamental, a national, non-profit program with thousands of local community projects that get books to children and children into books. So, if you have youngsters, put the RIF philosophy to work in your home. Bring back the bedtime story tonight. Then help make it work in your neighborhood. Get in touch with your local RIF project soon.

Reading Is Fundamental
Box 23444
Washington, D.C. 20024

This is a public service message on behalf of Reading Is Fundamental and this magazine.

SUPER AVILYN:

So your videodeck won't pay for the sins of your videotape.

On the surface, videotape is the picture of innocence. But if its microscopic oxide particles and binder are not of the highest quality, loose oxide particles may shed into the works of your videodeck. And oxide shedding has been the downfall of a good many videodecks.

Super Avilyn is different. It's a super-refined videotape especially developed by TDK. Super Avilyn particles are virtually inseparable from their strong binder. They stick to the tape as your videoheads spin at 1800 rpm. Pictures stay faithful to the original. Virtually no drop outs or color loss. Brilliance and crispness from beginning to end. Even during six-hour play, when the tape moves at a bare .43 inches per second.

Before we told you all this, you could have innocently hurt your deck. Now that you know all about Super Avilyn, it would be a sin to use anything else.

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George, Jr., Mrs. Lang, Maryelizabeth, Mr. Lang.

"A working mother's best friend is her Maytag," writes Mrs. Lang.

Between her family and her job, who has the time to wait around for repairmen?

"Thank you for making a washer a working housewife and mother can count on," writes Mrs. Nancy Lang, Hampton Bays, New York.

"11 years ago, I purchased a Maytag. It wasn't till just this past spring that it needed its first repair."

Mrs. Lang knows from experience that Maytag Washers are built to last longer and save you money with fewer repairs. She also knows that they can save you the hassle of waiting around for repairmen.

Mrs. Lang adds that she is also delighted with her Maytag Dryer. "As for my Maytag Dishwasher, I would be lost without it," she concludes.

Of course, we don't say all Maytags will equal that record. But long life with few repairs is what we try to build into every Maytag product.

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The Maytag Company, Newton, Iowa 50208

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And the window sash is *completely* enclosed in vinyl. So it's stronger and more sturdy. Easier for your family to open, close—live with.

The Perma-Shield casement is available in white or the earth color, Terratone. Both are virtually maintenance-free. If the rain doesn't clean them a damp sponge will.

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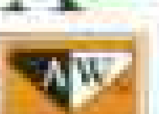

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There are those who say this country is in the autumn of its time. That we have lost our pride, and quality no longer is a way of life.

Whirlpool disagrees.

As a maker of home appliances, we believe that pride and quality are so much a part of this country's heritage we must be true to them in everything we make.

Whirlpool believes that this is not the onset of winter but the advent of spring.

A new beginning, where quality will once again become a way of life for everyone.

For people who lead the good life. A car that leads the simple life.

Over the past few years, luxury cars have changed. From showy to simple understated elegance.

The Honda Accord LX has always been a simple statement of commonsense luxury. Year after year.

INSIDE. SIMPLY LUXURIOUS.

Sit inside the roomy Accord LX, and

you'll find thoughtful extra touches everywhere. From the instrument panel with its air conditioner, quartz digital clock, low fuel warning light and tachometer, to the hatch. With its tonneau cover.

Luxury quality seat fabric and carpeting add to your comfort. Little extras like a remote control outside mirror make you feel pampered. And a remote hatch release is another standard luxury.

SOME SIMPLE ENGINEERING FACTS.

Variable-assist power steering provides the Accord LX with the feel of a luxury car. As does four-wheel independent suspension. Michelin steel-belted radial tires. And an optional 3-speed automatic. Of course, every Honda sold in the U.S. has always had front-wheel drive.

DURABILITY MAKES THE GOOD LIFE A LONG LIFE.

The Accord LX is built to give years of reliable performance. That's one reason why its resale value has remained so high.

Not that you'll be anxious to sell. After all, the Honda Accord LX really makes the good life simple.

HONDA

We make it simple.

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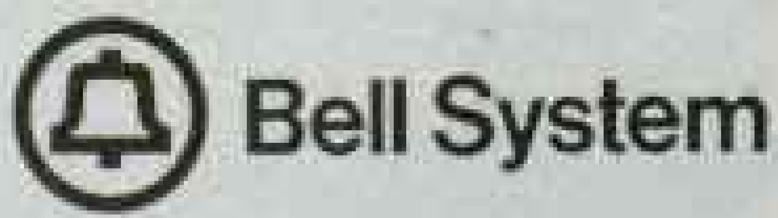
Man about town.

Forrest Walling is a customer service supervisor for complex business equipment, like the Dimension® PBX, for Southwestern Bell. After more than eleven years of supervising his crew's work around town, he's built a special kind of rapport with all his customers. To them, Forrest says, he's the Bell System:

"All the customers ever see are my installers and the work we do out there. It's how my people react that has a bearing on how they feel about the phone company. If we tell them that we're going to try to do something, we've got to go all out to do it. That's what we've got, really, service. It's something that you take pride in and that sure makes a difference.

"I still drive by pole lines I put up as a lineman—25 years ago—and the copper doesn't shine like it did then, but if you see it, it's pretty, it's pretty. That's mine. I get satisfaction out of the services I perform, out of providing something that the people really need. I'm proud of my job—and I know everybody in my crew is too. We provide good service."

People: the character of a company.



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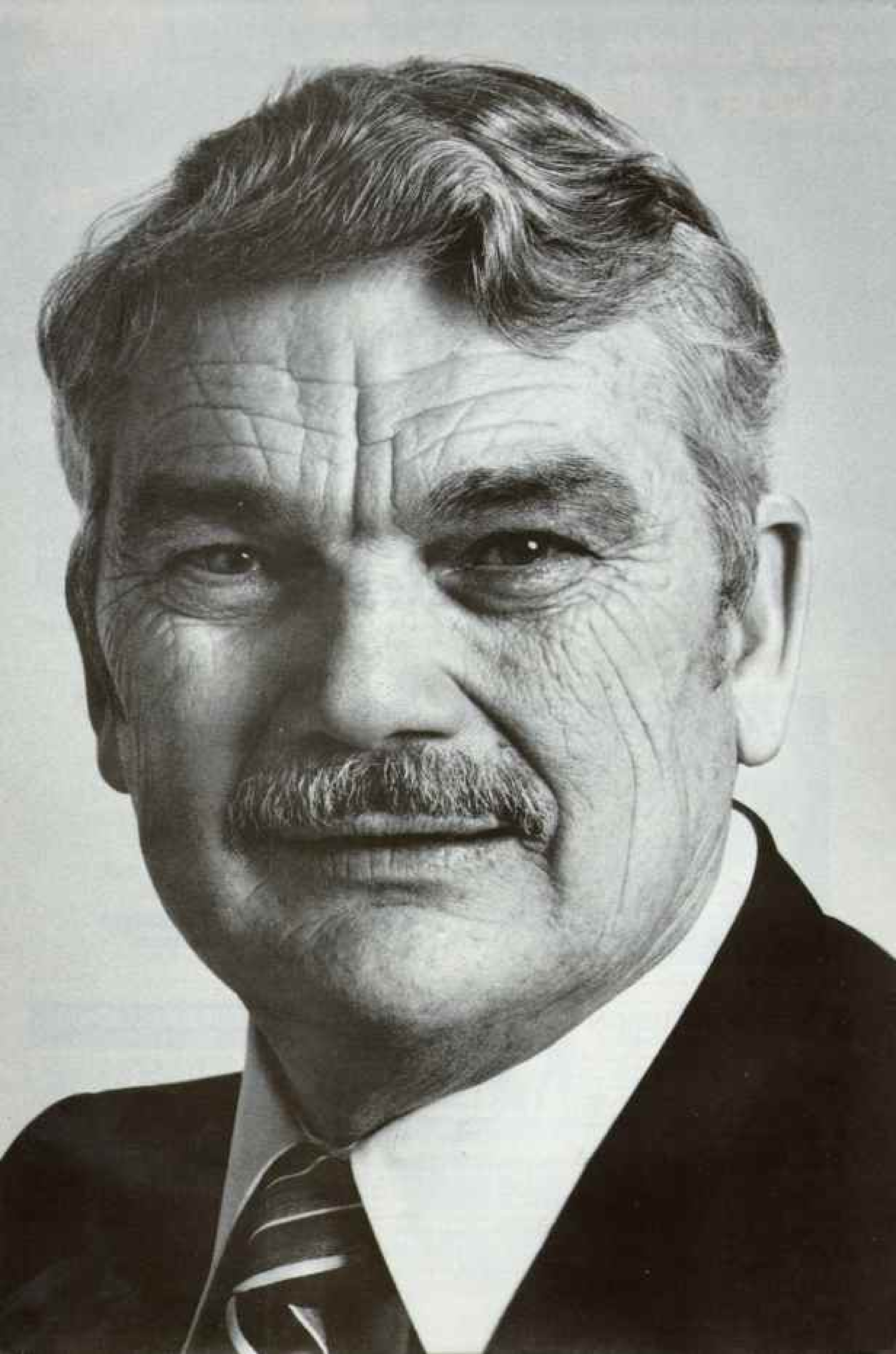

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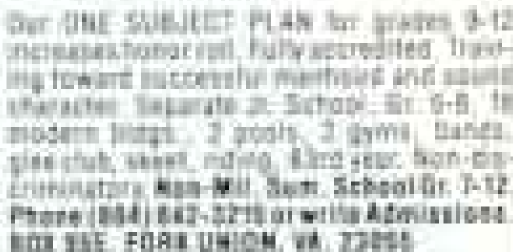

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*Use estimated MPG for comparisons. Your mileage may differ depending on speed, distance, weather. Actual highway mileage lower. Estimates differ in Calif. Chevrolets are equipped with GM-built engines produced by various divisions. See your dealer for details.

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Chevrolet

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