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COMMUNITY INVOLVEMENT

IN

URBAN TREE PLANTING

by

Andy and Katie Lipkis

President and Vice President

TreePeople

January, 1990

collecting and recycling litter and garbage and sweeping the sidewalks...even painting out graffiti.

On another day, students are making preparations for future forests that will shelter their schools and surrounding communities. Working with neighbors and local businesspeople, they survey streets, parking lots and open spaces to determine the number and species of trees required to form a green canopy. They receive guidance from city foresters and planners, ultimately gathering the whole community to shape their collective dreams into action plans. They collect funds, materials and supplies to plant seeds, then transplant seedlings and raise thousands of trees in nurseries built in school yards. Students spend a portion of every day working in the nursery and caring for the larger trees they've planted around their campus and community.

Down the road at the shoe warehouse, employees, on company time before the lunch break, are pruning and weeding the trees they planted eighteen months ago around their parking lot. Some of the faster growing species they selected are already beginning to shade the building and cut air conditioning and, every day, the "early birds" get the pick of the cool, shaded parking spaces. The employees then sit down to enjoy lunch in the shade of the scented herb and fern garden picnic area they created just off the parking lot.

The bell rings. It's the end of another school day. Students flow out of the classroom doors. While most leave, a couple go to the bicycle compound. Mounted on specially engineered forest care bikes, they ride to the boulevards and business districts in their assigned territory. One student checks with a local shopkeeper before hooking up a hose and filling the 50 gallon tank on his bike. He adds some nutrient concentrate and pedals up the sidewalk to feed and water the trees. Another loosens tree ties that are beginning to strangle their charges, and prunes suckers that have sprouted. She then rides to the neighborhood compost station to deposit the prunings before riding home.

On Sunday, after brunch, several families gather to harvest peaches, plums and apricots from the trees they planted in the community orchard at their church. After each taking their share, they deliver the remainder to a local food bank for distribution to clients.

This is not Ecotopia, nor even a futuristic community-living complex in Scandinavia. This is the scenario for activities that will begin in cities throughout our country in response to the Greenhouse Effect, and the growing awareness of the need for environmental change.

As it begins, it will have the appearance of spontaneous occurrence. In truth, it has its roots in a growing movement of community-based urban forestry projects. It has the capacity to literally change the face of our cities, and our urban lives. But if it is to succeed, it needs careful planning, gentle guidance, committed support, and sustained information...

The Case for a Public/Private Partnership

1. **Public Education:**
   A concerted effort to reach, inform and involve the public is vital. This is best achieved working closely with the news media. See attached "Taking It to the Streets: Inspiring Public Action" for details. The purpose of public education is two-fold: to stimulate independent action on private property; and to help mobilize people for community action.
2. **Involvement:**
   Gather local communities and invite them to investigate and define local needs, problems and opportunities. Catalogue those findings. Solicit ideas on how trees could help.
3. **Training:**
   Train the community not only in the technical aspects of species selection, planting and maintenance, but in the social skills of fundraising, networking and neighborhood involvement.
5. **Planting:**
   Plant the first few trees. Is the community ready for the challenge ahead? What else needs to be done to lay the groundwork?
6. **Commitment:**
   Based on their planning and planting, community members need now be ready to commit to the ongoing care of those first trees, and the rest of the planning, planting and care process.
7. **Ongoing Support:**
   The city must demonstrate that it values the work by doing its share to support the effort.

Pitfalls

Although this paper concentrates on the methodology for a successful program, it is imperative to highlight the potentially destructive results of an improperly organized program.

The wrong kind of tree planting program can prevent a public/private partnership and inhibit further meaningful action.

Watch out for politicians promising new laws, funds and changes that create an impression that the problem is solved, with no public participation. Simply mandating a program won't guarantee results. Areas other than those that can be mandated by government, like private and corporate property, are equally in need of planting. Trees are living beings that don't thrive on legal mandates alone. Further, without understanding or commitment, the public is likely to respond to the letter of the law rather than the intent, resulting in inappropriate trees in inappropriate locations...an issue that can pose a problem even when commitment is a given.

People who perceive they're not needed will continue to be part of the problem. They'll be reluctant to change, and will show little concern about vandalism.

Centralized, or government, tree planting funds can disempower a community. If funds are distributed insensitively, communities become dependent on outside sources and never establish their own "root system". A strong community identity grows out of the struggles of gestation and establishes a sense of ownership of the project. This brings out the neighborhood's natural commitment and passion, and even its willingness to plant its own trees. When the going gets tough, local people

Of course volunteers are used in every aspect of TreePeople's work, from helping run its daily operations, to setting board policy, to designing and producing public education and media materials. Volunteers are often high level professionals providing services to support the cause. The subject of volunteer resource management for urban forestry is substantial and should be addressed in full in future papers.

Citizen Foresters

The ultimate expression of volunteer training and community ownership is demonstrated through TreePeople's Citizen Forester(tm) Program[1] . It was developed out of the realization that, by virtue of our success, our grass-roots operation was taking on the dimensions and problems of a centralized organization.

Two things happened. As the demand for tree planting increased, neither TreePeople's budget nor human resources (staff or volunteers) could meet the need. Of even greater concern, neighborhoods began demonstrating the dependency referred to earlier in this paper. Trees were planted, but often neglected thereafter.

As funds were tight, and we were no longer able -- or willing -- to do everything for community groups, including fundraising, permits, planning, organizing, and planting, we began to guide them through the process. As they struggled to obtain planting permits and money, they generated extraordinary community commitment.

Even in very poor neighborhoods, families began realizing what they could contribute. On planting day, people would turn out to plant "their" trees. Even more important, they seriously adopted their role as tree guardians. One group built its own water wagon, strapping two 55 gallon oil drums to a trailer pulled by various neighborhood cars. In one area, as we helped restake trees after a windstorm, confused neighbors drove by shouting, "Don't hurt our trees"!

An essential lesson in giving up our role as a community group was giving up the accolades for having done it all. Centralized "hero" groups also disempower communities. TreePeople now consciously encourages the media to give credit where it's due -- to TreePeople for training, and to the block club, community organization or individual for initiating the planting and pulling the neighborhood together.

The Citizen Forester training currently includes more than 30 hours of classroom time, plus practical field experience planting and teaching others likewise. Citizen Foresters also learn tree care, fundraising, community organizing, how to work with government agencies and more.

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[1] Citizen Forester is a term trade-marked by TreePeople. It is used to represent an individual citizen who is *volunteering* to serve his community. The term is specific and is in no way meant to imply possesion of professional forestry skills or license to practice professional forestry.

Dealing with personalities can be difficult and painful. The difficulty often keeps citizens out of public service, or government agencies reticent to involve the public. It causes turf battles. It sets professionals against non-profit groups whose specialities may be entirely different but each equally vital to successful public/private partnerships. The two forces combined, using the strengths each brings to the process, can be a formidable combination, but both sides need to be able to support and learn from each other, to pool energy, information, expertise and resources.

Staffed Copy
Fact Check II

(Lange/Cawley)
April 12, 1990
5:45 P.M.
[GLOBAL.DOC]

PRESIDENTIAL ADDRESS: WHITE HOUSE CONFERENCE ON GLOBAL CHANGE
J. W. Marriott, Grand Ballroom
WEDNESDAY, APRIL 18, 1990
2:30 P.M.

[Acknowledgements...]

After all of the work that has taken place here -- in what I know was an atmosphere of lively debate -- I would begin with thanks, and a moment of perspective: for your purpose here is profoundly important to the state of nature, and the fate of mankind.

Your presence offers hope for a new era of environmental cooperation around the world -- and the promise of a quieter, more thoughtful, more careful tenancy of nature's legacy to humanity.

A growing sense of **global stewardship** prompted us to host this conference. It is a sense of stewardship shared by all of you, and by the nations you represent. And it arises out of a natural sense of obligation. An understanding that we owe our existence, all that we know and are, to this miraculous sphere that sustains us.

Such stewardship finds expression in many ways -- from public demonstration, to landmark legislation. But it is also rewarded in many ways, in moments unexpected and unforgettable. To feel the cold rush of water falling from an ancient glacier, to see the glint of light in a panther's eye, to stand in silent witness to the timeless beauty of a heron's flight: Such moments

are among the most precious mankind might know on this abundant earth.

Such moments also have a special power -- a resonance that at once elevates the mind's eye, and yet humbles us as well. Before such beauty the works of humanity seem somehow small. We may build cathedrals, temples and mosques; monuments and mausoleums to great men and high ideals. And still we know we can build no monuments to compare with nature. Our greatest creations cannot equal God's smallest.

Yet as our tools and intellects advance, we've learned of our power to alter the earth. We understand that small actions, taken together, have profound global consequences for the environment we share, and the humanity we share it with. **Global stewardship can only be understood in human terms.**

That is the reason we have held this conference.

Ours is a prosperous planet -- with greater hopes now than ever before that **more** of our people may come to know an unexpected peace, and an unprecedented prosperity.

So we are called upon to ensure that both the earth's integrity -- and mankind's prospects for prosperity, peace, and in some regions, even survival -- are not put at risk by intemperate action.

The minds at work here are among the very best we have -- and the best insurance that our actions are sound. Here, for the first time, we gathered talent from around the world -- Dr. Maynard scientists, economists, environmentalists, energy ministers,

policy-makers -- to assess the environmental and developmental future of the planet. An **unprecedented** cross-fertilization of disciplines -- and of nations. That alone is reason for hope.

If you have raised more questions than conclusions here, your work has been worthwhile. But if diversity of perspective is expected, unity of purpose is crucial. In an atmosphere of uncertainty, we must foster a climate of good will -- and a stubborn hope, that we might forge solutions without the excessive heat of politics.

Among all of the challenges in our tenancy of the planet, climate change is, of course, foremost in your minds. You are helping us work from what we know, through the uncertainty of both the science and the economics of climate change. But there is one area where we will allow for no uncertainty -- and that is **our commitment to finding solutions that work.**

There are several things that the climate change debate is not about. It is not "Jobs versus Environment" -- the two are inseparably interdependent, as the destructive experience of so many developing nations has shown. We must clearly understand both environmental cause and economic effect. For if we cannot see the forest for the trees, we risk losing both.

Nor is the climate change debate about "Economists versus Environmentalists." Only in the most primitive minds has it been reduced to a rhetorical holy-war between bean-counters and tree-huggers.

But above all, the climate change debate is not about "Research versus Action" -- for we have **never** considered research any substitute for action. We already <u>know</u> enough to act -- and we are.

Over the last two days you've heard from key members of this administration about action the United States is already taking -- our leading investment in climate change research and response strategies, our Clean Air legislation, <u>our comprehensive national energy strategy</u>, <u>our search for alternative and more efficient energy sources</u>, our re-forestation initiatives, and technical assistance programs to developing nations.

What bears emphasis is that we are **committed** to -- **moving** on -- and out **front** with -- domestic and international policies that are environmentally aggressive, effective, <u>and</u> cost-effective.

And we are deeply committed to an international partnership, through the I.P.C.C. process. We look forward to its Interim Assessment -- and would encourage a framework convention as part of a **comprehensive approach** addressing the system, sources, and sinks as a whole. We hope to host the first negotiating sessions here in the U.S. -- and we've just [**insert to come**].

All of you here today understand climate change as one of <u>many</u> challenges in the call to global stewardship. Ozone depletion, water supply, ocean pollution, wetlands, deforestation, biodiversity, population change, hunger, energy demand -- in short, **all** of the interrelated issues of

sustainable development: Each demands our attention. And each has a human dimension we must never forget.

Understand the choices we are making. They affect us all, but in profoundly different ways.

In too many developing countries, the consequences of premature policy-making will be reflected in life-threatening competition for limited resources. In political instability -- and man-made limits to prosperity. And it will be most painfully reflected in the hollow eyes of hungry children, and their prospects for survival.

p-Ed by Richard Schmalensee CEA

If developed nations ignore the needs of developing nations, it will imperil us all. We know that a change in G.N.P. of even a few tenths of a percent often means the difference between adequate shelter, food, and health care -- and human castastrophe.

Mark

DCP amend

To bear this in mind is no barrier to action. It merely suggests that those who have ascended the economic hill must **think twice before building walls that would prevent others from making the climb.**

It is a reminder that economic limits have serious human costs. And it suggests that the best policies are those of well-managed growth: The only kind of growth that true global stewardship allows -- but only possible if the nations of the world are linked in partnerships of every kind: scientific, economic, technical, agricultural, environmental.

Developing nations will contribute a growing share of the world's emissions in the coming decades. They face the greatest threats from environmental degradation of every kind -- and can least afford the consequences.

But pollution is not, as we once believed, the inevitable by-product of progress. The developed nations of the world will better serve their own interests, and those of the world community, **not** by seeking limits to growth -- which would never survive human nature -- but by catalyzing environmental protection through more **intelligent**, more **informed**, more **efficient** growth.

Here, I must confess to some confusion. Those who value environmental quality most highly, should be the most ardent supporters of strategies that tap the power of free wills and free markets, that turn human nature to environmental advantage. Efficient strategies are the **only** realistic hope that developing nations might avoid making the mistakes that developed nations have made.

And we have made mistakes. When America made its transition from an agrarian to an industrial economy, we paid a price. What we learned, we learned the hard way. And in some ways, we're **still** fighting our way back. But over the past century we've made tremendous progress -- especially in the last twenty years.

Two decades ago, this nation -- holding to its birth-right of free expression and the value of the dissenting voice -- was home to one protest movement in an era of protests, called Earth

CEQ Annual Rpt 3-9-90 p. 3, ch. I

Anne Boren

teach-in college campuses expr of concern

Day. It motivated President Nixon to sign into law "a national policy [to] encourage productive and enjoyable harmony between man and his environment." And it set in motion a new sense of conscience, that a few idealists hoped would change the world.

It did. What began as an isolated American movement twenty years ago is now shared by 135 countries on seven continents. And while many thought our experiment in environmental protection would prove impossible -- that you couldn't maintain both a productive economy and protective ecology -- we've learned that economic prosperity and environmental protection go hand in hand.

And we understand no nation can act effectively alone. Unilateral action is futile. But united action? Essential -- and more than merely possible, as the Montreal Protocol proved.

Around the world, America and other nations now extend an offered hand to emerging democracies in Eastern Europe and in this hemisphere. And only now do we see the extent of the challenge we share.

In this hemisphere and in Africa, the raging fires of forests burned for compelling but mistaken economic reasons have been visible to astronauts in space. Other nations, in the struggle to support life, have been virtually stripped of the resources that **sustain** life.

And whether through the tyranny of ignorance, or the ignorance of tyrants, pollution has been unveiled as one of Eastern Europe's cruelest dictators. An oppressor. Not man -- but man-made.

In the majestic city of Krakow, monuments to great men, statues that survived invasions by Swedish Kings and Austrian emperors, by Hitler and by Stalin, have been defaced by pollution, as their medieval majesty is reduced to shapeless lumps of stone.

If mankind's greatest **creations** cannot equal God's smallest, some may grieve that our greatest **destruction** is turned at times upon ourselves. And we may not see much hope in the faces of the starving, or the faces of ancient monuments. But we <u>can</u> find cause for optimism among the men and women in this room.

Let us act on what we know, and in good faith. The earth cannot, must not be sacrificed to blind material ambition -- nor can the health, the very survival of millions be sacrificed by intemperate policies. Let us work to meet the needs of this generation, while preserving the earth for the next, and all that follow.

# # #

Fact Check I

(Lange/Cawley)
April 12, 1990
11:25 P.M.
[GLOBAL.DOC]

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sustainable development: Each demands our attention. And each has a human dimension we must never forget.

Understand the choices we are making. They affect us all, but in profoundly different ways.

The consequences of reducing carbon dioxide emissions in a wealthy nation like the United States would likely be measured in relatively manageable terms: additional costs incurred, to be sure; job losses, probably temporary; and some effect on G.N.P.

But in too many developing countries, the consequences of such policy will surely be painfully reflected in the hollow eyes of hungry children. In life-threatening competition for already-scarce resources. In political instability -- and man-made limits to prosperity. Security. Survival.

If developed nations ignore the needs of developing nations, it imperils all. We know that a change in G.N.P. of even a few tenths of a percent often means the difference between adequate shelter, food, and health care -- and human castastrophe.

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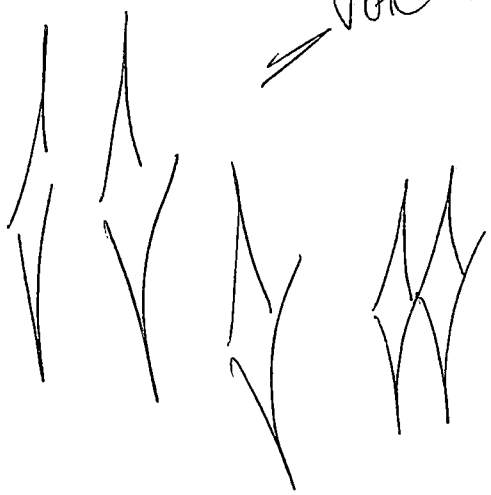
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# # #

politics of the supercollider

vote on Monday



CC

(copy to POTUS)

(Lange/Cawley)
April 13, 1990
7:30 P.M.
[GLOBAL.DOC]

PRESIDENTIAL ADDRESS: WHITE HOUSE CONFERENCE ON GLOBAL CHANGE
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There are several things that the climate change debate is not about. It is not "Jobs versus Environment" -- the two are inseparably interdependent, as the common global experience of so many nations has shown. We must clearly understand that a clean and wholesome environment is not possible without a strong economy -- just as a strong economy depends on a clean and wholesome environment. If we lose sight of the forest for the trees, we risk losing both.

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debate has been reduced to a rhetorical holy-war between bean-counters and tree-huggers.

But above all, the climate change debate is not about "Research versus Action" -- for we have **never** considered research a substitute for action. In fact, we are already moving in areas where research has led to action.

Over the last two days you've heard, formally and informally, that the United States is already moving forward. You've heard about our leading investment in climate change research, our action to stabilize and reduce greenhouse gas emissions, our Clean Air legislation, our use of market-based incentives to control pollution, our search for alternative and more efficient energy sources, our re-forestation initiatives, and our technical assistance programs to developing nations.

What bears emphasis is that **we are committed to domestic and international policies that are environmentally aggressive, effective, and efficient.**

And we are deeply committed to an international partnership, through the I.P.C.C. process. We look forward to its Interim Assessment. And we would encourage a framework convention as part of a **comprehensive approach** to address the system, sources, and sinks as a whole -- if a decision is made that international action is needed to reduce net emissions. We hope to host the first negotiating sessions here in the U.S. -- and [[**Insert on specific proposals made at the conference, from O.S.T.P.**]].

All of you here today understand climate change as one

of many challenges in the call to global stewardship. Ozone depletion, water supply, ocean pollution, wetlands, deforestation, biological diversity, population change, hunger, energy demand -- in short, all the interrelated issues of the global environment. Each demands our attention. Each will have great impact. Some we can predict and regrettably, some can't be easily anticipated. And each has a human dimension we must never forget.

Understand the choices we are making. They affect us all, but in profoundly different ways.

In too many developing countries, the consequences of uninformed policy-making will be reflected in damage to precious and life-giving resources. Perhaps, in political instability -- certainly in man-made limits to prosperity. And it will be most painfully reflected in the hollow eyes of hungry children, and their prospects for survival.

If developed nations ignore the growth needs of developing nations, it will imperil us all. We know that even small changes in G.N.P. growth rate often threaten adequate shelter, food, and health care -- for millions and millions of people.

To bear this in mind is no barrier to action. It merely suggests that those who have ascended the economic hill must **think twice before preventing others from making the climb.** They must extend a helping hand. This is only possible if the nations of the world are linked in partnerships of every kind: scientific, economic, technical, agricultural, environmental.

Developing nations will contribute a growing share of the world's emissions in the coming decades. They face the greatest threats from environmental degradation of every kind -- and can least afford the consequences.

But pollution is not, as we once believed, the inevitable by-product of progress. The developed nations of the world will better serve their own interests, and those of the world community, **not** by seeking limits to growth -- which are contrary to human nature -- but by achieving environmental protection through more **informed**, more **efficient**, and **cleaner** growth.

Those who value environmental quality most highly, should be the most ardent supporters of strategies that tap the power of free wills and free markets -- that turn human nature to environmental advantage.

In the same way, those who value economic development most highly should be the most ardent defenders of the environment, which provides the basis for a healthy economy. Efficient strategies are the **only** realistic hope for developing nations to avoid making the mistakes that developed nations have made.

And we have made some mistakes. When America made its transition from an agrarian to an industrial economy, there was an impact. What we learned, we learned the hard way. Over the past century we've made tremendous progress -- especially in the last twenty years. We want to share that knowledge -- our technologies, new processes, and pollution **prevention** techniques -- with the developing world.

Two decades ago, this nation -- holding to its birth-right of free expression -- was home to a movement symbolized by Earth Day. It motivated President Nixon to sign into law "a national policy [to] encourage productive and enjoyable harmony between man and his environment." And it set in motion a new sense of conscience that a few idealists hoped would change the world.

It did. What began as an isolated American movement twenty years ago is now shared by over 130 countries on seven continents. And while many thought our experiment in environmental protection would prove impossible -- that you couldn't maintain both a productive economy and healthy ecology -- we've learned that economic prosperity and environmental protection go hand in hand.

And we understand no nation can act effectively alone. Unilateral action is futile. But united action? Essential -- and possible, as the Montreal Protocol proved.

Around the world, America and other nations now extend an offered hand to emerging democracies in Eastern Europe and to developing societies around the world.

In this hemisphere and in Africa, the raging fires of forests and grasslands burned for compelling but ultimately tragic economic reasons have been visible to astronauts in space. Other nations, in the struggle to support life, have been virtually stripped of the resources that **sustain** life.

And whether through the tyranny of neglect, or the neglect of tyrants, pollution has been unveiled as one of Eastern Europe's cruelest dictators. An oppressor. Not man -- but man-made.

In the majestic city of Krakow, monuments to great men, statues that survived countless invasions by kings and emperors, by Hitler and by Stalin, have been defaced by pollution -- their medieval majesty reduced to shapeless lumps of stone.

If mankind's greatest **creations** cannot equal God's smallest, some may grieve that our greatest **destruction** is turned at times upon ourselves.

Let us neither grieve nor quarrel, but act on what we know can help, and act in good faith. **Our challenge is global stewardship.** To work together to find long-term strategies that will meet the needs of both the developed and developing world.

Our conviction, and my sincere belief, is that environmental protection and economic growth, well-managed, **complement** one another -- and that we can serve this generation, while preserving the earth for the next -- and all that follow.

It is an uncommon opportunity we share. **So let us seize the moment. Together, we will succeed.**

# # #

(Lange/Cawley)
April 18, 1990
8:45 A.M.
[GLOBAL.DOC]

PRESIDENTIAL ADDRESS: WHITE HOUSE CONFERENCE ON GLOBAL CHANGE
CLOSING ADDRESS
J. W. MARRIOTT, GRAND BALLROOM
WEDNESDAY, APRIL 18, 1990
2:30 P.M.

Dr. Bromley, Dr. Boskin, Mr. Deland. Secretaries Watkins and Lujan. Dr. Bolin [bo-LEEN], and distinguished delegates to this unprecedented conference:

After all of the work that has taken place here -- in what I know was an atmosphere of lively debate -- I would begin with thanks, and a moment of perspective: for your purpose here is profoundly important to the state of nature, and the fate of mankind.

Your presence offers hope for a new era of environmental cooperation around the world -- and the promise of a quieter, more thoughtful, more careful tenancy of nature's legacy to humanity.

A growing sense of **global stewardship** prompted us to host this conference. It is a sense of stewardship shared by all of you, and by the nations you represent. And it arises out of a natural sense of obligation. An understanding that we owe our existence, all that we know and are, to this miraculous sphere that sustains us.

Such stewardship finds expression in many ways -- from public demonstration to landmark legislation. But it is also rewarded in many ways, in moments unexpected and unforgettable.

Nature's beauty has a special power -- a resonance that at once elevates the mind's eye, and yet humbles us as well.

Before nature, the works of humanity seem somehow small. We may build cathedrals, temples and mosques; monuments and mausoleums to great men and women, and high ideals. And still we know we can build no monuments to compare with nature. Our greatest creations cannot equal God's smallest.

Yet as our tools and intellect advance, we've learned of our power to alter the earth. We understand that small actions, taken together, can have profound global consequences for the environment we share, and the humanity we share it with. **The importance of global stewardship can be best understood in human terms.**

We also recognize that ours is an increasingly prosperous planet -- with greater hopes now than ever before that **more** of our people, in <u>every</u> nation, may come to know an enduring peace and an unprecedented quality of life.

So we are called upon to ensure that the earth's integrity is preserved -- <u>and</u> that mankind's prospects for prosperity, peace, and in some regions, even survival, are **not put at risk by the unintended consequences of noble intentions.**

That is the reason we have held this conference.

The minds at work here are among the very best we have -- and they are the best insurance that our actions are sound. We have gathered talent from around the world -- scientists, economists, environmentalists, energy ministers, policy-makers

-- to assess the environmental and developmental future of the planet. An **unprecedented** cross-fertilization of disciplines -- and of nations. That alone is reason for hope.

But if diversity of perspective is expected, unity of purpose is crucial. In an atmosphere of uncertainty, we must foster a climate of good will -- and a stubborn hope -- that we might forge solutions without the excessive heat of politics.

Among all the challenges in our tenancy of the planet, climate change is, of course, foremost in your minds. We are leading the search for response strategies, and working through the uncertainty of both the science and the economics of climate change. But there is one area where we will allow for no uncertainty -- and that is **our commitment to action -- to sound analyses and sound policies.**

Judging from the press coverage of this issue, there are two misunderstandings about our position that I'd like to set straight. First, anyone who says we're trying to balance economic growth and environmental protection misses the point. We are calling for an entirely new way of thinking, to achieve both while compromising neither, by applying the power of the marketplace in the service of the environment.

We cannot allow a question like climate change to be characterized as a debate between "Economists versus Environmentalists." To say that this issue has "sides" is about as productive as saying that the earth is flat. It may simplify things, but it doesn't do justice to the facts.

The truth is, **strong economies allow nations to fulfill the obligations of stewardship -- and environmental stewardship is crucial to sustaining strong economies.** If we lose sight of the forest for the trees, we risk losing both.

But above all, the climate change debate is not about "Research versus Action" -- for we have **never** considered research a substitute for action. And this is the second misunderstanding I want to correct: We are not waiting to take action.

Over the last two days you've heard, formally and informally, that the United States is already taking action to stabilize and reduce emissions -- through our Clean Air legislation, our use of market-based incentives to control pollution, our search for alternative energy sources, our emphasis on energy efficiency, our reforestation initiatives, and our technical assistance programs to developing nations.

These policies address a number of environmental objectives. But our phase-out of CFCs, the impact of our Clean Air Act on emissions, our tree-planting initiative and other strategies will **produce reductions in net greenhouse gas emissions that will reach 15 percent in ten years -- and considerably more later on.**

We are also making a leading investment in climate change research -- absolutely essential, because it will tell us what to do next. But what bears emphasis is that **we are committed to domestic and international policies that are environmentally aggressive, effective, and efficient.**

And we are deeply committed to an international partnership, through the I.P.C.C. process. We look forward to its Interim Assessment. And we would encourage a framework convention as part of a **comprehensive approach** to address the system, sources, and sinks as a whole, if a decision is made that international action is needed to reduce net emissions. We hope to provide a venue for the first negotiating sessions here in the U.S.
[[Finally, here at this conference, we've offered four new proposals: To endorse a "Charter for Cooperation in Science and Economics Research Related to Global Change" ; To create "International Institutes for Research on the Science and Economics of Global Change" ; To encourage data and information transfer through a "Global Change Communications Network" ; and to endorse a "Statement of Principle to develop an internal strategy for cooperation in Scientific and Economic Research in Global Change."]]

All of you here today understand climate change as one of <u>many</u> challenges in the call to global stewardship. Ozone depletion, water supply, ocean pollution, wetlands, deforestation, biological diversity, population change, hunger, energy demand -- in short, **all** the interrelated issues of the global environment. Each demands our attention. Each will have great impact.

Some we can predict -- and regrettably, some can't be easily anticipated. But each has a human dimension we must never

forget. **Understand the choices we are making. They affect us all, but in profoundly different ways.**

We have many paths to choose from. Some of them are fraught with risk to precious and life-giving resources. Risk to geopolitical stability. And certainly, man-made limits to prosperity -- most painfully reflected in the hollow eyes of hungry children and their prospects for survival.

If developed nations ignore the growth needs of developing nations, it will imperil us all. We know that even small changes in G.N.P. growth rate often threaten adequate shelter, food, and

health care -- for millions and millions of people.

To bear this in mind is no barrier to action. Those who have ascended the economic hill must break down the barriers to progress, and assist others now making the climb. But this will only be possible if the nations of the world are linked in partnerships of every kind: scientific, economic, technical, agricultural, environmental.

Pollution is not, as we once believed, the inevitable by-product of progress. True global stewardship will be achieved not by seeking limits to growth -- which are contrary to human nature -- but by achieving environmental protection through more **informed**, more **efficient**, and **cleaner** growth.

Those who value environmental quality most highly should be the most ardent supporters of strategies that tap the power of free wills and free markets -- strategies that turn human nature to environmental advantage. Equally, those who value economic development most highly should be the most ardent defenders of the environment, which provides the basis for a healthy economy. Efficient strategies are the **only** realistic hope for developing nations to save themselves from the mistakes that developed nations have made.

And we have made mistakes -- but over the past century we've made tremendous progress, especially in the last twenty years. Our automotive emission controls have brought about a new generation of cars that emit only four percent as much pollution as the typical 1970 model. We've cut airborne particulates by 60

TOM super-CEQ

Newsweek

percent, carbon monoxide by about 40 percent, cut sulfur emissions, and virtually eliminated lead from the air -- all during a period of population growth and economic **expansion.**

We want to share that knowledge -- our technologies, new processes, and pollution **prevention** techniques -- with the developing world.

Two decades ago, this nation -- holding to its birth-right of free expression -- was home to a movement symbolized by Earth Day. It motivated President Nixon to sign into law "a national policy [to] encourage productive and enjoyable harmony between man and his environment." And it set in motion a new sense of conscience that a few idealists hoped would change the world.

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reasons have been visible to astronauts in space. Other nations, in the struggle to support life, have been virtually stripped of the resources that **sustain** life.

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Our conviction, and my sincere belief, is that environmental protection and economic growth, well-managed, **complement** one another -- and that we can serve this generation, while preserving the earth for the next -- and all that follow.

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HEADLINE: Carbon monoxide and the burning Earth; Burning of tropical rain forests releases large amounts of carbon monoxide

BYLINE: Newell, Reginald E.; Reichle, Henry G., Jr.; Seiler, Wolfgang

Seen fires from space

BODY:

Carbon Monoxide and the Burning Earth

Twenty years ago, a map of the atmosphere illustrating the presumed distribution and flow of carbon monoxide would have placed almost all of it in the Northern Hemisphere. Experts agreed that virtually all carbon monoxide came from burning fossil fuels, and the Northern Hemisphere was home to most of the world's industry and transportation. The map would have shown much of the gas lingering near the ground where it was produced, in the lowest two kilometers of the atmosphere, or boundary layer. Convection might carry some to higher altitudes where it could drift into the Southern Hemisphere; otherwise carbon monoxide stayed in the north.

That map would have been wrong. Industrial smokestacks and automobile tail pipes are not and have never been the only major sources of carbon monoxide--they may not even be the largest sources of this colorless, odorless gas. An instrument that we helped to develop, and that flew twice on board the space shuttle, has provided global "snapshots" of carbon monoxide distributions over a wide swath of the earth. Its measurements and data collected by airplanes and ground stations during the past 10 years have shown clearly that the burning of tropical rain forests and savannas generates at least as much carbon monoxide as the burning of fossil fuels does.

This discovery is alarming, but not because carbon monoxide is poisonous. The gas does bind strongly to the blood's hemoglobin and prevents oxygen from being carried to the tissues. Concentrations of carbon monoxide typical of traffic tunnels or busy streets, around 20,000 molecules per billion air molecules, can dull mental acuity. Yet the concentrations of carbon monoxide over the tropical rain forests are usually hundreds of times lower than that. Instead carbon monoxide has other ominous implications for the environment. First, high levels of carbon monoxide from burning vegetation confirm other evidence that the rain forests are being diminished rapidly. Destruction of the tropical rain forests would probably wreak disastrous change on the climates of these regions and possibly those of the rest of the world. Second, major increases in atmospheric carbon monoxide could encourage the accumulation of pollutant gases such as ozone, which is highly toxic to plants, and methane, which adds to the greenhouse effect and thus may contribute to higher global temperatures.

For many years high concentrations of carbon monoxide in the Southern Hemisphere and tropics seemed unlikely because sources of the gas were thought

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to be exclusively industrial and automotive, and mainly in the Northern Hemisphere. Until relatively recently, studies of atmospheric carbon monoxide made from the ground or sea level generally supported that idea. For example, in 1969, samples of air collected from a ship by one of us (Seiler) and Christian Junge of the Max Planck Institute for Chemistry in Mainz while sailing the tropical Atlantic Ocean showed higher carbon monoxide values north of the equator. During the same period, measurements made by aircraft flying between Frankfurt and Johannesburg at an altitude of about 10 kilometers showed almost identical carbon monoxide concentrations in the Northern and Southern hemispheres. The results were ascribed to highly efficient mixing of Northern Hemisphere air into Southern Hemisphere air at great heights [see "The Global Circulation of Atmospheric Polutants," by Reginald E. Newell; SCIENTIFIC AMERICAN, January, 1971].

Still, the discovery of significant carbon monoxide levels in the Southern Hemisphere prompted investigations of possible sources other than burning fossil fuels. One focus of attention was atmospheric chemistry involving hydroxyl (OH), a highly reactive radical. Hydroxyl is the product of a reaction between atmospheric water molecules and excited oxygen atoms that are released when sunlight decomposes low-altitude ozone molecules. Its high reactivity makes hydroxyl the most important scavenging gas in the atmosphere, voraciously oxidizing methane and other molecules.

James C. McConnell, Michael B. McElroy and Stephen C. Wofsy of Harvard University suggested in 1971 that when hydroxyl oxidizes methane in the atmosphere, it triggers a series of reactions that yield an abundance of carbon monoxide. Methane is distributed in almost uniform concentrations throughout the atmosphere and is therefore plentiful in the Southern Hemisphere. According to the Harvard group's calculations, methane was potentially a greater source of carbon monoxide than fossil-fuel burning.

Carbon monoxide injected into the atmosphere does not stay there indefinitely. After a period ranging from about 10 days to several months, it vanishes. Some of the gas is known to settle to the earth and be absorbed by the soil. By the time of the Harvard studies, Hiram Levy II of the Smithsonian Astrophysical Observatory in Cambridge, Mass., had already shown that hydroxyl could also remove carbon monoxide from the air by converting it into carbon dioxide.

Despite these theoretical advances, the riddle of how carbon monoxide originated and disappeared could not be solved completely without knowledge of the distribution of the gas. Areas of unusually high concentration might offer clues about where carbon monoxide is coming from, and areas of low concentration might reveal where it is leaving the atmosphere. How, though, could extensive and detailed maps of carbon monoxide distribution be compiled? Measurements made solely from the ground or aircraft are impractical because of the large number required. It would take months or years for even a fleet of aircraft to gather enough readings for a detailed map, and such a map would obscure short-lived carbon monoxide patterns.

While the Harvard studies and other work were being carried out, other groups were considering possible applications of earth-orbiting satellites to global carbon monoxide surveys. Orbiting instruments could compile enough measurements for a map in only a few days, revealing nearly simultaneous conditions at various latitudes and longitudes. Theoretical investigations by Claus Ludwig

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and his collaborators at Convair Incorporated showed that it would be possible to measure carbon monoxide from a satellite by a technique called gas-filter radiometry. This technique had already been applied by John T. Haughton's group at the University of Oxford to study atmospheric temperature with the Nimbus IV satellite.

Various implementations of the gas-filter technique were tested on board aircraft at the Langley Research Center of the National Aeronautics and Space Administration (NASA), and one suggested by Anthony Barringer of Barringer Research, Inc., in Toronto was adopted for development as a candidate satellite instrument. One of us (Reichle) then invited the others (Newell and Seiler) to serve as members of a science team that would guide the development of an experiment to be carried on board the space shuttle. The experiment, called Measurement of Air Pollution from Satellites (MAPS), was proposed during 1976 for one of the shuttle's orbital test flights.

The MAPS gas-filter radiometer is based on the principle that carbon monoxide absorbs infrared radiation at discrete frequencies. This distinctive absorption pattern can serve as a "fingerprint" for detecting and measuring concentrations of the gas in the atmosphere. Carbon monoxide characteristically absorbs infrared energy at wavelengths near 4.67 micrometers (millionths of a meter), although the precise pattern of absorption depends on both the temperature and the pressure of the gas.

The objective lens of the MAPS instrument is aimed toward the planet and collects radiation from the earth-atmosphere system. The radiation is then periodically "chopped" by a rotating wheel, which also introduces flashes of infrared radiation from a temperature-controlled, black aluminum plate. This plate, called a black-body source, radiates a known spectrum that does not show losses due to absorption at any wavelength. This smooth spectrum serves as a reference for measuring the amounts of radiation absorbed by the atmosphere. The combined beam passes through a filter that screens out all wavelengths except those near 4.67 micrometers. Beam splitters divide this selected radiation and channel it to three photo-detectors. One of the detectors is set behind an evacuated, transparent gas cell; it measures alternately the absolute intensity of the infrared signal from the atmosphere and that from the blackbody source. The other two detectors sit behind cells filled with carbond monoxide at different pressures. Three measurements are stored by the instrument's flight recorder: the time-stamped electronic output of the vacuum-cell detector and the two differences between that output and those of the gas-filtered detectors.

The two difference signals represent the degrees of similarity between the changing spectrums of the atmosphere and the constant signals from each of the pure carbon monoxide cells. When the region of the atmosphere being measured is relatively free of carbon monoxide, the differences are large; as the atmosphere becomes enriched in carbon monoxide, the differences shrink. On the basis of these measurements and the known pressures and temperatures inside the gas cells, we can infer the proportion of carbon monoxide in the air, a value termed the mixing ratio.

Because the radiation spectrum of carbon monoxide changes with pressure, each detector responds most strongly to carbon monoxide at a different altitude. The detector set behind carbon monoxide pressurized at 266 millimeters of mercury is most sensitive to gases at altitudes from three to eight kilometers, whereas

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the one "reading" through carbon monoxide at 76 millimeters of mercury is in effect tuned to the gas at higher altitudes. The unfiltered detector responds most to radiation from the ground. The different response curves for the detectors help us to estimate the height of the carbon monoxide measured during MAPS experiments.

To arrive at carbon monoxide mixing ratios from the detector measurements, we also needed to know about other factors that influence teh radiation passing through the atmosphere. We therefore took into account meteorological conditions, the angle of the sun during our observations and estimates of the terrain's light-reflecting qualities. Information from the U.S. Navy Fleet Numerical Oceanography Center was invaluable. We developed atmospheric models that helped us to correct for the presence of water vapor, carbon dioxide, ozone and nitrous oxide, all of which also absorb energy near 4.67 micrometers.

Clouds in the instrument's field of observation can also distort measurements, and so we corrected for them. Our solution during the first shuttle flight of MAPS was to align a camera with the radiometer's sensing axis so that the earth-atmosphere system could be photographed while measurements were made. Later, our colleagues Warren D. Hypes of the Langley Research Center and Barbara B. Gormsen, who was then at the Old Dominion University Research Foundation in Norfolk, Va., inspected these photographs painstakingly for indications of cloud cover and deleted from the MAPS data set any carbon monoxide measurements that had been made through clouds.

The MAPS instrument needed to be tested for sensitivity at both high and low mixing ratios of carbon monoxide in air. For a high mixing-ratio test, we mounted the radiometer on an aircraft and flew it over Lake Michigan to monitor carbon monoxide produced by morning rush-hour traffic in Chicago. Plumes of carbon monoxide from both Chicago and Milwaukee were detected. The Chicago plume showed carbon monoxide levels, averaged over altitude, of 260 molecules per billion air molecules, a high value but not an unexpected one.

It was during what was supposed to be the low mixing-ratio test that MAPS first measured high carbon monoxide levels in remote, undeveloped areas. In the summer of 1979, MAPS was included in an international project, called MONEX, studying the Indian monsoon. On board a NASA Convair 990 aircraft, the MAPS radiometer took readings during long flight tracks across the Arabian Sea at an altitude of roughly 12 kilometers. Its readings were verified by analyses of bottled air samples collected in flight by Estelle P. Condon, who was then at the Old Dominion University.

To our astonishment, these flights detected even higher concentrations of carbon monoxide in the boundary layers over Saudi Arabia and the Ganges Valley in India than were found over Chicago at rush hour. As measured by both MAPS and the bottled air samples, mixing ratios in these regions were over 300 carbon monoxide molecules per billion air molecules. Over the Arabian Sea, much lower concentrations of roughly 80 molecules per billion air molecules were found near the equator, where air from the Southern Hemisphere was entering the monsoon circulation.

As work on MAPS progressed, other evidence continued to accumulate against the old view associating carbon monoxide almost exclusively with developed areas. During the dry season in August and September, 1980, one of us (Seiler) and investigators from the National Center for Atmospheric Research in

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Boulder, Colo., participated in a study of carbon monoxide and various other gases over Brazil. Aircraft measurements found boundary layer concentrations of up to 400 molecules per billion air molecules over untouched tropical rain forests. Even higher values, some going off the scale of the measuring device, were found near a Brazilian savanna that was being burned.

New theories soon emerged to explain how forests could contribute carbon monoxide to the atmosphere. Inspired by the Brazilian data, Paul J. Crutzen of the Max Planck Institute [see "The Changing Atmosphere," by Thomas E. Graedel and Paul J. Crutzen; SCIENTIFIC AMERICAN, September] suggested that large quantities of carbon monoxide could be generated over completely untouched rain forests through the photochemical oxidation of hydrocarbons other than methane. These hydrocarbons would arise from the resins and oils that are released primarily by trees. Similar conclusions have recently been drawn by Alain Marenco of the Center of Atomic Physics at Toulouse and Jean Claude Delauny of the Atmospheric Physics Laboratory at Abidjan, Ivory Coast, from data obtained over tropical forests in Africa.

Crutzen, working with Seiler, also proposed that burning biomass, such as vegetation being cleared from the land or animal dung being burned as fuel, is a major source of atmospheric carbon. Only some of this carbon takes the form of carbon monoxide; much more becomes carbon dioxide and particulate carbon. By Seiler and Crutzen's calculations, burning biomass annually contributes from two to four billion metric tons of carbon to the atmosphere. Work done by Helene Cachier and her colleagues at the Centre de Faibles Radioactivities in Gifsur-Yvette has also shown that carbonaceous aerosols from tropical forests add as much fine particulate carbon to the atmosphere as all industrial sources do. Many of these aerosols are produced during the dry season, when most natural and anthropogenic burning occurs.

Against this backdrop of surprising new data and novel theories, the MAPS radiometer flew into space on board the shuttle's second engineering test flight in November, 1981. Because of failures in the shuttle's power and cooling systems, only 11 hours of usable data were collected over two days, representing about 10,000 observations of carbon monoxide at altitudes between three and 12 kilometers.

The observed areas lay in the tropical band between 37 degrees north and 37 degrees south latitude. From the shuttle's altitude of 260 kilometers, MAPS could record the radiation from successive areas of the earth's surface 20 kilometers across. These monitored areas were divided into grid squares measuring five degrees of latitude by five degrees of longitude. We smoothed out small-scale variations in the data by averaging multiple measurements made within each grid square.

When we analyzed the MAPS data in this way, we were startled by the picture of global carbon monoxide distribution that emerged. Least surprising was the observation that the lowest concentrations, around 40 molecules per billion air molecules, came from over the southeast Pacific and Argentina, where winds blow from the west over large tracts of ocean. Since previous studies had discounted the open oceans as major contributors to atmospheric carbon monoxide, these findings agreed with expectations.

We noted higher carbon monoxide values, around 75 molecules per billion air molecules, over the eastern Mediterranean and adjoining landmasses. The same

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air had previously passed over Western Europe during a time of strong convection: the burning of fossil fuels was presumably responsible for these high readings.

The big surprise, however, was that the highest carbon monoxide readings had been recorded over regions with little or no industry or automobile traffic, many of which lay in the Southern Hemisphere or tropics. Northern South America, central Africa and eastern China all showed readings greater than 100 molecules per billion air molecules. (The highest measured value was found over the Gulf of Guinea along equatorial Africa's western coast, but this may have been a statistical fluke reflecting the small number of usable readings.)

Where was the cabon monoxide over these undeveloped areas coming from? We looked at wind velocity maps and convection reports for the observed regions during November. It became clear that the carbon monoxide-laden air flowing 10 to 12 kilometers above South America and the equatorial Atlantic Ocean had originated in the boundary layer over tropical rain forests. The air over China had blown over rain forests in northwest Burma the day before the sampling was taken. The terrain immediately beneath the measured central African boundary layer was grassland and savanna, and there was rain forest within 500 kilometers.

Clearly, something other than industry had to be producing clouds of carbon monoxide in these undeveloped areas. The proximity of rain forests seemed to be a common element; burning vegetation in the savanna might also be involved. In other words, the theories proposed by Crutzen, Seiler and others could account for the data collected by MAPS on its first shuttle flight. We hoped that measurements from a second shuttle flight would confirm and improve on the initial findings.

Before the second shuttle experiment, the MAPS instrument was modified to provide a simple system for cloud detection. Now, only one gas cell was filled with carbon monoxide. This change slightly limited our ability to determine the altitudes of carbon monoxide plumes but was acceptable to us. The other cell was filled with nitrous oxide, which mixes with air at an almost constant ratio of 305 molecules per billion air molecules throughout the lowest 12 kilometers of the atmosphere. Like carbon monoxide, nitrous oxide absorbs energy near 4.67 micrometers. With this new configuration, we could measure the mixing ratios of both carbon monoxide and nitrous oxide. Since the mixing ratio of nitrous oxide is nearly constant, any apparent fluctuations that the instrument observed had to be caused by obscuring clouds moving into view. By looking for such fluctuations, we could immediately recognize and discard the accompanying carbon monoxide data, which would also have been distorted. This change in the setup of the instrument eliminated the tedious step of examining photographs for clouds.

The second shuttle flight of MAPS took place in October, 1984. It had originally been scheduled for the early spring of that year, but delays in the shuttle launch schedule forced a postponement. This was unfortunate, because we had hoped that measurements made during the spring would complement the data from November, 1981, and give some indication of carbon monoxide variations throughout the year. Seiler and his colleagues had previously monitored the air from surface stations in both hemispheres and found marked seasonal variation, with peak carbon monoxide levels in the local spring.

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In other respects the execution of the second MAPS shuttle flight improved on the first. Because the shuttle's orbit on this trip passed over a greater range of latitudes--from 57 degrees north to 57 degrees south--the observations covered a more extensive geographic range. Over a period of nine days, 86 hours of measurements were collected. These were used to make two maps, each showing carbon monoxide concentration patterns averaged over consecutive four- and five-day periods.

The patterns of carbon monoxide distribution recorded on the October, 1984, flight resembled the one seen in November, 1981. Values exceeding 100 carbon monoxide molecules per billion air molecules were measured over South America, southern Africa, Europe, the U.S.S.R., China, the northern Pacific and the southern Indian Ocean. The lowest values were over the tropical Pacific, the north Atlantic, the Sahara and Argentina.

Photographs taken from space by Kathryn D. Sullivan, a NASA astronaut, confirmed an association between large fires visible from orbit and plumes rich in carbon monoxide. For example, smoke from fires near the mouth of the Zambezi River in Africa was seen blowing inland, carried by an easterly wind. Convection carried this smoke to altitudes of from five to 10 kilometers, where the MAPS radiometer could detect the carbon monoxide it contained.

To calibrate the 1984 MAPS data, Seiler's research group made extensive measurements from an aircraft flying over the Atlantic Ocean during the shuttle flight. Because the instrument that made these measurements had direct contact with the air, it was sensitive to mixing ratios lower than one carbon monoxide molecule per billion air molecules. The measurements were taken at an altitude of about 10 kilometers during flights from Frankfurt to Sao Paulo and back.

North-south distribution patterns for carbon monoxide measured almost simultaneously by MAPS and the aircraft corresponded extremely well. The aircraft measurements were consistently about 40 percent higher than the MAPS readings; the discrepancy is currently under study.

All the MAPS and aircraft measurements strongly suggest that at least during the Northern Hemisphere autumn and the Southern Hemisphere spring, when the measurements were made, rain forests and savannas rival or surpass fossil fuels as sources of atmospheric carbon monoxide. Both burning and hydrocarbon oxidation contribute to this output. Despite similarities in the highest values recorded around the world, several distinct mechanisms of carbon monoxide generation appear to be at work.

The relative importance of the various mechanisms adding carbon monoxide to the atmosphere depends on location. Oxidation of methane and other hydrocarbons is a major contributor in both hemispheres; releases of the gas from biochemical processes in the soil and vegetation are relatively minor. In general, combustion of fossil fuels is the major source of carbon monoxide in the developed Northern Hemisphere, whereas burning of biomass predominates in the Southern Hemisphere and the tropics.

The amount of carbon monoxide introduced by burning vegetation, much of which results from human activities in developing nations, raises troubling questions. How does the rate at which forests lose carbon through burning compare with the rates at which carbon is incorporated into growing trees by photosynthesis and respiration? What are the environmental consequences?

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People in the developing nations rely heavily on wood for fuel; they also burn it to clear land for cattle ranges, agriculture and new settlements. Moreover, the rate of burning is rising because of economic pressures and urgent fuel shortages.

Working from statistical data, Seiler and Crutzen have calculated that from .5 to .75 percent of the tropical forests is lost annually to burning. As the productive base of forestland decreases and burning rates increase, the percentages of forest lost skyrocket. Some logged areas will be allowed to grow back, but forests cleared for agriculture are lost forever.

The disappearance of tropical rain forests, or even substantial decreases in their size, could dramatically alter the climate by changing global patterns of evaporation and heat circulation. Trees return large quantities of moisture to the atmosphere by releasing water vapor from their leaves during the day. When trees are removed, rain runoff increases and less water evaporates from the soil into the air. The evaporation of moisture also moderates surface temperatures by absorbing solar energy that would otherwise heat the soil. As a result of trees disappearing, temperatures would become more extreme.

Nor would all the effects be local. Evaporation is also important because it efficiently conducts solar energy into the atmosphere at high altitudes. Without evaporation, heat from the warm earth is conducted directly into the surface layers of the atmosphere. Water vapor, however, usually rises to heights of from two to eight kilometers before releasing its latent heat by condensing as rain. The injection of heat at these altitudes drives global patterns of weather and air circulation. The consequences of altering these patterns are difficult to predict.

It is also difficult to predict how the large amounts of carbon monoxide produced by biomass burning may change the climate by altering atmospheric chemistry. Hydroxyl reacts readily with carbon monoxide. As carbon monoxide emissions climb, proportionally more of the hydroxyl is consumed by carbon monoxide, and less remains to break down methane and other molecules. This disturbance of the atmosphere's chemical equilibrium may help explain increases in atmospheric methane that have been observed in recent years. Methane, like carbon dioxide, is a greenhouse gas. In the atmosphere, it helps to trap heat that the earth would ordinarily emit back into space. Much of the growing concern that an increasing green-house effect might change the global climate has centered on huge increases in atmospheric carbon dioxide; whether increases in carbon monoxide will result in enough methane to seriously compound the problem remains to be seen.

High levels of carbon monoxide also increase the formation of ozone at relatively low altitudes. It appears that this low-altitude ozone is effective at screening harmful solar ultraviolet radiation. It might therefore be helpful in offsetting the effects of decreases in the stratospheric ozone layer, which seems to be diminishing because of reactions with chlorofluorocarbon contaminants. Yet even fairly small increases in ozone concentrations can harm the growth of vegetation. The effects of ozone exposure may already be visible in some hardwood forests that appear to be suffering from slower growth rates.

It is clear, then, that measuring the production, circulation and elimination of carbon monoxide is a matter of vital interest. The MAPS instrument has already proved to be a useful tool for detecting carbon monoxide from burning

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biomass, fossil fuels and natural sources at high altitudes. Repeating the MAPS experiment during seasons other than the Northern Hemisphere autumn would help to increase understanding of seasonal variations in carbon monoxide throughout both hemispheres. Additional measurements could also fill in gaps in geographic coverage, particularly over the oceans. Further improvements in MAPS could increase its sensitivity to carbon monoxide in the lowest layers of the atmosphere, which would permit more direct and accurate measurements of burning and local carbon monoxide generation.

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REGINALD E. NEWELL, HENRY G. REICHLE, JR., and WOLFGANG SEILER have collaborated on the study of atmospheric carbon monoxide during the Measurement of Air Pollution from Space project. Newell is professor of meteorology at the Massachusetts Institute of Technology. His main interests are in the large-scale general circulation of the atmosphere and the physics of climatic fluctuations. Reichle is a senior research scientist at the NASA Langley Research Center and has been active in research on the remote measurement of atmospheric properties since 1965. Seiler is the director of the Fraunhofer Institute for Atmospheric Environmental Research in Garmisch-Partenkirchen, West Germany.

GRAPHIC: Map; Chart; Graph; Caption: Concentration of carbon monoxide in air; Creation of carbon monoxide.; Diagram of MAPS radiometer.; Mixing ratios of carbon monoxide in atmosphere.; Seasonal variations in carbon monoxide levels

SUBJECT: Carbon monoxide, environmental aspects; Rain forest ecology, research; Air, Pollution; Burning of land, environmental aspects; Space shuttles, scientific applications

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Krakow monuments

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BODY:

The Soviet Union and its East bloc allies have been keeping a dirty little secret for more than 30 years.

They hid evidence of how acrid emissions from cars without catalytic converters and factories without filters were eroding their most cherished monuments. In Krakow, that evidence is locked in a courtyard behind the Church of St. Peter and Paul, which has become the burial ground for 17th century statues that survived invasions by Swedish kings and Austrian emperors, by Hitler and Stalin, only to have their noses nibbled off and eyes eaten out by pollution.

They espoused Marxist dicta on the harmony between man and nature. In truth, while scientists in West Germany's Black Forest and New Hampshire's White Mountains need binoculars to see how acid rain has thinned trees, along the East German-Czechoslovak border pollution has completely consumed thousands of acres of evergreens. All that remains are tree skeletons too brittle and thin to be salvaged for paper.

Worst of all, they kept under wraps pollution's human toll: Clinics in Poland and the Soviet Union contain ward after ward of infants breathing through tubes, with birth defects scarring their bodies and brain damage limiting their learning - conditions their doctors say were caused or aggravated by levels of lead, sulfur dioxide and other toxins in the air and water up to 200 times higher than in US cities.

Now, with the dramatic lifting of the Iron Curtain, proof is pouring out of an environmental nightmare, the legacy of more than three decades of industrial development with little or no environmental control.

The lessons for the East are ones of failure - of Marxism and Stalinism, of centralized planning and Socialist economics. But a two-month investigation by The Boston Globe also found signs of hope - in public pleas for clean air and water as loud as the cries for democracy, in new leaders who know cleanups will cost tens of billions of dollars but who are committed to finding solutions.

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The message for the West is just as vital. Devastation in the East makes clear what's in store for us, and for developing countries such as China, if we continue to pollute. It gives a truer picture of how much money Poland, Hungary and other East bloc nations will need to prove that their experiments with democracy can produce a healthier quality of life for their people. And, most important, it underlines the need to work with our traditional adversaries to slow global warming, clean the oceans and attack other problems that threaten the planet we share.

"There is no way we can make real progress in addressing global environmental problems unless we work with Eastern Europe and the Soviet Union in addressing their environmental problems," explained William Nitze, President Bush's ecological point man at the State Department.

"It is a very exciting time there politically, I'm very encouraged," Nitze added. "The only thing that discourages me is the magnitude of the problems."

Rumors that socialist countries were destroying nature have circulated for years, as Western analysts scoured Soviet technical journals for any hint of problems and emigrees carried out tales of woe. The Russians were said to have covered up a nuclear catastrophe in the Ural Mountains; the East Germans reportedly were dumping toxic wastes into open pits.

The first solid evidence of how bad things were came in April 1986, when the Chernobyl reactor exploded and spread radiation around the globe. A closer look revealed that Chernobyl's design was inherently unsafe, that its operators were poorly trained and that 19 other Soviet reactors were similarly flawed.

Even after Chernobyl - and glasnost - data on the depth and breadth of environmental damage were hard to come by.

"It was considered high treason to talk about these problems," Dr. Magdolene Hanicka explained recently while guiding visitors through her clinic in Krakow, pointing out case after case of children she said were disabled by pollution.

Within the last several months, however, Hanicka and other officials across the East have opened up about their pollution problems, inspired by glasnost and prospects of Western aid. Environmentalists, who had been quietly organizing for a decade, are advertising their concerns around the world. And Westerners, including reporters, have been invited for the first time to see first-hand what is wrong and why.

"Pollution in that region is among the worst on the earth's surface; I know of nowhere that is worse," said Michael Gwynne, who runs the United Nation's Global Environment Monitoring System. "It's something that is going to have to be put right."

Numbers tell part of the story: In Poland, 65 percent of the rivers are so dirty that even industries will not use the water for fear of corroding their pipes. In Czechoslovakia, where sulfur dioxide concentrations are eight times higher than in the United States, half the forests are dead or dying. And in Dorog, Hungary, an industrial town an hour from Budapest whose coal plants belch sulfur dioxide, children are stricken by bronchitis and asthma three to four times as often as in the rest of the country and suffer twice as many congenital heart defects.

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Other damage is tougher to measure: In Budapest, the "Paris of the East" which was formed in 1873 by the union of two old cities, the haze is often so thick that from the Pest side of the Danube River you can't see the magnificent castles hundreds of yards away on the Buda side. In the vast wilderness of Siberia, one of the most desolate places on Earth, a huge brown cloud of dust and dirt blown over from industrial regions reminds you that it is impossible to escape pollution. And in Gdansk, Poland, birthplace of Solidarity, the Vistula River contains a witch's brew of bacterial and chemical contaminants that cause welts on hands or feet left in the water too long.

In the West, pollution today often consists of invisible toxic emissions whose sources are uncertain and whose levels are measured in parts per billion. In the East, environmental ills are less abstract: Like residents of Pittsburgh 25 years ago, the 425 million people living in Eastern Europe and the Soviet Union can see and smell their pollution and observe its deadly effects.

For Maria Guminska of Krakow, the evidence is all around: Cancer has killed six of 23 residents of her apartment building, including her husband, while lilac bushes, apple and plum trees, and other plants have dried up or changed shape.

Guminska and her neighbors traced the problems to an old pharmaceutical plant down the street that spewed dioxin and other dangerous chemicals. They got the company to cut its emissions, but Guminska - a biochemistry professor at Nicolaus Copernicus Medical Academy and founding member of the Polish Ecology Club - says the plant simply waits until dark to belch its toxins.

Problems on her street are typical of those across the nation, Guminska said. Unless the economy improves or countries such as the United States help, she warned, "I can't see things getting better. Many people will continue to get sick."

On either side of Europe's crumbling East-West divide people today are asking how socialism could have failed so miserably in safeguarding the environment.

After all, environmentalists have always seen a plannned economy as the road to a pollution-free society. Capitalists are more interested in making money than preventing pollution, they reasoned, whereas public planners would have the will and power to prevent industry from harming the environment.

The first problem with that reasoning is that early leaders of the socialist revolution didn't buy it.

Karl Marx, communism's spiritual father, and Vladimir Lenin, the Soviet Union's first leader, were preoccupied with redressing intolerable factory conditions and other social ills, and assumed nature could be molded to man's needs. That was not an unreasonable expectation since the society they inherited was made up largely of peasant farmers and had not been plagued by industrial pollution. Even industrialized Western nations were naive about pollution's catastrophic effects.

Lenin's successor, Joseph Stalin, took a less benign approach. Soviet conservationists were planning to establish 20 million acres of nature preserves, "but Stalin overrode that," explained Nicholas Robinson, a professor of law at Pace University and specialist on Soviet environmental policies. The

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Soviet dictator went on to "exterminate an entire generation of ecologists. That set back scientific evaluation of the environment until Khrushchev."

If lack of concern among early leaders got environmental protection off to a bad start, inherent contradictions between state-run economies and effective pollution control made things even worse.

For one thing, communist officials had the conflicting duties of promoting industrial development and policing pollution caused by that development.

"When the state is doer and checker, doing usually prevails over checking," said Marshall Goldman, associate chief of Harvard University's Russian Research Center.

What that meant, Robinson said, is that "inspectors went into factories and found pollution violations, collected fines and sent them to Moscow. Meanwhile, the company was requesting money from Moscow to pay the fines. The money was going around in a circle and having no deterrent effect on antisocial polluting behavior."

Socialist industries also had less incentive than capitalist ones to use resources efficiently since they were not penalized for waste. That was especially dangerous in the Soviet Union, where supplies of coal and other minerals were so abundant that the nation abandoned partly tapped mines and wasted twice as much energy as many Western nations.

"Our country's wealth in terms of natural and manpower resources has spoiled - one may say even corrupted - us," Soviet leader Mikhail Gorbachev acknowledged in a 1987 speech.

A final flaw in state-controlled systems was their intolerance of opposition, including that of environmentalists. "The damage we see in Eastern Europe is what we would have had in the West without the environmental movement," said Conrad von Moltke, adjunct professor at Dartmouth College and founder of the Institute for European Environmental Policy.

Whatever environmentalists had hoped for, "in the real world there is not much difference between a production quota and the profit motive," said Lester Brown, president of the Worldwatch Institute, an environmental think tank. "Both lead to a focus on production at any cost. The difference is that capitalist countries were aware of that and took steps to modify that impulse and centrally planned economies didn't."

The United States and its allies exacerbated the problem by isolating the East politically and economically, said Alexander Timoshenko, a senior analyst at the Soviet Academy of Sciences. That forced socialist states to build their own cars, power plants and factories, all worse polluters than comparable equipment in the West. And, Timoshenko said, the drive to increase military output as well as industrial production depleted the funds that might have paid for expensive environmental controls.

If their economies had flourished, the Soviet Union and its allies might have overcome all those barriers. After all, the United States and other capitalist countries experienced their own environmental nightmares in the 1950s and 1960s, and - with prodding from environmentalistnvironmental Protection

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Agency and former science attache at the US Embassy in Poland. "It was like trying to take a round hole and put it over a square peg. The thing didn't fit."

Sandor Jobbagy, a Hungarian environmental official, agreed: "Industry was king. Pollution was purposely ignored to develop industry. The result was we did not develop in a healthy or sane manner."

Ironically, Soviet research on mercury and other toxins is so advanced that although Soviet officials pay little heed, the United States has used the information to set its safety limits, Robinson said.

And, said Goldman, while the Soviets "have the strictest environmental laws in the world . . . they can afford to because no one observes them."

Westerners historically have not cared much about pollution in the East bloc. We had our own environmental nightmares to worry about, and with the Warsaw Pact nations seeming to pose a major military threat, pollution or anything else that drained their resources and diverted their attention was seen as a boon to the West.

The global environmental crisis has changed all that.

First radioactive rays from Chernobyl spread as far as the United States, then industrial chemicals pierced the ozone layer of the atmosphere and oceans began spitting back sewage and syringes. The most alarming proof of global interdependence has come within the last 18 months, as searing droughts and record high temperatures lent new credibility to warnings the Earth is heating up. Researchers predict Cairo and Shanghai could be flooded as warming expands the oceans and melts the glaciers; they also predict that the American farm belt could be transformed into a wasteland and Massachusetts could lose 10,000 acres to the encroaching sea.

The pollutants responsible for those and other woes do not recognize national boundaries or political divisions.

The Soviet Union and its allies produce 20 percent of the carbon dioxide, methane and other gases responsible for global warming, the same percent as the United States. With ozone depletion, they are responsible for about 5 percent of the problem, one-sixth as much as the United States. And they are a major source of the contaminants that are soiling the Baltic Sea and Pacific Ocean and killing forests across Europe and Asia.

China, which seems hellbent on repeating the mistakes of its socialist brethren, contributes just 10 percent of gases responsible for warming. But that will double by early next century if the Chinese succeed in industrializing and continue burning fuel inefficiently and without controlling pollution.

"Our future and their future are completely and totally linked in terms of these environmental solutions," said Sen. John Kerry (D-Mass.), who is helping organize next year's international Earth Day celebrations.

"We have to care," the senator added.

Kerry and others say that for the United States to make a difference, that care must be translated into billions of dollars in aid. The only way that

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level of help can be provided, officials in the East and West agree, is through an enormous shift of spending from arms to the environment.

Helping the East may turn out to be the cheapest way for the West to attack global warming and similar woes, said Nitze, the State Department official. Soviet and Eastern European factories, power plants and cars are the dirtiest in the world, with few or no pollution controls, and fitting them with rudimentary filters is much less costly than adding sophisticated controls to US plants. That reasoning has convinced the Finns, Swedes, West Germans and others to buy millions of dollars worth of pollution-scrubbing equipment for Poland's industries.

Such aid also could be a bonanza for US firms that supply low-sulfur coal, catalytic converters and other energy and pollution-control services, Nitze explained. And it would provide an opening for US scientists to study up-close what happens to people, trees and buildings when pollution gets that bad.

Most important, East-West collaboration in rescuing forests, protecting monuments and saving lives threatened by pollution could lead to "the whole betterment of relations in all sectors," said Timoshenko, the Soviet legal specialist.

But to be effective, that help must come now, warned Laurens Brinkhorst, the European Community's top environmental official. "For many years the West and America have been saying we are ready to work with the East on issues like cleaning the environment, providing the military threat is removed.

"Well, that threat is being dismantled. The reform movement is a golden chance to use a window of opportunity that may close if things do not go well," he added. "We should grab the chance and work in an active way to prevent the reform movement from falling back."

ON THE BORDER, PROBLEMS BECOME SHARED

HOF, West Germany Climbing through lush spruce forests near this remote Bavarian town, you sense you've left behind the troubles of the world. And the government wants to keep it that way, making the few industries around meet air pollution limits that are among the toughest in the world.

As you near the 3,200-foot peak of Schneeberg Mountain, however, something seems amiss.

More than half the trees are thinning, and one in five is dead. The rich, diverse underbrush has been replaced by monotonous brown grass, the kind that can withstand anything but the darkness of a healthy forest. If you could test the rain pouring from the heavens, you'd find it more acidic than vinegar.

And the damage is not limited to trees. Since 1980, when East Germany dramatically increased its use of dirty brown coal, the incidence of bronchitis in the region is up 99 percent, while asthma cases are up 456 percent.

"The increases are parallel, there is a connection between air pollution and respiratory disease," said Dr. Rudolph Sies, a general practitioner who has tracked the trends.

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Hof's troubles make it clear that while West Germany is on its way to scrubbing clean its factories and cars - and getting its Western allies to do the same - that is not enough. Eighty percent of the pollution raining down here is blown over from power and paper plants in East Germany, less than 40 miles away.

The only way to save Hof, specialists agree, is to get the East to join the cleanup.

The lessons of Hof are not limited to states with common borders, such as East and West Germany. The same linkage exists on a global scale - with pollution from East Germany and its neighbors fueling global warming, depletion of the Earth's ozone layer and other problems that threaten countries as far away as the United States.

"The worst mistake we could make is to look at places like Hof with complacency," said Conrad von Moltke, who teaches at Dartmouth College and founded the Institute for European Environmental Policy. "Hof tells us why we have to help the East eliminate pollution. There is no way to isolate environmental problems.

"The real challenge is to avoid having Hof become a metaphor for wider environmental damage."

That challenge is even more pronounced in Lubeck, a 1,000-year-old town north of Hof known for five towering churches dating to Henry the Lionhearted's rule in the 12th century, a central square magnificently reconstructed after World War II, marzipan candy, sandy beaches along the East German border and, more recently, a dizzying array of pollution problems.

Acid rain has killed 16 percent of the trees in Lubeck's forests, made another 33 percent sick and caused millions of dollars in damage to the old City Hall and marketplace. Officials lay much of the blame on the East, where even the newest power plants and factories have antiquated pollution controls.

Dangerously high bacteria levels forced the closing of beaches along the Black Sea for the first time last summer. Since nearly all of West Germany's sewage receives advanced treatment, East Germany again is suspected of being a major culprit.

Worst of all, officials believe paint coatings, medical debris, sewage sludge and other toxins from the Schoenberg hazardous waste site just across the East German border are leaking and poisoning Lubeck's drinking water.

But the Schoenberg situation also shows how sticky East-West pollution issues can be. Nearly all 40,000 loads of waste trucked there each year come from the West. West German firms know it is much cheaper to ship their wastes across the border, where environmental standards are much looser, and the West German government has gone along for 19 years, apparently relieved to find a quick and easy solution to its toxic disposal worries.

"The East Germany site is an escape for our industry. It's easy and it's hidden," said Peter Boege, Lubeck's environmental chief, who is as angry at his government as he is at East Germany's. "To get East Germany to make improvements, we should pay for them."

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Reinhold Hiller, Lubeck's representative in Parliament, agreed that the two must collaborate to end the town's pollution problems. If that happens, he added, Lubeck could be transformed from a symbol of pollution to a symbol of solutions.

"We can set an example for cooperation between the USA and the Soviet Union," he said, "and for the Third World and industrialized countries."

SOCIALISM: A LEGACY OF POLLUTION;
EAST GERMANY

80% of rivers contaminated.

Most cities have air pollution 50 times safe limits.

6 million people at risk from environmentally induced disease.

In Bittefeld and other cities, 90-100% of children suffer respiratory diseases.

37% of trees dead or damaged.

CZECHOSLOVAKIA

30% of forests dying, another 20% damaged.

30% of Czechs, 16% of Slovaks exposed to dangerous pollution.

Sulphur dioxide concentrations per unit of land 8 times higher than in US.

YUGOSLAVIA

Belgrade is 5th most polluted city in world.

3.5 times more sulphur dioxide per unit of land than in US.

48% of trees dead or damaged.

126 towns have air pollution problems.

ALBANIA

10% of land drained for farming since World War II, killing wetlands.

BULGARIA

80% of cultivable land damaged by wind, water erosion.

158 plants, 62 birds, 26 fish, 17 mammals threatened with extinction.

25% of plant, animal species vulnerable.

ROMANIA

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Less than 20% of waterways provide drinkable water.

30% of arable land eroded.

SOVIET UNION

100 major cities have serious air pollution.

Most rivers polluted.

8 of 10 deaths in Lithuania blamed on pollution.

59% of trees damaged or dead.

the New dictator

The tyranny of pollution!

HUNGARY

Budapest air pollution during rush hour 30 times higher than safe limits.

Pollution blamed for men having lowest life expectancy in Europe.

POLAND

65% of rivers too corrosive and dirty for industry to use.

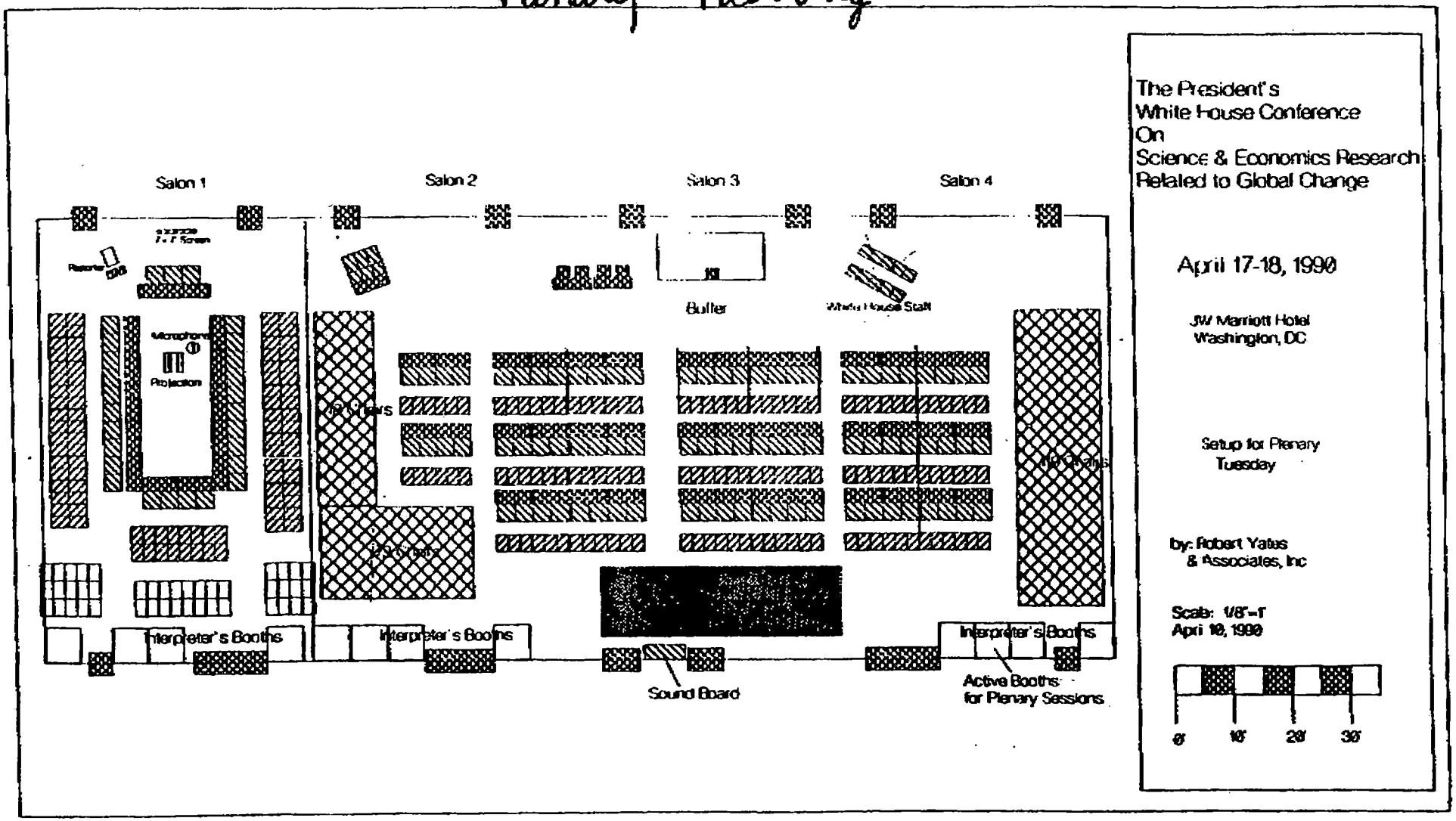
10-15% of students chronically ill.

50% of trees badly damaged, another 17% harmed.

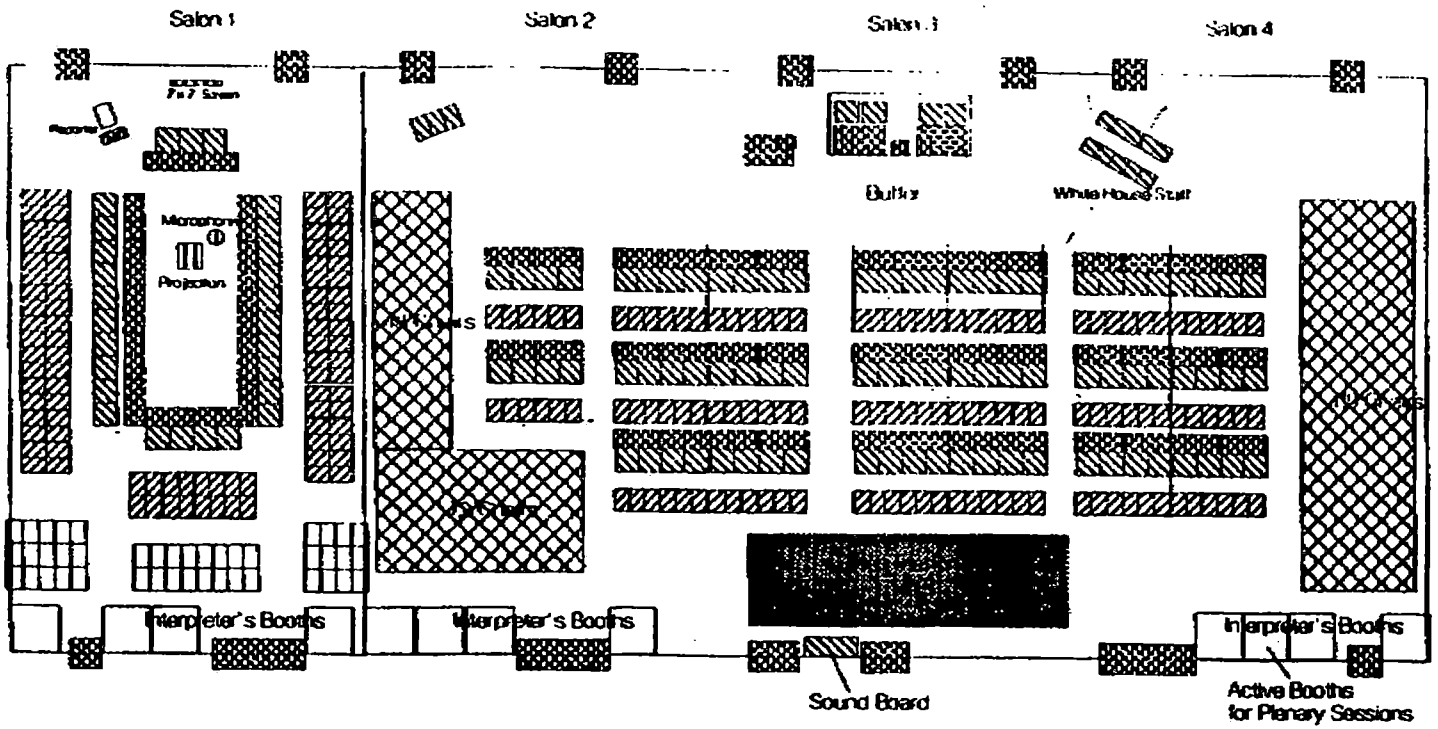
GRAPHIC: PHOTO MAP, 1. Smoke from a coal-burning bauxite plant blankets the community of Ajka in Hungary. There are few pollution controls anywhere in Eastern Europe. / GLOBE STAFF PHOTO / SUZANNE KREITER 2. An environmentalist shileds herself from acid rain in a forest near Hof, West germany, that is dying due to emissions from nearby East Germany. 3. Across the East bloc, people live in the shadow of horrendous pollution. Stefan Zak, 55, (above top) blames the Glogow copperworks in Poland, where he worked for six years, for his lung and leg problems. The plant still belches toxins that have forced officials to raze an adjacent village. In Mosonmagyarovar, Hungary, (above) two children wander across a toxic waste dump in search of salvage. And in Dorog, Hungary, Gabor Varga, 3, one of dozens of children with pollution-related respiratory problems, is examined at a public clinic. 4. GLOBE STAFF MAP

LEXIS® NEXIS® LEXIS® NEXIS®

Plenary Tuesday



Plenary Wednesday



The President's
White House Conference
On
Science & Economics Research
Related to Global Change

April 17-18, 1990

JW Marriott Hotel
Washington, DC

Setup for Plenary
Wednesday

by: Robert Yates
& Associates, Inc

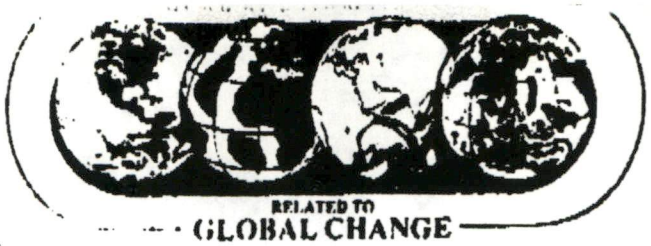
Scale: 1/8"=1'
April 18, 1990

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Heads of Delegation/Minister-level Reception/Photo-up

Australia	Neal Blewett	Member of Parliment, Minister for Trade Negotiations
Brazil	Jose Lutzenberger	Environment Secretary
	Jose Goldemberg	Science Secretary
Canada	Lucien Bouchard	Federal Environment Minister
	Jak Epp	Federal Energy Minister
France	Hubert Curien	Minister of Research and Technology
	Brice Lalonde	Secretary of State for the Environment
Germany	Professor Dr. Klaus Topfer	Federal Minister for the Environment, Nature Protection and Nuclear Safety
India	Ms. Maneka Gandhi	Minister of State for Environment and Forests
Indonesia	Prof. Dr. Ing. B.J. Habibie	Minister of State for Research and Technology; Chairman of the Agency for the Assessment and Application of Technology
Italy	Hon. Adolfo Battaglia	Minister of Industry, Head of Delegation

Japan	Ishimatsu Kitagawa	Minister of State, Director General of Environment Agency
	Shigeto Nagano	Parliamentary Vice Minister of Science and Technology
Mexico	Lic. Patricio Chirinos	Secretary of Urban Development and Ecology
Netherlands	J.G.M. Alders	Minister, Ministry of Housing, Physical Planning and Environment
Nigeria	Major General Mamman Kontagora	Minister of Works and Housing
	Gordian Ezekwe	Minister of Science and Technology
Norway	Kristin Hille Valla	Minister of Environment
	Einar Steensnaes	Minister of Education and Science
Poland	Jan Janowski	Deputy Prime Minister; Head of the Agency for Science and Technological Progress and Application
U.S.S.R.	Nikolay Pavlovich Laviorov	Chairman of the U.S.S.R. State Committee on Science and Technology
	Juriy Antonievich Israel	Chairman of the U.S.S.R. State Committee on Hydrometeorology
United Kingdom	David Trippier RD, JP, MP	Minister for the Environment and Countryside



AGENDA

MONDAY - APRIL 16, 1990

12:00 p.m. **Early Registration** - J.W. Marriott Hotel
1331 Pennsylvania Avenue
Washington, D.C.

7:00 p.m. **Reception - National Air and Space Museum (Closed to Media)**

Hosts: Robert A. Mosbacher, Secretary of Commerce
Richard H. Truly, Administrator of NASA
Martin Harwit, Director, National Air and Space Museum

TUESDAY, APRIL 17, 1990

9:30 a.m. **PLENARY SESSION I (Open to Media)**

Moderator: Michael J. Boskin, Chairman, Council of Economic Advisors

Welcoming Remarks: Nicholas F. Brady, Secretary of the Treasury

President George Bush

Goals and Expectations for the Conference: D. Allan Bromley, Assistant to the President for Science and Technology

Opening Remarks by Visiting Delegate: Jan Janowski, Deputy Prime Minister of Poland, Director of the State Office for Science and Technology Development

11:00 a.m. **PLENARY SESSION II (Open to Media)**

Moderator: Michael R. Deland, Chairman, Council on Environmental Quality

Theme I - The Science and Economics Research Challenge

Theme II - Integrating Science and Economics Research in the Policy Process

Theme III - Building Partnerships for Science and Economics Research

Presentations:
D. Allan Bromley
Michael J. Boskin
Michael R. Deland

12:00 **Luncheon (Open to Media)**

Speaker: William K. Reilly, Administrator, Environmental Protection Agency

1:45 p.m. **WORKING GROUP SESSIONS (Closed to Media)**

Working Group Session I

Working Group Session II

6:00 P.M. **Reception at the National Academy of Sciences Building (Closed to Media)**

Host: Frank Press, President of the National Academy of Sciences and
Robert White, President of the National Academy of Engineering

8:00 p.m. **Official Delegate Dinner (Closed to Media)**

Host: Lawrence Eagleburger, Deputy Secretary of State
Address: Bert Bolin, Professor of Meteorology, Stockholm University, Sweden
Chairman, Inter-Government Panel on Climate Change

WEDNESDAY, APRIL 18, 1990

9:00 a.m. **WORKING GROUP SESSIONS (Closed to Media)**

Working Group Session III

Working Group Session IV

12:00 p.m. **Luncheon (Open to Media)**

Speaker: James D. Watkins, Secretary, Department of Energy

1:45 p.m. **CONCLUDING SESSION (Open to Media)**

Moderator: D. Allan Bromley

Review of Co-Chairmen's Report: Michael R. Deland, for the Conference Co-Chairmen

President George Bush

3:00 p.m. **Conference Ends**

Mary Nugent 724-0622

724-0601-5

724-0608

Jim Fox
(~~MIT Jamison~~)

Rick Davis 0620/1/2

On stage
- boskin
- Deland
- Bromley

Sununu
~~Brady~~
~~Mosbacher~~
Lujan
Yeutter
Watkins
Reilly
Erich Bloch - NSF ~~Sec~~ - Dir.
John A. Knauss - Undersec Comm Oceans & Atmos + Dir. NOAA

Co-Chairs Boskin
Bromley
Deland

12 names

C1

~~Recent~~ minus Brady + Mosbacher

For ACRA.

As of 4/6; 9:00 p.m.

HEADS OF DELEGATIONS

724-0622
~~663-2996~~
call Dr. Fran Marie Kee for acknowledgements

*** CHECK CABINET MEMBERS

COUNTRY	NAME OF DELEGATE	TITLE
Australia		Mary Nugent
Brazil		
Canada	Lucien Bouchard	Federal Environment Minister
Federal Republic of Germany	Klaus Toepfer	Federal Environment Minister
France	Hubert Curien	Minister of Research & Technology
India	Maneka Gandhi	Min. of State for Environment
Indonesia	B.J. Habibie	Min. of State for Res. & Tech.
Italy	Adolfo Battaglia	Minister of Industry
Japan	Ishimatsu Kitagawa	Minister of Environment
Mexico	Patricio Chirinos	Sec. of Urban Dev. & Ecology
Netherlands	Hans Alders	Minister of Environment
Nigeria		
Norway	Kristin Hille Valla	Minister of Environment
Poland	Jan Janowski	(also Head of S&T Cooperation) Deputy Prime Minister
Soviet Union	Nikolay Laverov	Chmn. St. Cmte. Sci. & Tech.
United Kingdom	David Trippier	Minister for Environment
United States	Nicholas Brady	Secretary of Treasury
Zaire	Citoyen Lobo Kanza Kanza	Depty. Minister of Environment
European Community (EC)	**Laurens Jan Brinkhorst	Director-General for Environment
OECD	Robert Cornell	Deputy Secretary-General

**Some confusion between EC and Irish. We now have 14 names; also indications that delegation head might be Filippo Maria Pandolfi, Commissioner (Vice President) in charge of Science, Research and Development.

CONFERENCE "EVENTS" WHERE OUTCOMES CAN BE NURTURED.

There are sixteen focal events, listed in the order of their occurrence, during the Conference where a potential exists for creating or nurturing a Conference outcome or product. These are:

1. Sec. Mosbacher's Hosting of the Opening Reception
2. Sec. Brady's Conference Opening Remarks
3. The Stating of the Conf. Goals/Objectives by the Conf. Co-Chairmen
4. President Bush's Opening Welcome to the Delegates
5. The Theme I Presentation by D. Allan Bromley
6. Working Group Session I - Addressing Theme I
7. Lunch Speech by William K. Reilly
8. The Theme II Presentation by Michael J. Boskin
9. Working Group Session II - Addressing Theme II
10. Dinner Remarks - Vice President or the Co-Chairmen
11. Address by Bert Bolin
12. The Theme III Presentation by Michael R. Deland
13. Working Group Session III - Addressing Theme III
14. Lunch Speech by Adm. James D. Watkins (Ret)
15. Reports from Each Working Group, both oral and written
16. Summary Remarks by Conference Co-Chairmen
17. Closing Remarks by President Bush

722 Jackson Pl. Dale Curtis

(Lange/Cawley)
February 4, 1989
3:45 P.M.
[IPCC.DOC]

PRESIDENTIAL ADDRESS: INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE
GEORGETOWN UNIVERSITY
MONDAY, FEBRUARY 5, 1990
10:15 A.M.

Thank you, Dr. Bolin [Bo-leen]. Professor Obasi. Dr. Tolba. Delegates of the World Meteorological Organization, and the United Nations Environment Program. Let me commend **all** of you, for coming together to examine an issue of such great importance. The recommendations this distinguished organization makes can have a profound effect on the world's environmental and economic policy.

By being here today, I hope to underscore concern -- my country's, and my own -- about environmental stewardship; and to reaffirm our commitment to finding responsible solutions. It is both an honor and a pleasure to be the first American President to speak to this organization, as its work takes shape.

You are called upon to develop recommendations which strike a difficult yet critical international bargain: a convergence between global <u>environmental</u> policy, and global <u>economic</u> policy. A bargain where **both** perspectives benefit -- and **neither** is compromised.

As experts, you understand that economic growth and environmental integrity need not be contradictory priorities. One reinforces and complements the other. Each, a partner. Both are crucial.

A sound environment is the basis for the continuity and quality of human life and enterprise. Clearly, strong economies allow nations to fulfill the obligations of environmental stewardship. Where there is economic strength, such protection is possible. But where there is poverty, the competition for resources gets tougher. Stewardship suffers.

For all of these reasons, I sincerely believe we must do everything in our power to promote global cooperation: For environmental protection **and** economic growth. For intelligent management of our natural resources **and** efficient use of our industrial capacity. And for **sustainable** and **environmentally sensitive** development -- around the world.

The United States is strongly committed to the I.P.C.C. process of international cooperation on global climate change. We consider it vital, that the community of nations be drawn together -- in an orderly, disciplined, rational way -- to review the history of our global environment, to assess the potential for future climate change, and to develop effective programs.

The state of the science; the social and economic impacts; and the appropriate strategies -- all are crucial components to a global resolution. **The stakes here are very high; the consequences, very significant.**

The United States remains committed to aggressive and thoughtful action on environmental issues. Last week, in my State of the Union address, I spoke of stewardship: because I

believe it's something we owe ourselves, our children and their children.

So we are renewing the ethic of stewardship in our domestic programs. In our work to forge international agreements. In our assistance to developing and East Bloc nations. And here, by chairing the Response Strategies Working Group.

I have just submitted a budget to our Congress for fiscal 1991. It includes over $2 billion in new spending to protect the environment. And, underscoring our commitment to your efforts, I am pleased to note that funding for the U.S. Global Change Research Program will increase by nearly 60 percent, to over **one billion dollars.**

That commitment, by far the largest ever made by any nation, reflects our determination to **improve our understanding of the science** of climate change.

We are working with our neighbors around the world to enhance global monitoring and data management, improve analysis, reduce the uncertainty of predictive models, and conduct regular reassessments of the state of the science.

Our program allows NASA, her sister agencies, and all our international partners, to move forward with the "Mission to Planet Earth." That will initiate the U.S. Earth Observing System, in cooperation with Europe and Japan, to advance the state of knowledge about the planet we share.

Furthermore, even as we wait for the benefits of this research, the United States has already taken many steps in our country that bring both **economic and environmental benefits.** Steps that make sense on their own merits in terms of responsibility and efficiency, which help reduce emissions of CFC's, carbon dioxide, and other pollutants now entering the atmosphere. **Let me outline them very briefly:**

We are pursuing new **technology development** that will increase the **efficiency** of our energy use, and thus reduce total emissions.

We're crafting a revised **Clean Air Act** with incentives for our private sector to find creative, market-driven solutions to enhance air quality.

We've launched a major **reforestation initiative** to plant a **billion** trees a year on private land across America.

And we're working out a comprehensive review and revision of our **National Energy Strategy**, with initiatives to increase energy efficiency and the use of renewable sources. These efforts, already underway, are the heart of a $336 million Department of Energy program, and are expected to produce energy savings through the year 2000 of over $30 **billion** -- while achieving significant pollution reduction. Quite a return on investment.

We're also working through diplomatic channels with our colleagues in other countries, and through innovative measures like debt-for-nature swaps, to do <u>more</u> than simply reduce global

deforestation. **We hope to reverse it** -- not unilaterally, but by working with our international neighbors.

The **economics** of our response strategies to climate change are getting intensive study in America. We are developing real data on the costs of various strategies, assessing new measures, and encouraging other nations to follow suit. And we look forward to sharing this knowledge and technical support with our international colleagues.

As we work to create **policy** and agreements on action, we want to encourage the most creative, effective approaches. Wherever possible, we believe that market mechanisms should be applied -- and that our policies must be consistent with economic growth and free market principles in **all** countries. Our development efforts and our dialogue can help us reach effective and acceptable solutions.

Last December at Malta, in my meeting with President Gorbachev, I proposed that the United States offer a venue for the first negotiating session for a framework convention, once the I.P.C.C. completes its work. I reiterate that invitation here, and look forward to your cooperation in that agenda.

We all know that human activities are changing the atmosphere in unexpected and unprecedented ways. Much remains to be done. Many questions remain to be answered. Together, we have a responsibility to ourselves and the generations to come, to fulfill our stewardship obligations. But that responsibility demands that we do it right.

We acknowledge a broad spectrum of views on these issues, but our respect for a diversity of perspective does not diminish our recognition of our obligation -- or soften our will to produce policies that **work**. Some may be tempted to exploit legitimate concerns for political positioning. Our responsibility is to maintain the quality of our approach, our commitment to sound science, and an open mind to policy options.

So the United States will continue its efforts to improve our understanding of climate change -- to seek hard data, accurate models, and new ways to improve the science -- and determine how best to meet these challenges. Where politics and opinion have outpaced the science, we are accelerating our support of the technology to bridge that gap. And we are committed to coming together periodically, for international assessments of where we stand.

Therefore, this spring, the United States will host a White House conference on science and economic research on the environment -- convening top officials from a representative group of nations, to bring together the three essential disciplines: science, economics, and ecology. They will share their knowledge, assumptions, and state-of-the-art research models, to outline our understanding and help focus our efforts. I look forward to participating in this seminar, and to learning from its deliberations.

Our goal continues to be matching policy commitments to emerging scientific knowledge -- and a reconciling of

environmental protection to the continued benefits of economic development. And as Secretary Baker observed a year ago, **whatever** global solutions to climate change are considered, they should be as specific and as cost-effective as they can possibly be.

If we hope to promote environmental protection **and** economic growth around the world, it will be important not to work in conflict, but <u>with</u> our industrial sectors. That will mean moving beyond the practice of command, control, and compliance -- toward a new kind of environmental cooperation -- and toward an emphasis on pollution **prevention**, rather than mere mitigation and litigation. Many of our industries, in fact, are already providing crucial research and solutions.

One corporation, for example, started an in-house program called Pollution Prevention Pays, that has saved the company well over half a **billion** dollars since 1975 -- and prevented 112,000 tons of air pollutants, 15,000 tons of water pollutants, and almost 400,000 tons of sludge and solid waste from being released into the environment. They've done it by rewarding employees for coming up with the ideas. And they have clearly demonstrated the benefits of doing it right.

Where developing nations are concerned, some argue we'll have to abandon the free-market principles of prosperous economies. In fact, we think it's all the more crucial in the developing countries, to harness incentives of the free enterprise system, in the **service** of the environment. \\

I believe we should make use of what we know. We know that the future of the earth must not be compromised. We bear a sacred trust in our tenancy here -- and a covenant with those most precious to us: our children, and theirs. We also understand the efficiency of incentives -- and that well-informed free markets yield the most creative solutions. We must now apply the wisdom of that system, the power of those forces, in **defense** of the environment we cherish.

Working together, with good faith and earnest dialogue, I believe we can reconcile vitality with environmental protection. Let me commend you on your outstanding work -- and wish you all deliberate speed in your efforts to address a very difficult, but very important, human concern.

Thank you -- and God bless you.

# # #

Memo

Jane Wish

Tim Wish

Rep Schenck

Ann Thulson

True Trust Act

by Warren Brookes (Times) last week

Rhodes

NASA

Engineers

FACT SHEET
for
THE WHITE HOUSE CONFERENCE
on
SCIENCE AND ECONOMICS RESEARCH
RELATED TO GLOBAL CHANGE

April 17-18, 1990
Washington, D.C.

On February 5, 1990, the President invited the Heads of State from seventeen countries, the European Community (EC) and the Organization for Economic Cooperation and Development (OECD) to send ministerial-level delegates to a White House Conference on Science and Economics Research Related to Global Change.

The Conference will be held in Washington, D.C. on April 17-18, 1990.

The President formalized his intention to host such a Conference on this subject during his Summit meeting with President Gorbachev, on December 4, 1989, and later on Monday, February 5, 1990, during his speech to the United Nations Intergovernmental Panel on Climate Change.

The Conference is designed to address important next steps for substantially enhancing and broadening international understanding of science and economics research related to global change. The Conference seeks to frame a strategy for implementing joint international science and economics research efforts. It also seeks for the first time to integrate and link science and economic research results to both the domestic and international policy process.

The Conference focuses on "Global Change," a scope of research that has evolved out of the science that concerns itself with understanding the natural processes that govern the way the Earth functions as well as economics research related to global change. .

The conference is conceived as an integral part of the ongoing international process of trying to understand changes in the global environment. The need for substantially improved understanding of both the science and economics of global change has been noted by virtually all world leaders. This Conference will focus on science and economics research as a complementary effort to the on-going Intergovernmental Panel on Climate Change (IPCC). The President strongly supports the IPCC efforts and expects that the results of the Conference will contribute to the on-going international debate on climate change issues. Dr. Bert Bolin of the Intergovernmental Panel on Climate Change has been invited to take an active role in the Conference.

The Conference will convene a delegation of three ministerial-level officials from a representative group of nations, each representing a relevant discipline, (i.e., science, economics, energy and the environment). Participants were invited on

the basis that the meeting should include countries or representatives of country interests that have substantial populations, large land masses, industrialized economies or heavy future energy needs, substantial research infrastructures, or have provided international leadership on issues related to climate and global changed. The President has asked the Heads of State of the following countries and organizations to send a delegation:

1. Australia
2. Brazil
3. Canada
4. Federal Republic of Germany
5. France
6. India
7. Indonesia
8. Italy
9. Japan
10. Mexico
11. Netherlands
12. Nigeria
13. Norway
14. Poland
15. Soviet Union
16. United Kingdom
17. Zaire
18. European Community (EC)
19. Organization for Economic Cooperation and Development (OECD)

It is expected that each country or organization will send a ministerial-level official to represent their relevant agencies including science, economics, energy and the environment. It is suggested that one delegate in each of the three areas will be an individual who is currently active in science or economics research. It is recognized that the delegations are likely to have one "at-large" member. Thus, the total delegation size should not exceed ten per country. Once the delegations are determined, it is planned to consult with these countries on agenda details.

The U.S. delegation will be:

Secretary of the Treasury - Nicholas F. Brady

Secretary of Interior - Manuel Lujan, Jr.

Secretary of Agriculture - Clayton Yeutter

Secretary of Commerce - Robert A. Mosbacher

Secretary of Energy - Admiral James D. Watkins (Ret)

Administrator, Environmental Protection Agency - William K. Reilly

Administrator, National Aeronautics and Space Administration - Richard H. Truly

Under Secretary of Commerce for Oceans and Atmosphere; and Director, National Oceanic and Atmospheric Administration - John A. Knauss

Director, National Science Foundation - Erich

Member, Council of Economic Advisors - Richard Schmalensee

Conference Co-Chairmen:

Chairman, Council Economic Advisors - Michael J. Boskin

Assistant to the President for Science and Technology - D. Allan Bromley

Chairman, Council on Environmental Quality - Michael R. Deland

The Conference is designed to be a forum to bring a number of ministerial-level leaders together to enhance international cooperation and to build the basis for joint efforts in these vital areas. It is hoped that the delegates, working together, will agree upon those areas of opportunity for cooperative action in the areas of science and economics research. The goal would be to address three major themes:

- Uncertain Change: The Science and Economics Research Challenge
- Integrating Science and Economics Research in the Policy Process; and
- Building Partnerships for Science and Economics Research.

The Conference provides a forum for international leaders to consider and discuss research questions that are critical to the policy process, such as:

* How well can we predict temperature trends in the decades ahead?
* How "good" are our global-scale models, such as models to predict temperature changes?

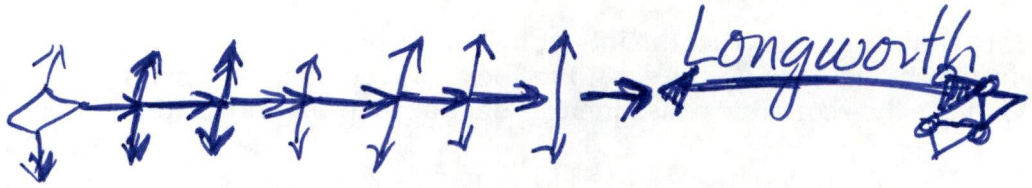
* How well can we predict the interconnections between global environment change and the resulting social and economic impacts?
* What are the economic consequences of adapting to or mitigating global change?
* How "good" are the models used to assess these economic consequences and their impact on the well-being of humanity?

By addressing such questions, it is hoped that the nations might agree to support joint international research efforts related to global change that focus on rapid improvement of both scientific and economic knowledge and developing the necessary infrastructure, including:

- Establishing a more formal international mechanism to improve the coordination of global change science and economic research programs, and
- Participating in cooperative research efforts, such as the World Ocean Circulation Experiment and cooperative economic projects of the OECD.

The Conference is a White House Conference, initiated by the President. Hence, the President has appointed three members of the Executive Office of the President in the relevant areas to be the co-chairmen of the Conference. The three co-chairmen are: The Chairman of the President's Council of Economic Advisors, Dr. Michael J. Boskin; the President's Science Advisor and Director of the Office of Science and Technology Policy, Dr. D. Allan Bromley; and the Chairman of the President's Council on Environmental Quality, Mr. Michael R. Deland.

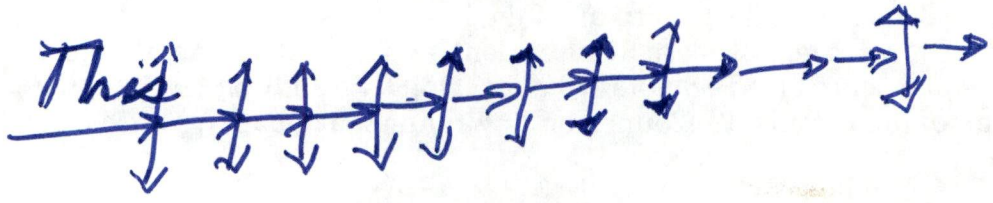
The President stated, "this conference is a vital next step in a joint international approach to address changes in the global environment."



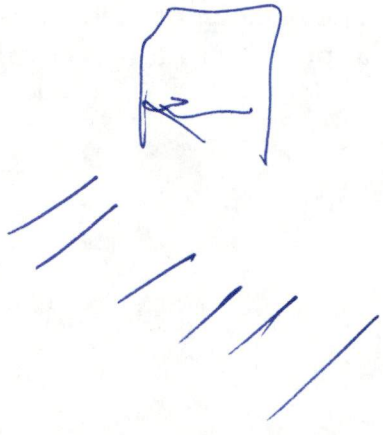
Credentials – laminate.

computer
epoxy & laminating machine

Information – data needed







Cancel

Easel sign
Conference
Registration
Right arrow

April 10, 1990

MEMORANDUM

TO: MARK LANGE

FROM: CAROLYN CAWLEY

RE: THIRD WORLD/ENVIRONMENT

Source: Larry Hausman/ State Dept. Enviro Coordinator/ 647-5960

Deforestation:

Causes:

Latin America -- to expand the land available for food production. In Brazil it is done mostly for livestock areas; elsewhere, it is done more for crops.

Indonesia/New Guinea -- the wood is cut mainly for commercial purposes, to sell the lumber to foreign countries for a profit

Africa/Haiti -- for fuel wood. 400 Years ago, when Columbus arrived in Haiti, 100% of the island was forested. By 1981 this was reduced to 8%. The Pan American Development Foundation began to plant 1 million seedlings, yet by 1989, only 1% of the island had forest. The forests are gone! They are now planting 9 million seedlings per year, but only 50% survive.

The situation can not get much worse than the current 1% forestation number but even with replanting efforts, we won't see new forests in our lifetime! It's as close as one can get to an irreversible situation.

-Rate of deforestation:
The rate of deforestation is very difficult to gauge; the latest verfied figures come from the mid to late 1980's. Other estimates come from people's projected calculations; the VERIFIED figures are:

--approximately 50 acres per minute (21 hectares)
--27 acres per year (approx. 11 million hectares)
18 million acres are in closed forests;
9 million acres are in open forests.

(Source: UNEP and Foreign & Agricultural Org.)

The area deforested every year is equivalent to:
28, 125 miles square

--much more than half the size of East Germany(41,767)
--United Kingdom: over a quarter (94,200)
--almost twice Switzerland (15, 491)

Tidbit: the fires caused by burning the forests (deforestation is caused either by cutting down for timber or by burning down to the ground to clear the land) roar so high and bright that the astronauts could see them from space!

The problem with industrialized nations calling for a stop to deforestation is that deforestation in fact creates jobs. Poor Juan Valdez does not see nor care about the effects on the world when he cuts down trees...he sees the instant money that he gets for it and needs to feed, clothe, and house his family.

The US is pushing for Forest Management Programs, through our government programs like the Peace Corps, AID, and the USDA.

Under current "rules" of calculating GNP, your GNP rises significantly if you cut the forests and you get nothing from leaving them alone. This is because we do not yet place a dollar value on forests.

The fact is that countries can make MORE money from leaving the forests alone and harvesting selectively the by products like nuts, rubber, resin, etc. and they still have the trees for future generations to enjoy.

The goal of Forest Management Programs is to create an awareness and appreciation of the forests and the benefits of leaving them alone.

EXAMPLE: INDIA

"minor forest industries" is what these products are called:
dyes, ropes, medicines, building materiel, nuts, resins, fuel wood, fodder (for domestic animals)

In India, minor forest industries account for 25% of the total value in forest production. In fact, 2 and 1/2 million people are involved in the forest sector...2/3 of the jobs are in these industries.

ENERGY DEMAND

We are supporting and promoting clean coal technology in such countries like Pakistan and Poland (esp. Krakow), where air pollution from burning coal is especially bad.

The idea is either retrofit existing factories and/or build new ones with pollutant-reducing scrubbers. But this is a very expensive proposition...some countries "see the light" but many are balking because they will have to rob Peter to pay Paul.

China and India are especially reliant on burning coal and say they will be increasing their current production in the next decade. The problem is especially exaggerated by the fact that their coal is of particularly poor quality and that much more harmful to the air.

Diffucult cycle to break because as it is now, everything comes from their own internal resources -- and they are dependent on no one and it is cheaper for them.

THE NATIONS OF THE WORLD NEED TO REACT TO 4 NEEDS:

1. Subsistence of the people in and around the forests.

2. To stabilize the local ecology.

3. To stabilize the local economy through minor forest products.

4. To preserve the genetic storehouse in the forests: all the species, from beautiful birds to the valuable microbes in the soil.

DEFORESTATION AND ITS HARMFUL EFFECTS ON WATER ETC.

When you cut down trees, you automatically expose the topsoil to erosion, especially in tropical regions where the rains are particularly heavy. This exposure to the elements washes away the topsoil.

Thus, the rainwater becomes laden with silt and clogs streams and rivers...causing problems for those who depend on the waterways for transportation, cooking, drinking, etc.

Silt laden water also creates havoc for dams, especially those that produce electricity. Sometimes these dams have to be shut down, or they can only output a significantly decreased amount of electricity depriving thousands of the utility.

The silt laden water also creates problems for farmers who have irrigation systems in their fields. Even the most primitive irrigation systems are fouled up.

DELEGATE ATTENDANCE SUMMARY
5 April 1990 (Time:1700)

The following is a current status report of countries attending the White House Conference on Global Change as of **500 PM on 5 April 1990.**

I. TOTAL COUNTRIES ATTENDING:

1. **Australia***
2. Brazil (2)
3. Canada (4)
4. FRG (10) **new**
5. France (10)
6. India (4)
7. Indonesia (10)
8. Italy (10)
9. Japan (10) **new**
10. Mexico (10)
11. Netherlands (10)
12. **Nigeria***
13. Norway (10) **new**
14. OECD (5)
15. Poland (10) **new**
16. U.K. (8)
17. USA (10)
18. USSR (10) **new**
19. Zaire (1)
20. EC (6)

Total Countries Attending: 20

Total of number of delegates to-date: 140

*** Bold type no data to date**

II. TOTAL NUMBER OF COUNTRIES SUBMITTING:

A. Tentative delegation list:

- **Total: 8**
- **Partial: 5**
- **None: 2**

B. Confirmed delegation list:

- OECD
- **FRG (new)**
- Indonesia
- **Norway (new)**
- **USA (new)**

C. Total number of developing countries:

- **6 LDC's**
- **Poland**

III. PERSONAL/CONTENT DATA:

A. **Personal: 0**

B. **Written Content:**
- OECD
- U.K.
- Australia
- **FRG Position Paper (new)**

C. **Oral:** Norway

IV. RECENT DEVELOPMENTS:

A. FRG: Position Paper. FRG has laid a marker by formal letter to Dr. Bromley by sending a formal position paper:

- "necessary actions must not be deferred or delayed, merely because it has been possible to clarify conclusively all the complicated scientific interrelationships associated with an environment threat"
- "...the risks threatening the earth's atmosphere necessitates immediate and extensive action at national and international levels"
- "..the government is convinced that immediate measures must be taken...such as the limitations of CO_2 emissions, the conservation of forests and the reduction of emissions from agriculture and waste management"
- "...the federal government therefore proposes that WHC also deal with response strategies and immediate measures in a plenary discussion...it therefore requests that the conference agenda be adapted accordingly."

PRELIMINARY

DELEGATION LIST

CURRENT AS OF

APRIL 6, 1990; 12:00 NOON

Additions: Canada

BRAZIL

(tentative)

Name	Title
Jose Lutzenberger	Environment Secretary
Jose Goldemberg	Science Secretary

CANADA

(tentative)

Name	Title
Lucien Bouchard	Federal Environment Minister
Jak Epp	Energy Minister
Dr. Geraldine Kenney Wallace	Chair, Science Council of Canada
Dr. Arthur W. May	President, Natural Sciences and Engineering Research Council
Dr. Anne White	Chair, IGBP Committee
Liz Dowdswell	Administrator, Environment of Canada for Atmospheric Environmnet Service
Judith Maxwell	Chair, Economic Council of Canada
Mr. Olton	Administrator, Energy Policy Department of Energy Mines and Resources
George Anderson	Administrator, Department of Finance
Derek Burney	Ambassador to the United States

EUROPEAN COMMUNITY

(tentative)

Name	Title
Laurens Jan Brinkhorst	Director-General for Environment, Nuclear Safety and Civil Protection
Jurgen Henningsen	Director for Environmental Quality and Natural Resources
Michael Emerson	Director for Economic Evaluation of Community Policies, Directorate-General for Economic and Financial Affairs
Philippe Bourdeau	Director for Environment and Non-Nuclear Energy Sources, Directorate-General for Science, Research and Development
Stanley Johnson	Director for Energy Policy, Directorate-General for Energy
David Wright	Central Advisory Group, Secretariat-General of the Commission

FEDERAL REPUBLIC OF GERMANY

(Confirmed)

Name	Title
Professor Dr. Klaus Topfer	Federal Minister for the Environment, Nature Protection and Nuclear Safety
Dr. Gebhard Ziller	State Secretary, Ministry for Research and Technology
Dr. Wilhelm Knittel	State Secretary, Ministry of Transportation
Baldur Wagner	Assistant Secretary, Federal Chancellery
Dr. Mario Graf von Matuschka	Assistant Secretary, Foreign Ministry
Dr. Horst Glatzel	Deputy Assistant Secretary, Federal Chancellery
Walter Lotz	Deputy Assistant Secretary, Ministry of Economics
Professor Dr. Ansgar Vogel	Deputy Assistant Secretary, Ministry for Environment, Nature Protection, and Nuclear Safety
Dietrich Kupfer	Director, Office of International Cooperation, Ministry for Environment, Nature Protection and Nuclear Safety
Professor Dr. Hartmut Gross	Scientist, Max Planck Society, Hamburg

FRANCE

(tentative)

Name	Title
Minister Hubert Curien	Minister of Research and Technology
Minister Brice Lalonde	Secretary of State for the Environment
Jean Audouze	Science Advisor to the President
Claude Alegre	Special Advisor to the Minister of Education
Ambassador Jean Ripert	Ministry of Foreign Affairs (Environment)
Yves Martin	Chairman of the Interministry Committee on Greenhouse
Madame Borione	Ministry of Foreign Affairs
Andre LeBeau	General Director of the Meteorological Center
M. Nasse	Ministry of Economy and Budget
Sylvie Faucheux	Professor of Economy at Paris I

INDIA

(tentative)

Name	Title
Ms. Maneka Gandhi	Minister of State for Environment and Forests
Vasant Gowarikar	Secretary of Department of Science and Technology
Mahesh Prasad	Secretary of Ministry of Environment and Forests
Dr. A.P. Mitra	Director General of Council for Science and Industrial Research

INDONESIA

(confirmed)

Name	Title
Prof. Dr. Ing. B.J. Habibie	Minister of State for Research and Technology; Chairman of the Agency for the Assessment and Application of Technology
Prof. Dr. Samaun Samadikun	Chairman of the Indonesian Institute of Science
Prof. Dr. John A. Katili	Deputy Chairman of the National Research Council
Prof. Dr. Gunawan Satari	Permanent Secretary, Ministry of State for Research and Technology
Mr. Poedji Kuntarso, MA	Director General for Foreign Economic Relations; Ministry of Foreign Affairs
Prof. Dr. Rustam Didong	Deputy Chairman (Economics), National Development Planning Agency
Prof. Dr. Harsono Wiryosumarto	Deputy Chairman (Technology Development); Agency for the Assessment and Application of Technology
Prof. Dr. S.B. Joedono	Assistant Minister (Industry, Energy and Mining), Office of the Coordinating Minister for the Economy, Finance, Industry and Development Supervision

INDONESIA

(continued)

Name	Title
Dr. M. Alwi Dahlan	Assistant Minister (Population), Office of the Minister of State for Population and the Environment
His Excellency Abdulrachman Ramly	Ambassador of the Republic of Indonesia to the United States of America

ITALY

(tentative)

Name	Title
Hon. Adolfo Battaglia	Minister of Industry, Head of Delegation
Prof. Umberto Colombo	Director of the National Agency for Nuclear and Renewable Energies
Prof. Giuseppe Biorci	Vice President of the National Research Council
Prof. Giuseppe Bianchi	Director General for Energy Sources, Ministry of Industry
Prof. Antonio Praturlon	President of the CNR Committee on Geological Sciences
Prof. Roberto Frassetto	CNR Institute of the Dynamics of Great Masses
Prof. Emilio Gerelli	Economic Counselor to the Minister of Environment
Dr. Corrado Clini	Director General for Pollution Prevention, Ministry of Environment
Prof. Guido Visconti	Department of Physics, University of L'Aquila
Dr. Giovanni Sacco	Vice Director General of Treasury, Ministry of Treasury

JAPAN

(tentative)

Name	Title
Ishimatsu Kitagawa	Minister of Environment
Shigeto Nagano	Parliamentary Vice Minister of Science and Technology
Koji Watanabe	Deputy Minister, Ministry of Foreign Affairs
Tadashi Yasuhara	Director General, Planning and Coordination Bureau, Environment Agency
Dr. Michio Hashimoto	Advisor to the Minister of Environment
Sousaburo Okamatsu	Director General, Industrial Location and Environmental Protection Bureau, Ministry of International Trade and Industry
Keiichi Yokobori	Executive Director, Research Institute of International Trade and Industry, Ministry of International Trade and Industry
Mr. Yoshikawa	Deputy Director General, Planning Bureau, Economic Planning Agency
Hiroto Ishida	Deputy Director General, Office of Minister of Science and Technology, Science and Technology Agency
Yuji Ikeda	Deputy Director General, United Nations Bureau, Ministry of Foreign Affairs

MEXICO

(tentative)

Name	Title
Lic. Patricio Chirinos	Secretary of Urban Development and Ecology
Dr. Jose Sarukhan	Rector, National Autonomous University
Dr. Herminio Blanco	Undersecretary for Foreign Commerce, Secretariat of Commerce and Industrial Development
Ing. Alberto Escofet	Undersecretary for Energy, Secretariat of Energy, Mines and Parastatal Industries
Lic. Jose Angel Gurria	Undersecretary for International Financial Affairs, Secretariat of the Treasury
Fis. Sergio Reyes	Undersecretary for Ecology
Amb. Alberto Szekely	Legal Counsel, Secretariat of Foreign Affairs
Dr. Julian Adem	Director, Center for Atmospheric Studies, National Autonomous University
Dr. Manuel Ortega	Director General, National Council for Science and Technology
Hector Santana	Staff Aide to Secretary Chirinos

THE NETHERLANDS

(tentative)

Name	Title
Hans Alders	Minister for Housing, Physical Planning and Environment
Dr. B.C.J. Zoeteman	Deputy Director-General for Environment
Dr. Pier Vellinga	Coordinator for National Climate Programs
N.D. Van Egmond	Director for Chemistry and Physics, State Institute for Public Health and Environmental Hygiene
I.G. Roos	Directorate-General for European Cooperation, Ministry of Foreign Affairs
Dr. H.M. Fijnaut	Director of the Royal Dutch Meteorological Institute
Dr. A.P.M. Baede	Head of the Department for Dynamical Meteorology
D.F.W.T. Pietermaat	Environmental Coordinator in the Directorate-General for Energy, Ministry of Economic Affairs
Prof. J.B. Opschoor	Professor of Ecology, Free University, Amsterdam

NORWAY

(tentative)

Name	Title
Kristin Hille Valla	Minister of Environment
Einar Steensnaes	Minister of Education and Science
Ambassador Kjeld Vibe	Norwegian Ambassador to the United States
Oddmund Graham	Secretary General, Ministry of Environment
Kaare Bryn	Director General, Ministry of Foreign Affairs
Dr. Tore Olsen	Director General, Ministry of Education and Research
Per M. Bakken	Coordinator, Air Pollution, Ministry of Environment
Lorents Lorentsen	Director of Research, Central Bureau of Statistics
Professor Dr. Ivar Isaksen	University of Oslo
Leif Westegaard	Science Officer, Norwegian Embassy in Washington

THE OECD

(tentative)

Name	Title
Robert Cornell	Deputy Secretary-General
William L. Long	Director for Environment
John Ferriter	Deputy Executive Director, International Energy Agency
Andrew Dean	Administrator, Department for Economic Affairs and Statistics
George Kowalski	Head of the Division of Economic Analysis, International Energy Agency

POLAND

(tentative)

Name	Title
Jan Janowski	Deputy Prime Minister; Head of the Agency for Science and Technological Progress and Application
Andrezejewski	Deputy Minister of the Environment
Tadeusz Diem	Deputy Minister of Education
Mr. Rybicki	Central Planning Office
Kazimierz Duchowski	Director, Department of Economic Cooperation, Ministry of Foreign Affairs
Mr. Wiackowski	Chairman, Parliamentary Commission on Environmental Protection
Professor Stakel	Polish Academy of Sciences
Mr. Sadowski	Institute of Metallurgy and Water Management
Wlodzimierz Bojarski	Member of the Senate
Jan Kinast	Polish Ambassador to the United States

SOVIET UNION

(tentative)

Name	Title
Nikolay P. Laverov	Chairman, U.S.S.R. State Committee on Science and Technology
Yuriy Izrael	Chairman, State Committee for Hydrometeorology
V. F. Kostin	Deputy Chairman, State Committee for Nature Protection
Aleksander P. Metalnikov	Deputy Chairman, State Committee for Hydrometeorology
A. A. Troitsky	Deputy Chairman, State Planning Committee
V. M. Kotliakov	Director, Institute of Geography, U.S.S.R. Academy of Sciences
Yu. L. Golubev	Assistant to the Chairman, State Committee for Hydrometeorology
Yu. V. Vakaljuk	Chief, Division of Global Geophysical Problems, Climate Change and Economic Consequences, State Committee for Hydrometeorology
B. V. Pikhanov	State Committee for Hydrometeorology, Department of International Cooperation
Mrs. N. Yu. Vail	State Committee for Hydrometeorology, Department of International Cooperation

UNITED KINGDOM

(tentative)

Name	Title
David Trippier RD, JP, MP	Minister for the Environment and Countryside
Sir John Fairclough	Chief Scientific Adviser, the Cabinet Office
Sir Crispin C.C. Tickell, GCMG, KCVO	United Kingdom Permanent Representative to the United Nations
Dr. John T. Houghton CBE	Director-General, Meteorological Office
J.G. Odling-Smee	Deputy Chief Economic Adviser; HM Treasury
Dr. David J. Fisk	Chief Scientist, Department of Environment
Dr. W. David Evans	Chief Scientist, Department of Energy
Dr. Eileen Buttle	Secretary, Natural Environment Research Council

UNITED STATES OF AMERICA

(confirmed)

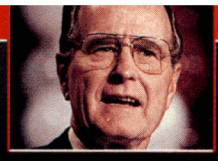
Name	Title
Nicholas F. Brady	Secretary of the Treasury
Manuel Lujan, Jr.	Secretary of the Interior
Clayton Yeutter	Secretary of Agriculture
Robert A. Mosbacher	Secretary of Commerce
Admiral James D. Watkins (Ret)	Secretary of Energy
William K. Reilly	Administrator, Environmental Protection Agency
Richard H. Truly	Administrator, National Aeronautics and Space Administration
John A. Knauss	Under Secretary of Commerce for Oceans and Atmosphere; and Director, National Oceanic and Atmospheric Administration
Erich Bloch	Director, National Science Foundation
Richard Schmalensee	Member, Council of Economic Advisers

ZAIRE

(tentative)

Name	Title
Citoyen Lobo Kanza Kanza	Secretary of State (Deputy Minister); Ministry of Environment and Conservation of Nature

APRIL 16, 1990



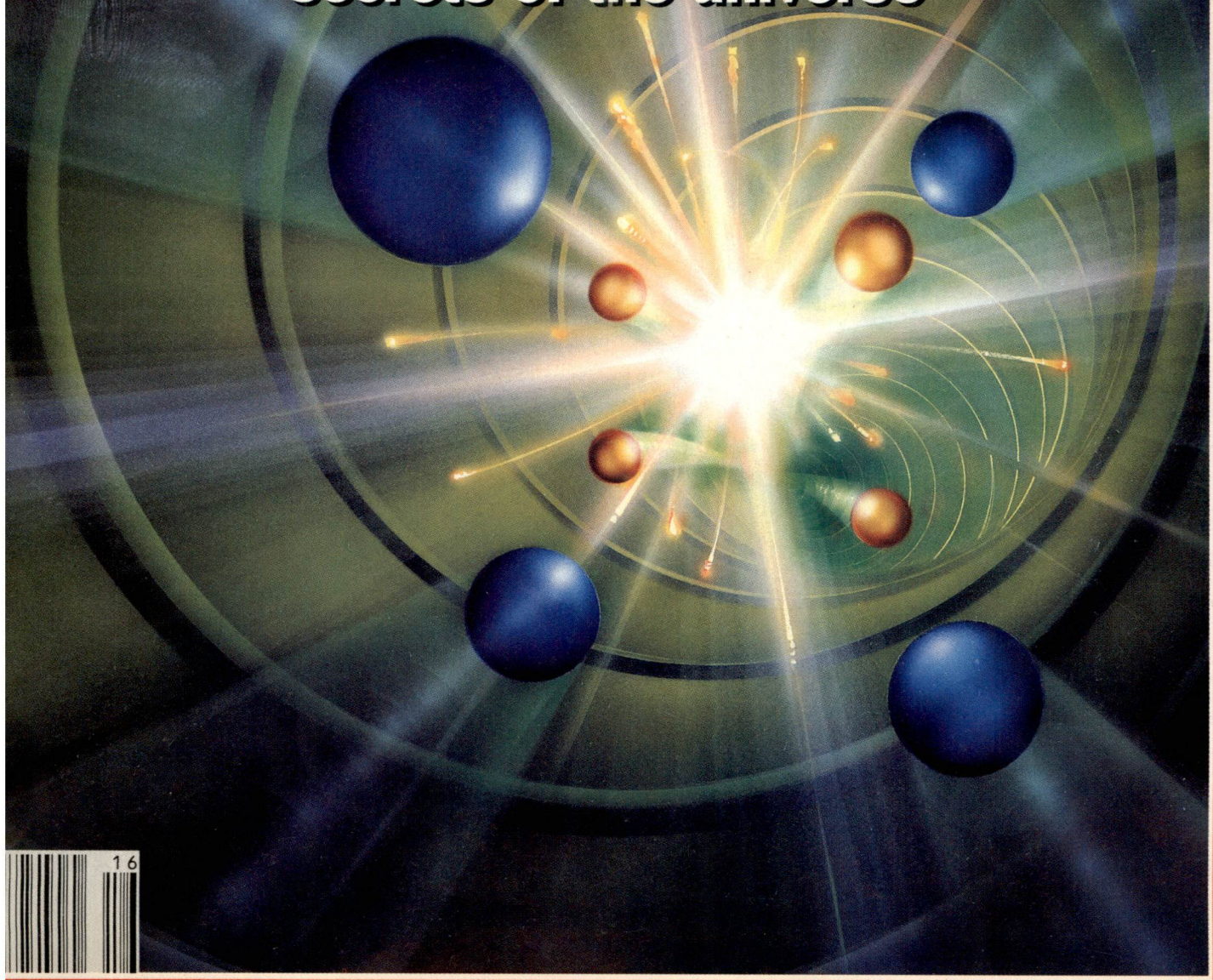
A Hurry-Up Summit



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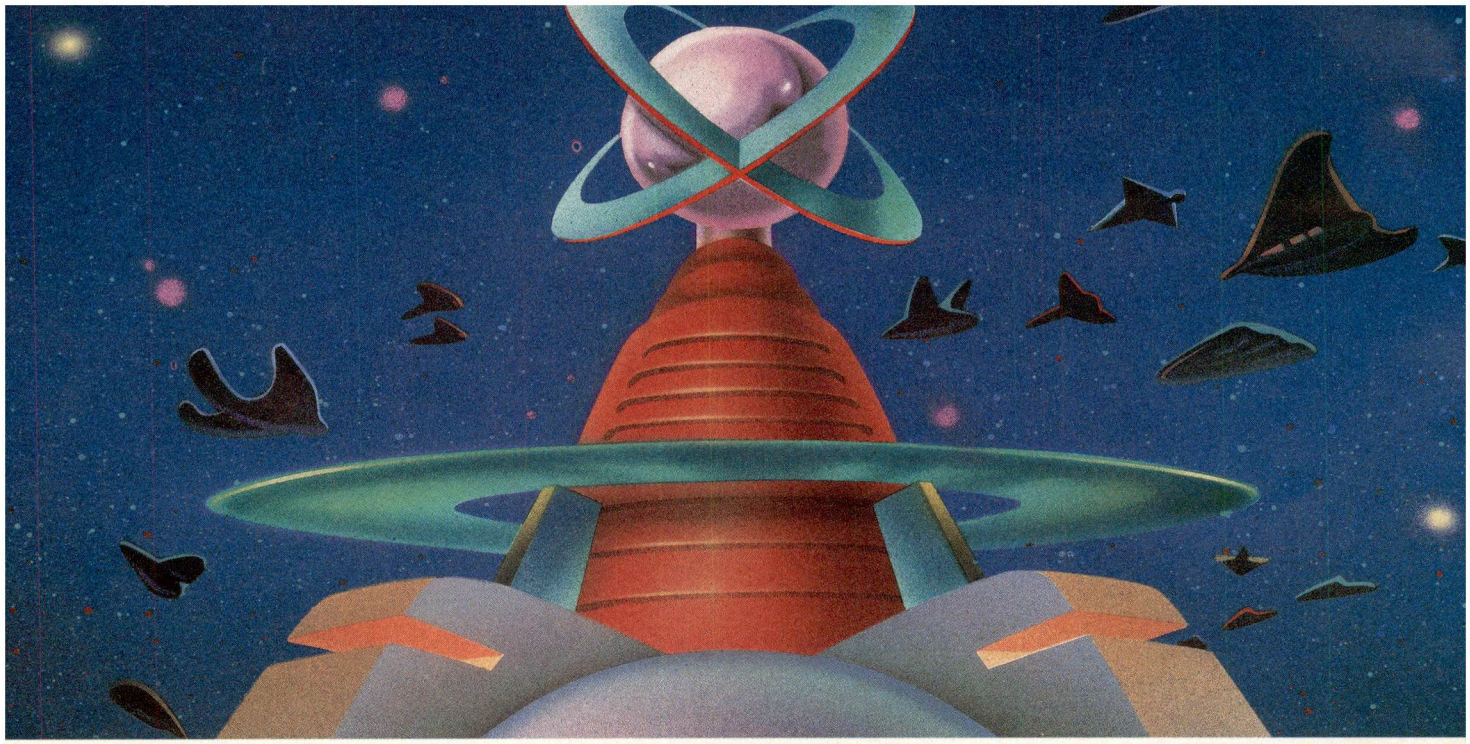
TIME SMASH!

Colossal colliders are unlocking the secrets of the universe

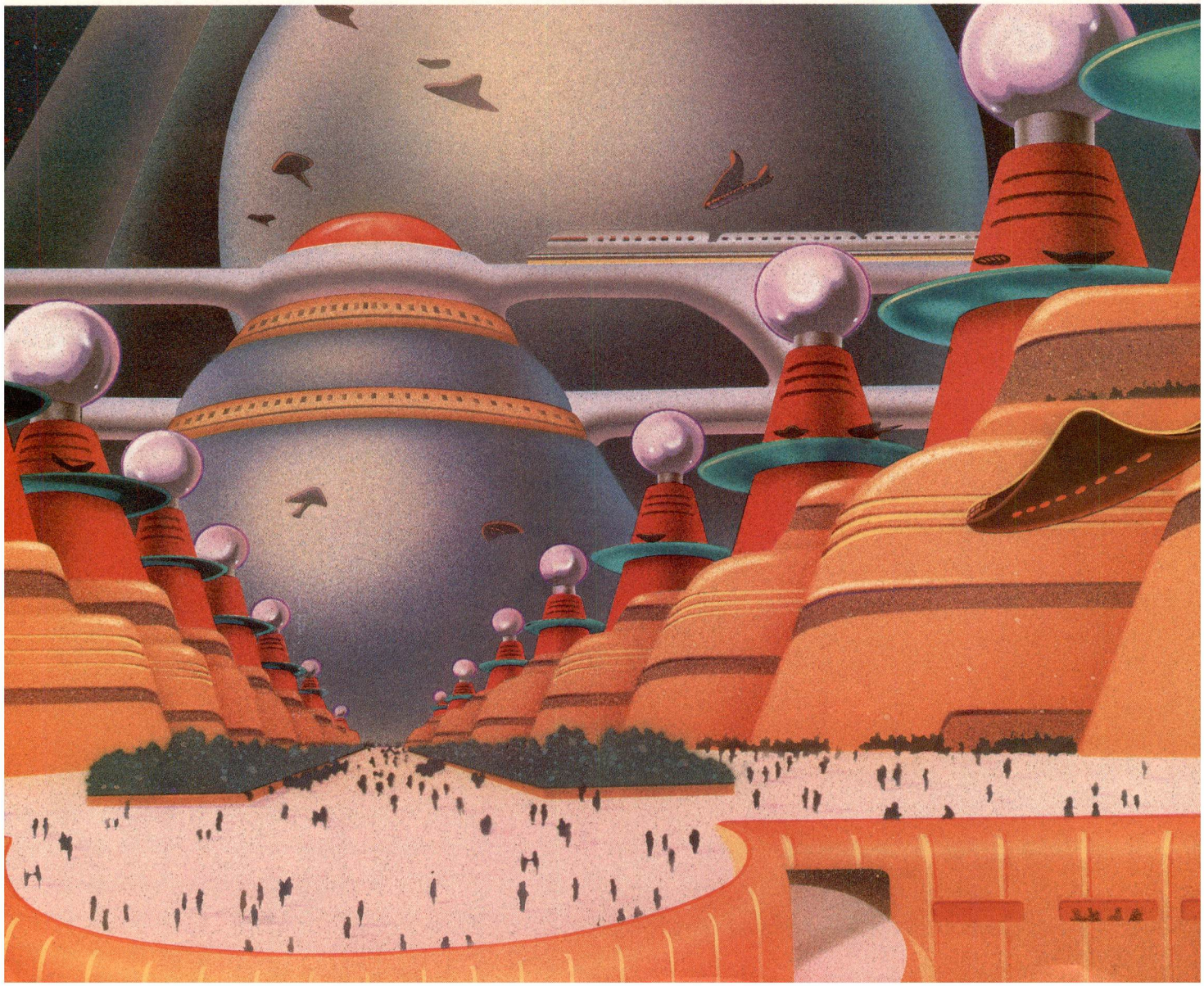


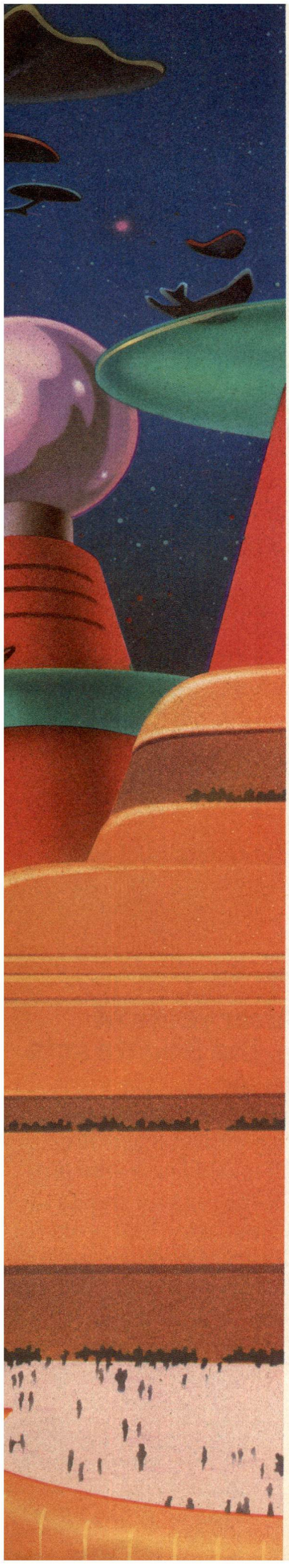
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Vol. 135, No. 16

TIME

THE WEEKLY NEWSMAGAZINE

SCIENCE: Giant accelerators are probing ever deeper into the subatomic mysteries of matter and energy

Armed with machines that cost hundreds of millions of dollars and span miles, researchers have forged a largely coherent model of the universe's basic building blocks. Now they are clamoring for the $7 billion-to-$8 billion superconducting supercollider, a mammoth device that may complete the picture—or torpedo it. ▶ Can physicists ever fully understand the nature of matter?

50



NATION: After years of frustration, the Senate acts to clean the air

But the compromises on acid rain and auto emissions leave environmentalists and business still squabbling. ▶ **Muslim Comeback:** The fight against crime and drugs gives new clout to the Nation of Islam. ▶ **Iran-Contra:** Poindexter is the scandal's ultimate fall guy.

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WORLD: Now, a hurry-up summit

The superpowers set an early date for a Bush-Gorbachev meeting, dispelling any question that the Lithuania crisis might derail the get-together. ▸ Before departing for Washington last week, Soviet Foreign Minister Eduard Shevardnadze spoke to TIME.

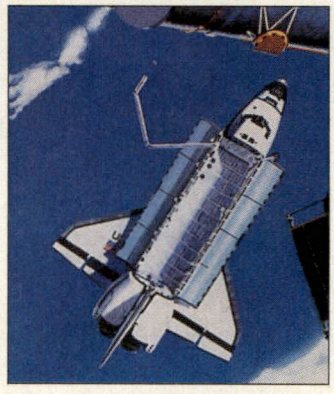
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BUSINESS: Punching it out with proxies

As leveraged buyouts fade, corporate raiders are rediscovering the good old-fashioned proxy fight. ▸ Japan and the U.S. agree on reforms to narrow the trade gap.

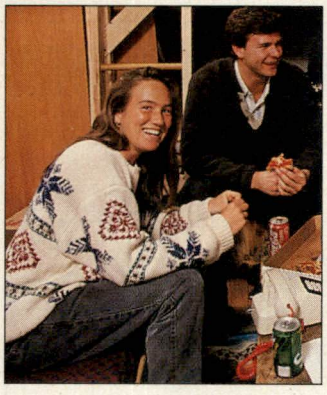
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SPACE: A sharp new eye will scan the heavens

The Hubble telescope is finally going into orbit to give astronomers their clearest views of the universe. ▸ The Pegasus rocket launches a new era of petite payloads.

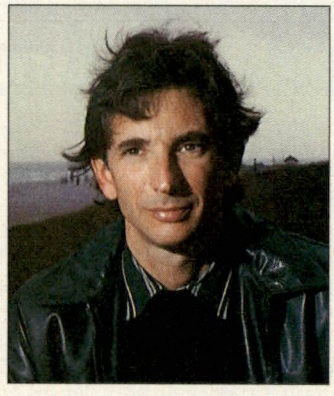
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EDUCATION: The war against the Greeks

Fed up with hazing deaths, boozy parties, vandalism and sexual harassment, schools are telling fraternities and sororities to clean up their acts—or clear out.

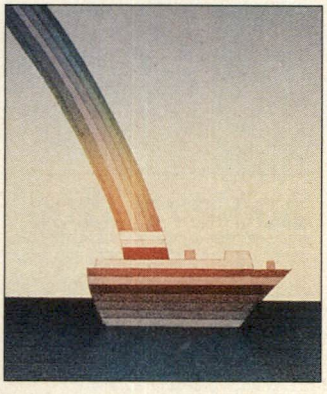
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PROFILE: Maestro Michael Tilson Thomas

He has progressed from wunderkind to celebrity to innovator. Beyond conducting, he has found time to enjoy science fiction, poetry and hiking in Utah.

66



ART: A world where fantasy teases reality

The humorous, watercolor-washed humanism of Jean-Michel Folon, best known from posters and magazines, is accorded a museum retrospective at New York City's Metropolitan.

69



VIDEO: In the new sitcoms, home is where the venom is

Inverting TV's traditional idealized image of families, shows like *The Simpsons, Married . . . With Children* and *Roseanne* get down and dirty on domestic life—and clean up in the ratings.

85

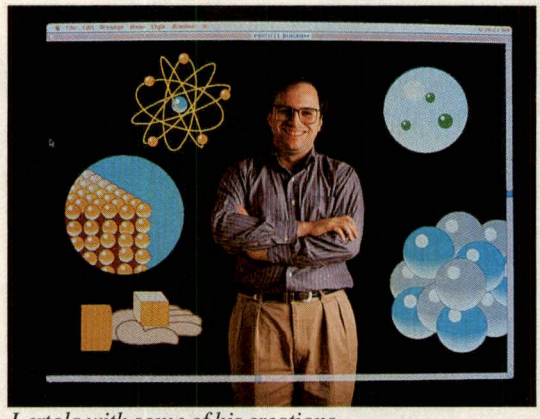
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Cover: Illustration by Jean-François Podevin

From the Publisher

They are sprinkled through TIME every week: clever, colorful charts and diagrams that grab the eye, tantalize the brain and make one want to read the story. This week's issue is no exception. To illuminate the cover stories on particle physics, artist Joe Lertola created a series of arresting graphics that make even so intricate a subject attractive to the reader.

To do so, Lertola, a native of Morristown, N.J., who graduated from Pratt Institute's School of Art and Design in Brooklyn in 1978, has traded in his old technical pens for the zip and click of an electronic mouse and a computer screen. To create or alter an illustration or to add color, he simply taps commands into the keyboards of his sophisticated Macintosh and IBM machines. Says Lertola, a science-fiction buff: "With so many computers, I sometimes feel as if I'm operating a spaceship."



FRANK MICELOTTA

Lertola with some of his creations

"I sometimes feel as if I'm operating a spaceship."

As helpful as they are, however, computers are not creative—at least not yet. Lertola still does all preliminary doodles with a pencil. What the computer does, he says, is "get artwork ready for printing a lot quicker than two years ago." On paper or on the computer, Lertola has been designing graphics for most sections of TIME since 1983, but his special fascination is with things scientific. He has been called upon to diagram such arcana as Halley's comet and the human immune system.

Few have been as tough to illustrate, however, as this week's cover story on the smallest particles in the universe. Sciences editor Charles Alexander asked Lertola to diagram both the family tree of matter and the difference between types of gigantic underground colliders, the huge machines in which subatomic particles are accelerated to fantastic speeds. "Each assignment has its own challenge," says Lertola. "The image has to get an idea across in a clever way. This time the devil was in the detail: colors, shapes and contrasts."

Particle physics holds another fascination for him: "It shows that the world is not really the way we see it." As if to illustrate the point, the computer screen on his table suddenly erupts in tiny bursts of colorful sparks without any special prompting. Glancing at it, Lertola, ever the sci-fi fan, says, "I'd like to look 100 years into the future and see how sophisticated equipment will be then."

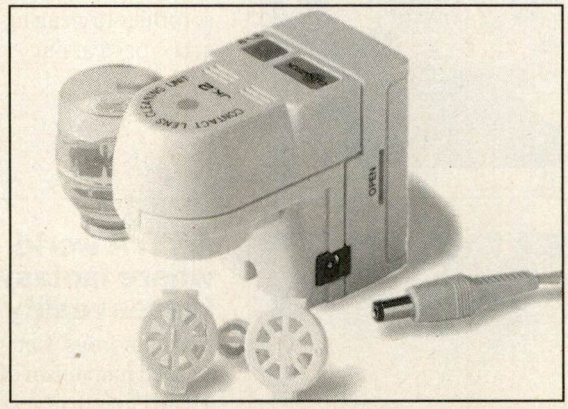
Louis C. Weitz

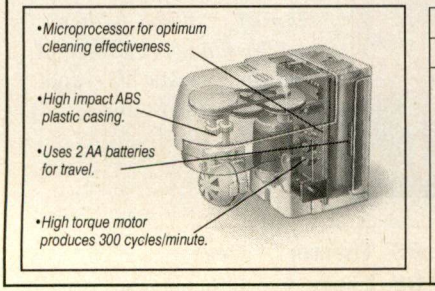
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Letters

THE GERMANS

"We must start looking to the future with some amount of trust."

Matthew S. Vollman, San Jose

America, a nation that supposedly wishes self-determination for all people, should do nothing but applaud German unification [WORLD, March 26]. Those Germanophobes who speculate on the "German question" and a "Fourth Reich" are as politically naive as those folks who steadfastly warn that the changes in Eastern Europe are a Communist ruse.

John McDonnell
Stevens Point, Wis.

The East Germans moved from a Nazi dictatorship directly to a Stalinist one and were never taught the rules of democracy. These people may need to be educated according to Western precepts before successful unity can be achieved.

Glenda Flüeck
Siegenburg, West Germany

Nazism is dead. The natural process of unifying the German people will be accomplished to the betterment of Europe and the world. It's time we put aside unfounded fears about the rebirth of fascism and celebrate the spread of democracy, freedom and economic stability.

John R. Kovacs
Norfolk, Mass.

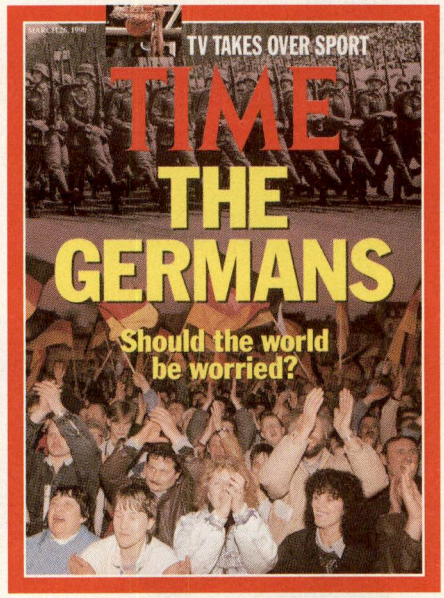
I was in my teens in the 1930s. I can still hear Hitler's voice screaming at the crowds. I can still see Chamberlain waving that worthless piece of paper. And I can still remember my first night in an Army barracks. I, for one, will not be celebrating the unification of Germany.

Warren Harris
West Hartford, Conn.

When I was in the Air Force in the 1980s, I lived in West Berlin. I came to know my German neighbors, both good and bad. Although I understand that we must remember the past in order not to repeat it, we must start looking to the future with some amount of trust, or we will never find the humanity that is within us all. People can learn from their mistakes. The positive changes in Europe, including German unification, must take place.

Matthew S. Vollman
San Jose

As a Briton living in West Germany, I say it's time to stop blaming today's Germans for the sins of their fathers. The tone of your article was arrogant. Any emerging



nationalism in the Germanys is no more than a healthy patriotism that other countries have been permitted to enjoy for decades. Could it be that West Germany's neighbors are jealous of its financial success, earned with tenacity and dedication over the years?

Diana Hellbusch
Wehrheim, West Germany

What happened during the Third Reich could occur anywhere in the world and at any time. It was the precision with which the Germans fulfilled their ideas that was fatal.

Dietmar Fiebig
Weilheim, West Germany

Puerto Rican Momentum

The Puerto Rican people are U.S. citizens [NATION, March 26], and the Congress is morally obliged to encourage their efforts at achieving self-determination and to support any outcome of a Puerto Rican plebiscite.

Carlos J. Vivoni
Santurce, P.R.

You noted thousands of pro-statehood marchers in Puerto Rico. There was also a large pro-independence demonstration last summer. However, commonwealth status is the one formula that allows the U.S. citizens of Puerto Rico to maintain their Latin American culture, their much prized autonomy and their prosperous industrial economy. These things would rapidly disappear under either statehood or independence.

José Roberto Martinez, Director
and Special Counsel to the Governor
Puerto Rico Federal Affairs Administration
Washington

Discovered by Spain in 1493, seized by the U.S. in 1898, Puerto Rico has endured nearly 500 years of colonialism. A plebiscite in 1991 could end half a millennium of colonialism. Puerto Ricans have defended this country in two World Wars, Korea and Viet Nam. We have been there for America when it needed us. Now we want the U.S. to listen to what we are saying: *"Estadidad ahora*—statehood now."

Nestor R. Ramirez
Alexandria, Va.

It is naive to believe statehood is the answer to all of Puerto Rico's economic problems. Natural resources and industrial development don't come along magically when you call yourself a state. Puerto Rico has a lot to lose, including 500 years of culture and a language that keeps us together.

María S. Santa-Hernández
New York City

Deficit Solutions

I am glad that someone in Congress appears to have "been bitten by the statesman's bug." House Ways and Means Committee Chairman Dan Rostenkowski's grand budget compromise, which includes higher taxes [NATION, March 26], may turn out to be more than a "crowning achievement." It may be the fiscal event of the post–Viet Nam era.

Terry Sharp
Mount Vernon, Ill.

A parallel can be drawn between losing weight and reducing the deficit. People would rather swallow a pill to take off the pounds than change their eating habits and start to exercise. It is time for this country to tighten its belt and begin sweating. We need to raise taxes and decrease spending before it is too late and the deficit grows bigger. For too long we have thought we could afford every luxury on a national level. We are like spoiled children.

Edward Albert Phippen III
Davis, Calif.

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Why not cut all foreign aid for two years and see what happens to the deficit?

Kenneth Ridenour
Essex, Md.

Rostenkowski is the only macho man in the whole Government. President Bush is a political wimp. And so is any other politician who won't put his future on the line in hopes of bettering the country. What we need is a new Harry Truman, and maybe Rostenkowski can fill those shoes.

Randy Hill
La Verne, Calif.

Greening of the Law

Although I am a student of wildlife and forestry and not a lawyer, I can believe attorneys may be making money from the increase in cases involving the environment [LAW, March 12]. For years corporations spilled oil, dumped toxic waste and spewed sulfur and nitrates because it was less costly to them than operating in environmentally sound and conscientious ways. I prefer to have society pay lawyers to bring polluters to heel than see corporations profit at the expense of everybody else.

Jacoby Carter
Amherst, Mass.

The U.S. has taken the only possible step: indicting firms for their carelessness and making them pay. Environmental law is important for us and future generations.

Barbara Weber
Weissenkirchen, West Germany

Challenges for the Right

If the conservatives in the U.S. are looking for a new cause to hold them together in the post–cold war world, they need only reverse their focus and activities [NATION, March 19]. They spent countless billions of dollars withstanding their visible enemy (communism) while withholding aid to fight enemies closer to home (poverty, illiteracy, homelessness, unemployment). What an accomplishment it would be to defeat them.

(The Rev.) Mark Franceschini
Westminster, Colo.

Anticommunism was not, as one conservative suggested, "the glue that holds the movement together." Communism and socialism fall under the broad concept of a belief in Big Government: the idea that government knows best and should shoulder all responsibility. This philosophy has finally been proved a flop in Eastern Europe. Yet U.S. politicians keep asking for additional money so the U.S. Government can take on more responsibility. The American left continues to push this nonsense. The right wing has a challenge, and it is here at home.

Bill Dekle
Sherman Oaks, Calif.

If the Republicans would quit looking for an enemy to galvanize America and would carry out their campaign for home, family and country, they wouldn't need to worry about holding on to voters. When the U.S. finally quits fixing up everyone else's problems and begins focusing on its own shortcomings, no one will lose.

Wesley Cook
Chicago

There are plenty of "crackling issues" for the right to battle in the 1990s. What is needed is more conservatives.

Edward T. Cutter
Philadelphia

Newscasts for Schools

Why is everybody worried about the classroom use of a TV program on current events that includes commercials [VIDEO, March 19]? No teenager is going to be affected by an additional two minutes of advertising during the day. If Christopher Whittle and his Channel One have to include time for ads in the program, so be it. The newscast offers what most American teens don't get—knowledge of what is happening in the world around them. I am a junior in high school and notice how little teens know about current events.

Greg Thompson
Santa Clara, Calif.

I'm a sophomore at Westerville North High School near Columbus. My school has not signed up for either Channel One (with ads) or *CNN Newsroom* (without ads). But it scares me that there are educational institutions willing to let Whittle hawk his ads to an audience that is forced to watch them. Questions like "How much were those shoes?" or "Where'd you get that watch?" are already too commonplace in high school. If it is news they want us to learn about, let them give us a newspaper, not a Nike commercial.

Andy Keicher
Gahanna, Ohio

Barrio Babies

The high number of infant deaths on Houston's impoverished Northside and the need for the work of Joan Mahon to help mothers get proper prenatal care are only two more examples of the failure in U.S. health care [AMERICAN SCENE, March 26]. Infant mortality and prematurity are long-term medical problems that should be a priority.

Sandra Ward, R.N.
New York City

There are thousands of bumper stickers boasting HOUSTON PROUD—and why not? The city is the home of the Astrodome, a center of modern medical research and the base for advanced space technology. But after reading your story, my chest and HOUSTON PROUD ego have been deflated. No one can take pride in the high infant-mortality rate on Houston's Northside.

Susan G.F. Gwin
Houston

Any attempt to address the problems of Houston's barrio families should include birth control. Women with health, cultural and economic handicaps especially need to know that pregnancy can be a choice.

Philip H. Saunders
Madison, Wis.

Exxon's Explanations

When the massive oil spill from the *Exxon Valdez* tanker devastated Prince William Sound last year, I fully expected the company's chairman, Lawrence Rawl [INTERVIEW, March 26], to show up at the scene immediately, sleeves rolled up, volunteering to scrub sea otters and clean beaches and at least to appear to look concerned at the damage. I believe that as Exxon's head, he should have made it a point to be in Alaska without delay.

Ann M. Stift
Round Hill, Va.

The responses offered by Rawl are long on "acts of God" and short on substantive corrective actions and quality control that might prevent still another Exxon disaster. The height of ludicrous rationalization is Rawl's comparing the number of birds killed by the Alaska spill with the number of ducks shot in one day's hunting in the Mississippi Delta.

Harold Debbi
Scottsdale, Ariz.

Forget the headline "Exxon Strikes Back." I think "Exxon Strikes Out" would be more appropriate. Rawl says he is exhausted? So is the environment.

Mildred Rathie
Ennis, Mont.

Riled by Rawl

Our talk with Exxon Chairman Lawrence Rawl brought a substantial number of letters. Most readers were unsympathetic to Rawl's account of the company's mounting troubles and battered image. Some found him arrogant. One asked for "a bit of courtesy, compassion and concern" on the chairman's part. But another liked his style: "He admits to fault and embarrassment but does not bend on subjects he firmly believes in."

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CRITICS' VOICES



TELEVISION

MISS UNIVERSE PAGEANT (CBS, April 15, 9 p.m. EDT). Dick Clark and Leeza Gibbons are this year's hosts, and new onscreen technology will show viewers up-to-the-minute scores as the contestants are winnowed. What is this, a beauty pageant or a game show?

PROFIT THE EARTH (PBS, April 16, 8 p.m. on most stations). Public TV launches a yearlong campaign of environmental programming with this hour-long special that examines free-enterprise solutions to the pollution problem.



BOOKS

DECEPTION by Philip Roth (Simon & Schuster; $18.95). The master deceiver again teases his fans with a fictive fan dance about a writer named Philip who may or may not be having an affair with a married woman who may or may not be a character in a novel in progress. The woman he lives with doesn't buy it, but readers who appreciate first-rate talent will be thoroughly taken in.

OH, THE PLACES YOU'LL GO! by Dr. Seuss (Random House; $12.95). Eighty-six-year-old Dr. Seuss continues to rhyme with reason in book No. 43, an illustrated philosophy lesson about bouncing back that contains the sage advice, "Be sure when you step./ Step with care and great tact/ and remember that Life's/ a Great Balancing Act."

THE OUTSIDERS (SUNDAYS, 7 p.m. EDT, FOX). TV has discovered a new genre: working-class romanticism. First came *Elvis,* with its nostalgic retelling of the King's early rise from blue-collar boredom to Top 40 stardom. Now Francis Coppola has turned his 1983 movie about Oklahoma teenagers (based on the S.E. Hinton novel) into a lyrical, lovingly crafted TV series. Class conflict is the theme: the three Curtis brothers, scraping along together after the death of their parents, are part of a wrong-side-of-the-tracks crowd known as the Greasers. Their snooty, letter-sweatered antagonists are called the Socs (that's *So*-shes). The show pushes its James Dean angst a bit hard ("What do I got? Nothin'! Just another greaser goin' nowhere"). But the milieu is sharply etched, and rarely have the disaffected been so affecting. The best drama series yet from TV's hottest network, Fox.



THEATER

GET ANY GUY THRU PSYCHIC MIND CONTROL OR YOUR MONEY BACK. The title may promise the impossible, but it captures the playful tone in this tale of Southern sisters who dream about Nashville stardom and of the men who derail them. At Act I Arena Theater in Framingham, Mass.

PRELUDE TO A KISS. The best play yet in response to AIDS never mentions the word but asks whether love is really forever when the young, beautiful person you married is suddenly a dying old man. Writer Craig Lucas and director Norman René have an off-Broadway winner, on its way to Broadway, and Mary-Louise Parker is the most fetching dizball leading lady since Judy Holliday.

OTHER PEOPLE'S MONEY. The robust, raunchily funny depiction of a hostile corporate takeover drew the limo-and-luxury investment bankers off-Broadway and is now on tour, currently in Chicago. If, in the changed economy, this is no longer a bulletin from the front, it's at least an instructive look back in anger.

FEAST OF FOOLS. Clowning through the centuries, British-born Geoff Hoyle is by turns a medieval jester, a fly-eating Arlecchino and two dueling waiters. Imaginative and skillful physically, if a bit labored verbally, Hoyle peaks in an inspired bit of off-Broadway lunacy proving that, when it comes to dancing, three legs are better than two.

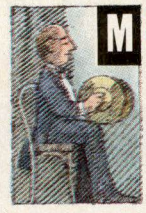


MOVIES

THE HANDMAID'S TALE. Set in a political and sexual dictatorship of the near future, this anti-fundamentalist fable carries a heady pedigree: screenplay by Harold Pinter from the Margaret Atwood novel. But a fine cast is zombified under Volker Schlöndorff's drab direction.

HENRY: PORTRAIT OF A SERIAL KILLER. Running into Henry is like winning a satanic lottery; you die, at random. John McNaughton's icy essay in depravity, made for peanuts in Chicago four years ago, forces the moviegoer to stare into the face of evil.

PRETTY WOMAN. Pretty ugly. 'Nuff said.



MUSIC

COWBOY JUNKIES: THE CAUTION HORSES (RCA). The Junkies are still laying down their special blend of Thorazine country—slow, dreamy and spiritual—but the novelty's worn dime-thin. Not so fresh as last year's exemplary debut, but the band still has mystique to burn and mystery to spare. Wait till next year.

THE NOTTING HILLBILLIES: MISSING . . . PRESUMED HAVING A GOOD TIME (Warner Bros.). Mark Knopfler, of Dire Straits, and three mates of similar musical inclination cook up a relaxed set of old-time guitar music and dusty folk. A sort of after-hours version of the Traveling Wilburys, with a solid Knopfler original *(Your Own Sweet Way)* nestled among the well-roasted chestnuts.

JAZZ PIANO (Smithsonian Collection of Recordings). A four-CD (six-LP) compendium of outstanding keyboard artists recorded between 1924 and 1978. Virtually every American jazz pianist of note—42 in all, ranging from Jelly Roll Morton to Keith Jarret—is represented in these 68 solo tracks. As if a gold mine of great music were not enough, the scholarly notes by Dick Katz, Martin Williams and Francis Davis make this a must-have for serious jazz aficionados.

Compiled by Andrea Sachs

ILLUSTRATIONS FOR TIME BY CHAS. B. SLACKMAN

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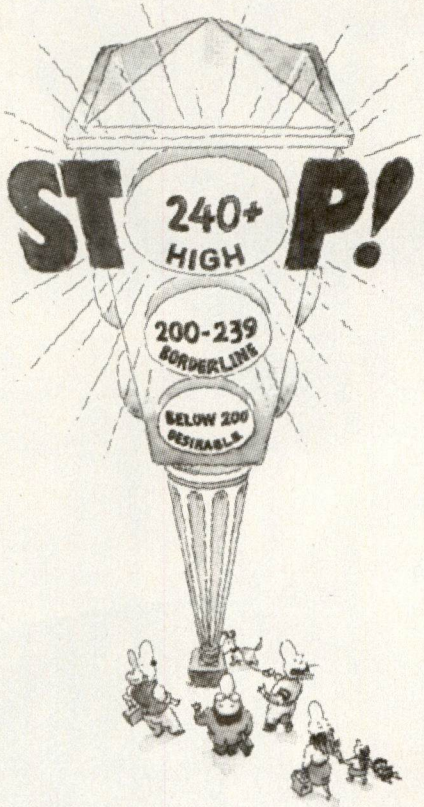
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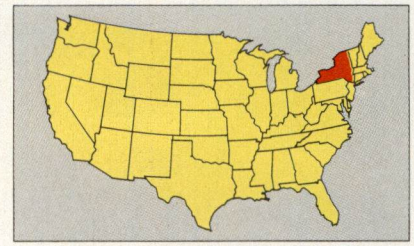
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Shrugging Off The Homeless

The nation's toughest urbanites lose patience with panhandlers



By PRISCILLA PAINTON

At 5 p.m. the rush-hour ticket line at New York City's Port Authority Bus Terminal wove through the customary wretched carnival of mendicants. One beggar twirled like a crazed ballerina from commuter to commuter, caressing people's shoulders and prodding their bellies with a beseeching hand. Another rolled his wheelchair up against the commuters' feet and tugged at their sleeves. A third stretched across a counter in a weirdly feline gesture, trying to intercept the change coming back to Mike Farrell, 50, of Ringwood, N.J. "No!" howled Farrell, loud enough to make heads turn. "It's the only way you can get through to them," he explained.

New Yorkers, who pride themselves on having the nation's thickest urban carapaces, are cracking under the tightening grasp of the homeless. When then Mayor Ed Koch urged Gothamites two years ago to stop giving to panhandlers because many "just don't want to work for a living," residents shrugged off the curmudgeonly remark as the latest from the city's self-appointed curmudgeon. But Koch's sour mood has caught on over the past twelve months, surfacing recently in cartoons, editorials, dinner conversations and official campaigns to move the city's vagrants out of its subway, bus and train stations.

"People who maybe a year ago would simply have walked away really snap back at panhandlers and homeless people who are acting aggressively," says Robert Kiley, chairman of the Metropolitan Transporta-



JOHN CHIASSON—GAMMA LIAISON

Once sympathetic, subway riders turn a cold shoulder to beggars

"People who maybe a year ago would simply have walked away really snap back at panhandlers and homeless people who are acting aggressively."

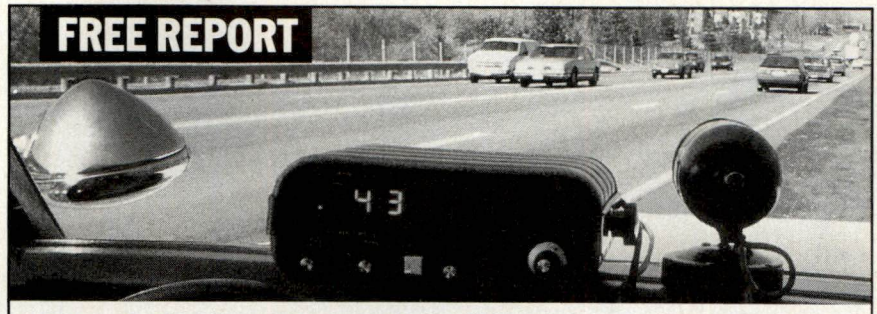
tion Authority. "Just in the past four or five weeks, I've seen a couple of near physical confrontations." Peter Harris, the MTA's director of research, says his "eyes kind of bulged" in October as he listened to the complaints of subway riders who participated in a focus group. "One woman said, 'I've spent my whole life in New York, I've grown up on the Upper West Side, and I consider myself a liberal. But I'm sick and tired of feeling guilty.' " Says Harris: "This thing has really turned."

This free-floating anger crystallized two months ago around the case of Rodney Sumter, 39, who was charged with first-degree manslaughter for beating to death a homeless man on a subway platform after the stranger spat on him and punched him in the head. Sumter who was traveling with his three-year-old son and had lately worked in a program to train homeless people in construction, had all the credentials of an earnest victim. Civil rights leader Roy Innis rallied to Sumter's defense, as did editorialists from the city's newspapers. "How many subway riders, wary of the deranged homeless who make the subterranean world so menacing, have not fantasized responding to assault with violence?" wrote social commentator Myron Magnet in the New York *Times*. Public wrath at the homeless was so palpable that the Rev. George Kuhn felt the need to admonish restraint at the funeral of Sumter's still unidentified victim. "Homeless people are not wanted in our country," said Kuhn. "We have to say, 'I am ready to give my all so that this does not happen again.' "

Two weeks ago, a grand jury cleared Sumter of any wrongdoing, a decision that was instantly interpreted as a victory for the social contract over random violence and of respectable citizens over society's lunatic fringe. "The torn fabric of our society has been mended in a significant way," declared Mel Sachs, one of Sumter's lawyers. "This grand jury has acted as a conscience of this community." Proclaimed Simeon Greenaway, another defense attorney: "It's a victory for the subway users of New York. The right of self-defense is still alive, and we're grateful for that."

Even before the Sumter case, frustration with the homeless helped persuade New York to adopt stricter rules for its railway and bus centers. Only passengers with tickets are now allowed in waiting areas at Pennsylvania Station and Grand Central Terminal. Last summer the Port Authority began replacing its wooden chairs with narrow, plastic "flip" seats suitable only for perching. And last October the MTA put into effect Operation Enforcement to rout the homeless from the subways by coaxing them into shelters and enforcing new rules against littering, panhandling and lying down on seats.

The crackdown left everyone unhappy. Advocates of the homeless denounced the move as insensitive. The transit police com-



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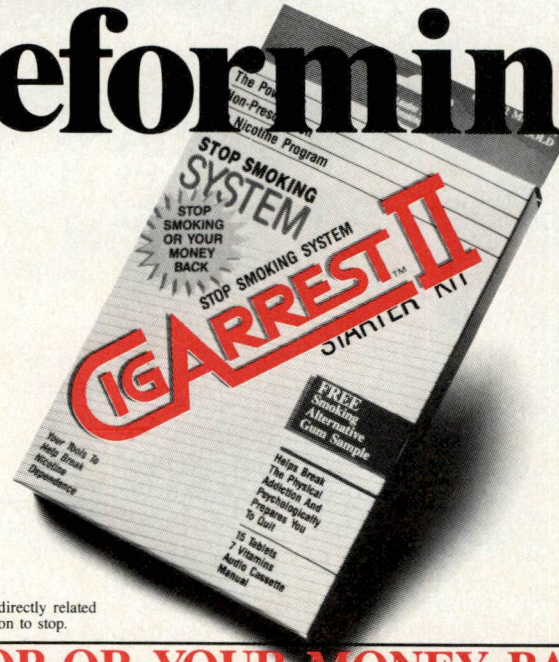
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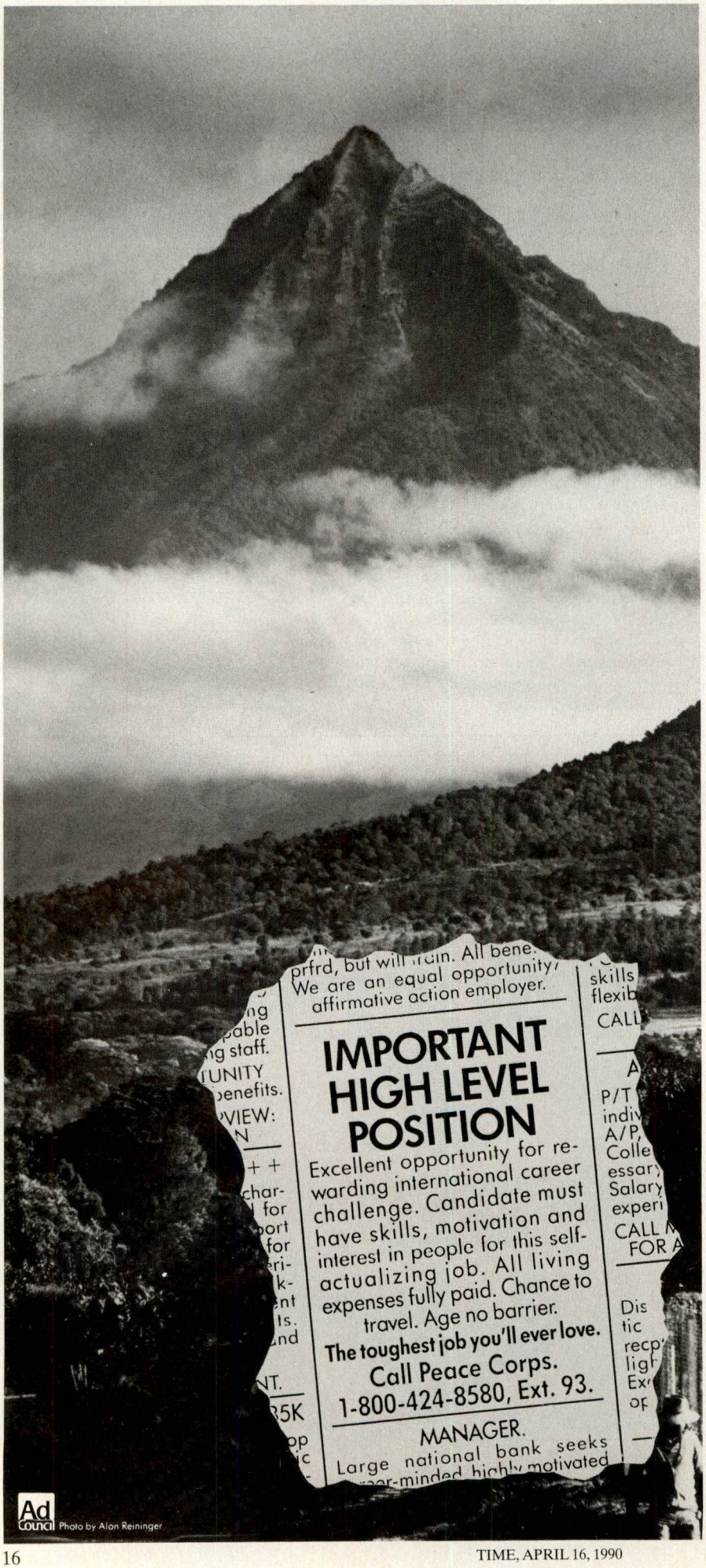
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plained that it made them social workers. Officials conceded that it affected only 20% of the homeless, many of whom returned to their old haunts after the cops departed. In January came another blow: Federal District Judge Leonard Sand ruled that panhandling is a form of free speech protected by the First Amendment and ordered a halt to the MTA prohibition against begging in the subways. The decision was temporarily stayed on appeal, but not before the New York *Daily News* printed a cartoon of a subway platform overrun by beggars with the caption: "It's really amazing how many federal judges you see down here."

The Port Authority, taking Sand's decision to the point of absurdity, began issuing a limited number of "begging permits" in February. In a lonely act of exasperation, James Benagh, 52, a copy editor at the New York *Times,* posed as a beggar so that he could snag a license and thereby shrink the number available to Port Authority paupers. "I don't want to sound like some right-wing beggar basher," he explained, "but you can't go anywhere in this city without someone pestering you for money anymore."

Defenders of the homeless realize they face a growing public relations problem. *Newsday* columnist Jimmy Breslin had to borrow from Jonathan Swift to arouse some sympathy on their behalf, arguing in the satirical tradition of *A Modest Proposal* that "beggars and bums" should become useful by renting themselves to subway riders as human shields. (Some of his readers took him seriously.) The founders of *Street News,* a monthly tabloid sold since November by a sales force recruited from shelters and benches, have found a way to circumvent the public's eroding sense of charity by making the homeless appear to work for their alms. "I tell them this is going to help me get off the street and put me back on my feet," says vendor Franklin Salcedo, who pockets 50¢ for every 75¢ copy sold. "They tell me to keep up the good work."

But in their uneasy negotiations with the public, the homeless may be most harmed by the growing perception that they have become a permanent fixture of urban life. A poll released in February by the Marist Institute for Public Opinion found that 76% of Americans believed the problem would worsen or remain the same. Another problem is the catchall name homeless, which throws together in one menacing bundle not only destitute people who need shelter but also AIDS victims, the mentally ill, drug and alcohol abusers, and street predators of all kinds. "It is becoming harder and harder, whether you are on the subway system or in the streets, to keep those distinctions straight in your own mind," says Kiley. Even harder for New Yorkers is the daily task of extracting compassion from a supply that seems nearly exhausted. ■



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To TRIM, or not to TRIM?

This country's global economic reach may be seen in the flow of earnings that return to the U.S. in the form of investment income, royalties, and fees from ventures abroad—a sum that was well over $136 billion last year. Besides those revenues, our nation is further enriched each year by a tremendous influx of capital from abroad seeking opportunities on the American scene. The Commerce Department just reported that during 1989 such new foreign investment in U.S. businesses and property amounted to $61.3 billion. Another tidy sum. But not every nation has seen the virtues—and the economic gains to be made—from the free flow of capital.

In many developing economies around the world—and even in some that are highly advanced—there is an inclination to impose cumbersome restrictions on the ways in which foreigners may invest. The diplomatic shorthand for these hurdles is trade-related investment measures, or TRIMs. Since all such measures distort to some extent the free trade of goods, ideas, and services, we commend the effort of U.S. Trade Representative Carla Hills to prune back or eliminate the use of TRIMs.

American negotiators are now meeting in Geneva with other members of the General Agreement on Tariffs and Trade, often referred to as GATT, which promulgates the rules for international commerce. In our view, GATT has done a fine job in previous negotiations to remove some of the impediments to the smooth and fair flow of world trade. Now, for the first time, the members in session at Geneva are addressing methods that would make international investment among themselves more open and equitable.

The challenge facing them is difficult and provocative, particularly as nationalistic fervor mounts in many lands, large and small. Yet investment is an inseparable aspect of trade, and when investment is distorted through the use of TRIMs, trade flows are sent awry and national economic growth is hindered or crippled. Countries aiming for an increase in productivity and living standards—not just the United States but every nation taking part in international commerce—will profit from an effective agreement to discipline TRIMs.

Several weeks ago, the American team proposed a set of regulations to prohibit certain investment measures that distort trade and to begin cutting back on others that produce occasional distortions. The U.S. proposal allows for a period of transition before the new rules would take full effect.

GATT has already achieved an enlightened climate among its members on the subject of reducing tariffs and quotas. Its deliberations on improving international trade practices in agriculture, services, and intellectual property are progressing. But, in our view, the key to further dramatic progress in world commerce lies in curbing the ability of governments to impede and restrict international investment.

Ambassador Hills and her GATT team at Geneva have presented a proposal on TRIMs that will advance the interests of every member in stimulating international investments. This could become the road toward increased productivity and an improved flow of trade all through the world—and it's great to see the United States leading the parade.

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"Civics have been the standard by which economy cars are judged since day one."
Motor Trend

"Try to find a better-built car in this price class. You won't."
Car and Driver

"The Civic Hatchback makes for easy loading and unloading—my cargo space actually withstood one hundred and ten blooming flower plants in two-gallon pots."
Cheryl Anderson, Dallas, Texas

"The engine starts immediately from cold, revs freely, and quietly goes about its business. The five-speed manual transmission is also a delight with its clean, crisp shift action and nicely spaced gear ratios."
AutoWeek

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Car and Driver

"I recommend the Civic to friends all the time. My hatchback is a lot of fun to drive, looks terrific and has been trouble free. This definitely won't be my last Honda."
Deborah Abbott, Kirkland, Washington

"Best entry level car."
Automobile Magazine

"In the Civic, Honda has perhaps the handsomest hatchback on earth."
Car and Driver

"1990 All-Star winner... Despite fierce competition from assorted new-and-improved marvels of automotive engineering, the Honda Civic continues to represent the ideal small car."
Automobile Magazine

"I have traveled the United States extensively in my Honda and am happy to report my Civic has never let me down. I love my Honda!"
Heide Karp, Burbank, California

"Not only is it easy on the pocket-book, it's comfortable, plenty roomy, and for its dainty sipping of gasoline it's regarded as a personal scourge by OPEC."
Car and Driver

"I run the busiest pizza shop in the area, and my three Civic Hatchbacks make deliveries a lot easier. The Civics are extremely dependable, even in bad weather. And there's enough room in the back for forty of my large pies."
Rod Pelkey, Bangor, Maine

We've always used incentives to sell the Civic Hatchback.



HONDA

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GRAPEVINE

By PAUL GRAY/Reported by David Ellis

HE KNOWS WHAT SHERMAN SAID. Announcing his bid for re-election to the Senate, New Jersey's Bill Bradley said he "can't think of anything" that would keep him from serving a six-year term. Does this mean he absolutely, positively won't run for President in 1992? Dollar Bill has amassed $9 million for a Senate race that even a New York Knick could not lose. With such a handy war chest, his demurral sounds a shade less convincing than William Tecumseh Sherman's "I will not accept if nominated and will not serve if elected." Says a Bradley adviser: "If, God forbid, Dan Quayle should be President in 1992, Bill Bradley won't be locked in by a Shermanesque statement. He could have been. Bill knows what Sherman said."



Does Bill really want out? Does Doug really want in?

MOVE OVER, JESSE. Virginia Governor Douglas Wilder, a moderate black leader, may end up stealing some of Jesse Jackson's thunder. His state party chairman, Paul Goldman, is eagerly mapping out 1992 scenarios, and Wilder's travel plans suggest far more than a mere vice-presidential bid. He has visited California twice in the past two weeks, and is poised to announce a foray into New Hampshire this spring. Can Iowa be far behind?

HEARD MELODIES ARE SWEET. *King,* the much delayed London musical based on the life of the slain civil rights leader, has some high-powered talent, including opera singer Simon Estes in the title role and Maya Angelou as the principal lyricist. But the show's intention to portray Martin Luther King Jr.'s human side (although not, producers insist, his womanizing) nettled Coretta Scott King, who has legal rights over the commercial use of her husband's image in the U.S. To win back her support, the script is being substantially rewritten, with greater emphasis on King's leadership and (unsurprisingly) Coretta's historic role.

DRUGS FOR YEN. Colombia's Cali drug cartel, seeking to beat out the rival Medellín cartel, has been recruiting U.S. traffickers willing to go on a long journey. Destination? Japan, a nation ripe for exploitation. Cocaine sells there for $85,000 a kilogram, in contrast to $17,000 in Miami. Japanese police, according to a secret Drug Enforcement Administration cable, do not have a simple computer system to store criminal histories, much less one that can analyze telephone toll records or trace money-laundering trails.

THE MORNING LINE

The odds on leaders likely to fall next



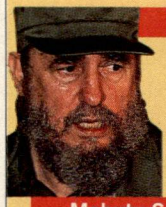
Corazon Aquino, the Philippines

Even money. Do seven failed tries deserve another? No. But with the economy in shambles, the coups keep coming.

Hun Sen, Cambodia



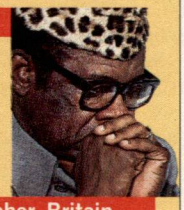
3 to 1. With the Chinese, Vietnamese and Thais all squabbling over Cambodia, the country is rapidly going to Pol Pot.



Fidel Castro, Cuba

7 to 2. Whipping up resentment about the U.S.'s TV Martí broadcasts won't feed his people if Moscow's $10 million-a-day subsidy wanes.

Mobutu Sese Seko, Zaïre



7 to 2. Finally balking at reports of his $3 billion fortune and palatial residences in several countries, the World Bank wants to cut aid, and so does Congress.



Margaret Thatcher, Britain

4 to 1. Wimpy Tories afraid to tell her that the poll tax has been too taxing on her polls have a dream scheme: get husband Denis to ask her to retire.

YOU WERE SAYING? Argentina's President, Carlos Saúl Menem, has never shown a sustained attention span for details. So a top aide was surprised during a recent private meeting to find the President nodding vigorously and taking copious notes. When Menem was called from the room, the aide could not resist peeking at what the President had written. What he found was Menem's ideal lineup for a local soccer team.

WHY NOT REISSUE *PINOCCHIO*? The Walt Disney studio is developing a feature film to be called *The Passion of Richard Nixon*. John Malkovich has been approached about the title role, and production is scheduled for later this year. Producer David Permut *(Dragnet)* describes the project as a "story about a man desperately trying to overcompensate in everything he did." ■

WINNER OF THE WEEK



WILLIAM J. BENNETT

The drug czar will release a report admitting that his yearlong effort to make Washington a "test case" in the drug war has largely failed. Such candor from a top official qualifies Bennett as an endangered species.

LOSER OF THE WEEK



WILLIAM J. BENNETT

A tough federal report will charge that his yearlong effort to make Washington a "test case" in the war on drugs has largely failed. In other words, at this stage of the struggle, the czar has no clothes.

SHOWBOAT OF THE WEEK



ALFONSE D'AMATO

New York's shameless Senator disrupted delicate diplomacy by unsuccessfully trying to enter Lithuania without a Soviet visa. Was the Baltic ballet staged to make folks forget that he's mired in influence-peddling scandals?

MISSING PERSON OF THE WEEK



PETE ROSE

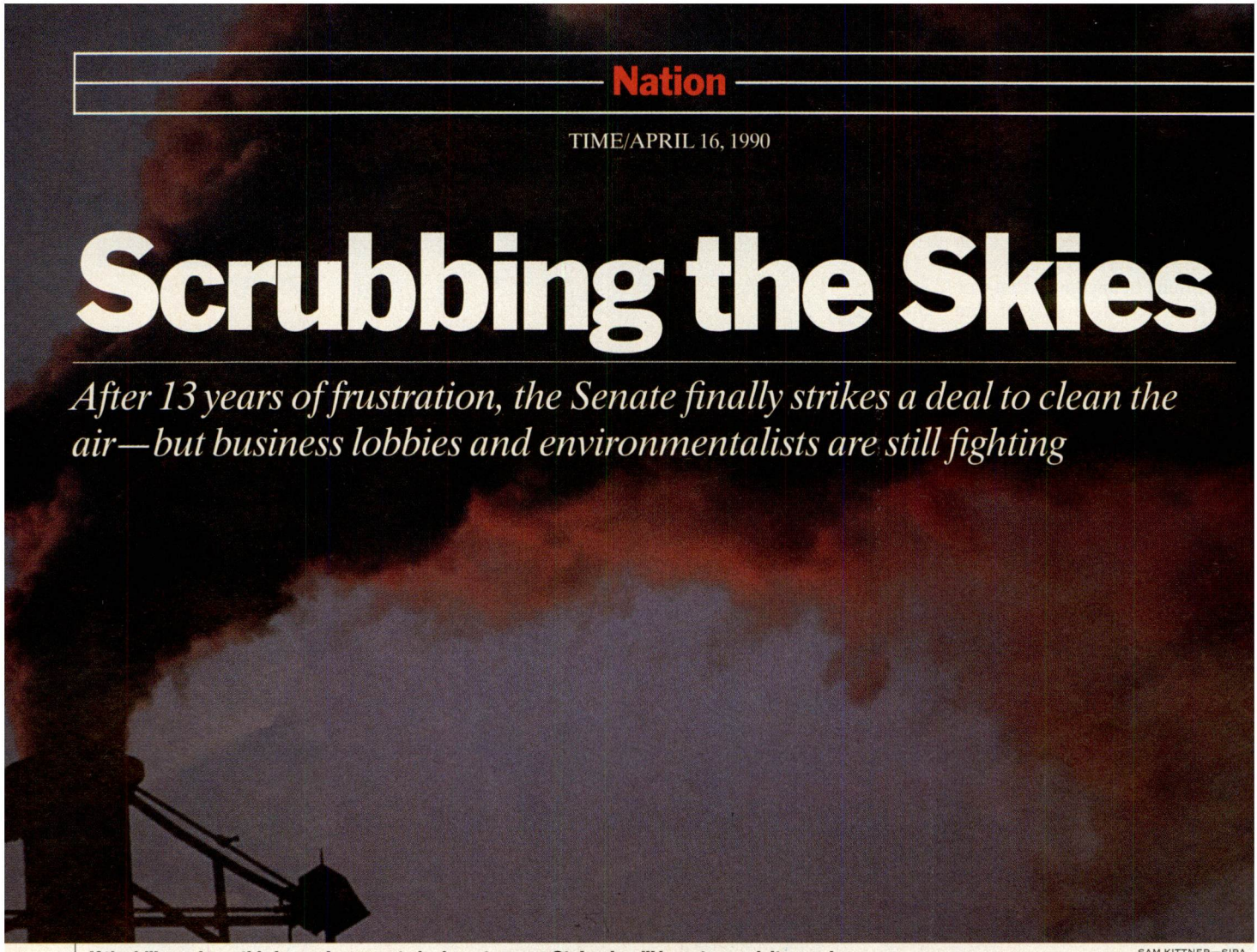
As baseball begins without him for the first time in 28 years, Rose is switching from gambling to golf: he drives 500 balls a day and commutes from Florida to Cincinnati for gambling therapy. Results of his tax-evasion probe may come this month.

CLOCKWISE FROM UPPER LEFT: RICK FRIEDMAN—BLACK STAR; P.F. GERO—SYGMA; CYNTHIA JOHNSON; DIANA WALKER—GAMMA LIAISON; MARY ALLEN; DAVID BURNETT—CONTACT; JUDAH PASSOW—J.B. PICTURES; JACQUES LANGEVIN—SYGMA; JASON BLEIBTREU—SYGMA; PAUL MILLER—BLACK STAR; GREG SMITH—GAMMA LIAISON

TIME/APRIL 16, 1990

Scrubbing the Skies

After 13 years of frustration, the Senate finally strikes a deal to clean the air—but business lobbies and environmentalists are still fighting



If the bill survives, this hazardous-waste incinerator near St. Louis will have to scrub its smoke

SAM KITTNER—SIPA

By OTTO FRIEDRICH

Compromise never comes easily in battles over the environment. It is simpler and more gratifying for everyone to denounce the opposition as fanatical or corrupt or under the control of sinister interests. So it seemed a bit of a miracle last week when the Senate approved broad new legislation against air pollution, the first since 1977, and the House Energy and Commerce Committee reported out a similar bill two days later. Both advocates and enemies of tighter pollution controls denounced the new legislation and vowed to fight on, but a final Senate-House compromise version is expected to reach the White House for signature by early next month. George Bush implied approval when he declared after the first vote last week, "The Senate bill is a major step forward. We can have cleaner air and a growing economy."

A chief architect of the miracle was the quiet-spoken Senate majority leader, George Mitchell of Maine. Starting during the reign of Ronald Reagan, who once professed to believe that some air pollution was caused by trees, Mitchell has tried to get a clean-air bill into law. After Bush claimed during his election campaign that he was a devoted environmentalist, Mitchell devised a strategy to hold the President to his rhetoric. First he waited for Bush to make his own proposals on pollution controls last July. Then he rammed a much tougher version through the Senate Environment and Public Works Committee. When the White House predictably denounced the committee version as too expensive, Mitchell and Administration experts went behind closed doors for some hard bargaining.

Most people—73% according to a recent Harris poll—are in favor of cleaner air, of course, but there are sharp and sincere differences about how much cleaner it needs to be, what the cleanup effort will cost and who should pay. Those differences pit liberals against conservatives, business groups against consumers, and urban office workers against blue-collar labor from older industries like mining and auto manufacturing. Politically, the strongest divisions pit entire regions against one another. The new legislation takes three major approaches:

▸Acid rain, which has never been legally controlled, is causing serious damage in the Northeast and Canada. The Senate and House measures alike require a 50% reduction (about 10 million tons) from 1980 levels by the end of the year 2000 in factories' emissions of sulfur dioxide, which turns rain into sulfuric acid. Major reductions are also called for in nitrogen oxides (2 million tons by the year 2000 in the Administration and House versions, 4 million tons by 2005 in the Senate version).

The burden of these reductions would fall most heavily on the Appalachian regions that produce high-sulfur coal and the 107 Midwestern power plants that burn it. "This bill will absolutely devastate my state, leaving nothing but unemployment in its path," complained Democratic Senator Alan Dixon of Illinois. The Senate version tries to help by offering incentives to plants that buy cleanup technology and reduce pollution even more than required (they would get credits that they could sell to other plants). But the Senate narrowly rejected an amendment by former majority leader Robert Byrd of West Virginia that would have compensated Appalachian coal miners for lost jobs. Byrd then voted against the whole bill.

▸On airborne poisons, which come mainly from chemical and industrial dry-cleaning plants, the Environmental Protection Agency was authorized in 1970 to control cancer-causing compounds with "an ample margin of safety." In fact, it has regulated

only seven such chemicals. The new bills require it to use the "maximum achievable technology" to control some 191 chemicals. The EPA would then set additional standards to reduce remaining health risks. ▶On automobile and truck tail-pipe emissions, the main cause of urban smog, the Senate bill calls for a 60% reduction in nitrogen oxides and a 22% reduction in hydrocarbons by 1995. If eleven of the 27 cities outside California now rated as "seriously" polluted fail to meet Government health standards between 1999 and 2001, a further 50% cut in those toxic emissions would automatically go into effect in 2003. At that time carbon monoxide would also be cut 50%. The House Energy and Commerce Committee, where Chairman John Dingell of Michigan is a powerful voice for the auto industry, voted to permit an extra year for the first phase and to let the second phase depend on whether the EPA considers it "feasible and necessary."

The original Bush proposals also called for production between 1997 and 2003 of 1 million cars a year that would run on clean fuels, not gasoline. The Senate changed that by specifying that oil companies would have to sell "reformulated" gasoline only in the nine smoggiest cities, and the House leaves it up to the auto manufacturers to certify their "capability" of making 1 million alternative-fuel cars.

Determining the cost of all these changes is one big numbers game. The White House figures that its original plan would have cost an extra $22 billion. Various industry lobbyists, on the other hand, estimate the costs of the original Senate bill at between $46 billion and $104 billion a year, and they dramatize that with estimates of lost jobs, bankrupt industries, ruined cities. "I don't think that the congressional bills have passed the affordability test," says William Fay, administrator of an industrial coalition called the Clean Air Working Group.

Environmentalists have different ways of manipulating numbers. Daniel Becker, a Washington official of the Sierra Club, cites an American Lung Association estimate that air pollution now costs the nation $40 billion to $60 billion a year. He also points to a Government study saying that air pollution causes 50,000 premature deaths annually. "The way the Senate deal came out, it is not a clean-air bill but a hold-your-breath bill," says Becker.

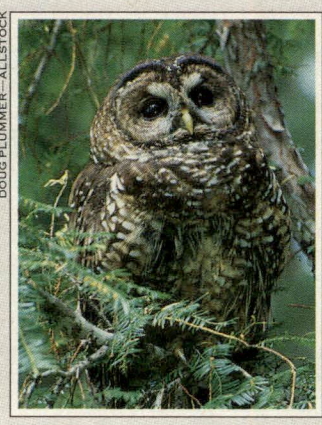
As it happened, the Environmental Protection Agency released its annual report on urban quality last week, showing that pollutants such as lead, sulfur dioxide, carbon monoxide and soot had decreased dramatically from 1979 to 1988. Even so, said EPA administrator William Reilly, "112 million people are living in areas still exceeding the smog standards."

These statistics of disease and death give the environmentalists' arguments a strongly emotional element. "The purpose of the Clean Air Act is to protect public health, not merely to make some pollution reductions," says Richard Ayres, chairman of the National Clean Air Coalition. "The difference is all-important. The Senate deal will reduce pollution; it is unlikely to reduce pollution sufficiently to protect public health." Or as Becker puts it, "When industry loses, they lose a few dollars. When we lose, people die."

Such arguments make it sound as though compromise is in itself unacceptable, and Senator Mitchell has been stung by some of his critics. "They spend most of their time attacking their friends," he says. He calls the compromise bill "a tremendous victory for the American people" and adds that "without the compromises, there would have been no clean-air bill at all in this century." The best things in life are said to be free, but by now it is clear that clean air is not one of them. —***Reported by Glenn Garelik and Hays Gorey/Washington***



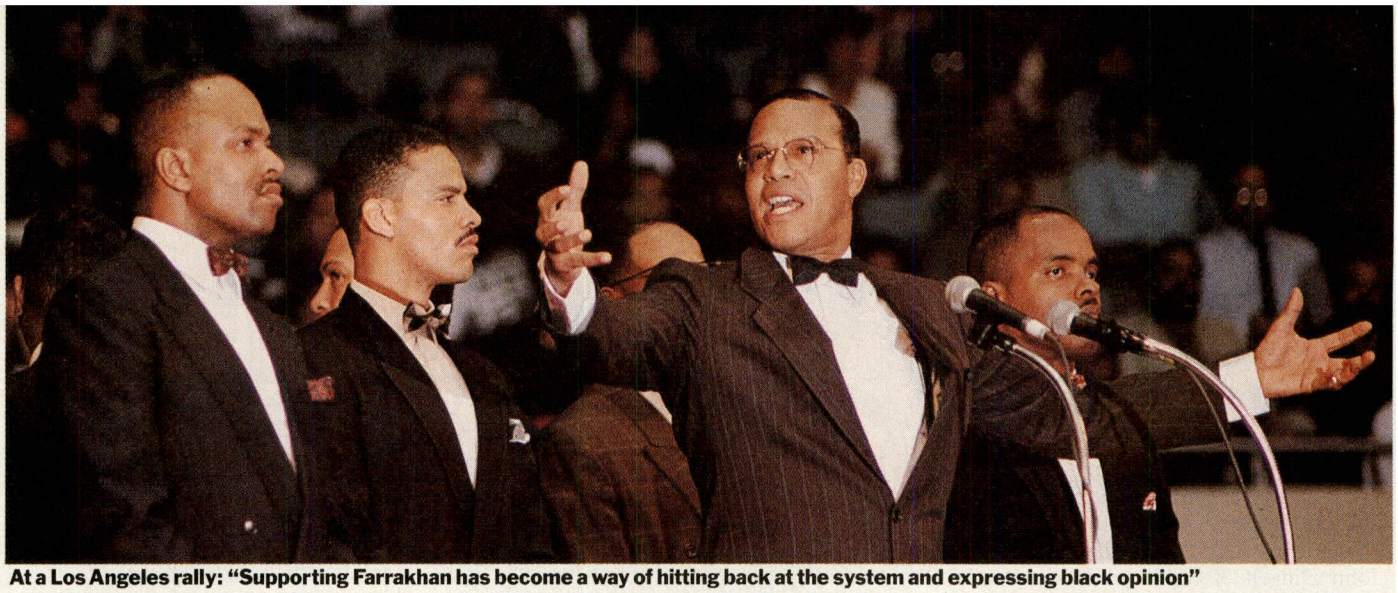
Environment's Little Big Bird


DOUG PLUMMER—ALLSTOCK

The northern spotted owl has become to the timber industry what the tiny snail darter was to dam builders—a symbol for environmentalists, only cuter. In the 1990s, the owl may curb logging in the Pacific Northwest just as the small fish temporarily halted construction of the Tellico Dam in Tennessee. Last week a panel of federal scientists called for a halt to logging on up to 40% of the national forest land in Oregon, Washington and California to keep the owl from becoming extinct. An estimated 1,700 pairs survive, a drop of more than half the population since 1800. Even with protection, the slow-breeding owl would take a century to increase to 2,200 pairs.

The recommendation should heavily influence a decision in June by the U.S. Fish and Wildlife Service whether to formally declare the owl an endangered species. The designation would make it a federal crime to disturb the bird's habitat—the woodlands that have succumbed to chain saws at the rate of 55,000 acres a year. Only about one-tenth of the original forests in the continental U.S. remain undisturbed.

Loggers argue that court injunctions have already deprived them of much of their prime lumber—and their livelihood. Protecting the owl, they warn, would silence the mills once and for all, and drive at least 9,000 jobs into extinction. Environmentalists believe that may be a price worth paying for preservation—not just of the 14-in. owl but also of the 300-ft.-high Douglas firs, the western hemlock and the Sitka spruce that predate Columbus' arrival. ■



At a Los Angeles rally: "Supporting Farrakhan has become a way of hitting back at the system and expressing black opinion"

Doing the Right Thing

Muslims have become a welcome force in black neighborhoods

By SYLVESTER MONROE

Not too long ago, the get-together in South Central Los Angeles would have been as difficult to imagine as a summit between Martin Luther King Jr. and Malcolm X. Last week 125 members of the First A.M.E. Church, the oldest and most influential black congregation in the city, traveled to a nearby mosque to worship with so-called black Muslims from the notorious Nation of Islam. The following night the Muslims reciprocated by attending a service at the church.

The purpose was not to argue about "dogma and doctrine," said A.M.E. pastor Cecil Murray, but to "ask what we can do jointly to help take our community back from drugs and crime." Such meetings, says Khallid Abdul Muhammad, special assistant to Muslim leader Louis Farrakhan, "put us into a position where black people are now turning to us for leadership."

Less than a decade ago, many blacks regarded the Nation of Islam as little more than bow-tied black nationalists, peddling bean pies and hawking newspapers on street corners from Harlem to Watts. While they commanded respect for their neat appearance and abstinence from cigarettes, alcohol and drugs, the Muslims' rigid religious strictures and separatist political views kept them on the fringes of mainstream black America.

But today the Muslims have quietly established themselves as a welcome presence in black neighborhoods. They have cleaned up a drug-infested Washington apartment complex and run a model drug-treatment program on its premises. They have earned the respect and cooperation of gang members in Los Angeles and run effective anticrime patrols in New York City, Chicago, Detroit and Atlanta.

The well-disciplined Muslims are becoming role models for a generation of black youth. "The problem of confronting gang violence and drugs is the responsibility of the black male," says Joseph H. Duff, president of the Los Angeles branch of the N.A.A.C.P. "And Muslims have always been a symbol of strong black manhood." In Los Angeles more than 1,000 black men, many of them former gang members, have recently joined the Nation of Islam. One new recruit is James Johnson, 18. "They told me how we were killing ourselves and showed me what's really going on in society," says Johnson. "Minister Farrakhan has a way of getting your attention."

More than 1,000 men, many former gang members, have recently joined the Nation of Islam

Farrakhan's harsh rhetoric and anti-Semitic remarks have frightened whites and obscured the impact of the Nation's work in the black community. But his firebrand approach has also won over some blacks. "He is respected in the black community for his audacity," says Howard University political science professor Ronald Walters. "Supporting Farrakhan has become a way of hitting back at the system and expressing black public opinion." Says Abdul Wazir Muhammad, minister of the Muslims' Los Angeles Mosque: "We are a barometer of the conditions and feel of the black community. If you really want to know how black people feel, then watch the Muslims."

Farrakhan's voice and the impact of his group's antidrug and anticrime work are resonating far beyond the boundaries of the Nation of Islam. Black filmmaker Spike Lee has spotlighted Farrakhan in his two most recent movies, *School Daze* and *Do the Right Thing,* and rap artists like Public Enemy, Big Daddy Kane and others are now wearing the Islamic star and crescent.

And while black audiences have long been willing to support the Nation of Islam by flocking to hear Farrakhan's razor-edged speeches, many people are now becoming just as willing to stand with his followers in the streets. When repeated clashes between Muslims and Los Angeles police and sheriffs resulted in the shooting death of a 27-year-old Muslim last January, the local N.A.A.C.P. and other mainstream black organizations rallied to support the group, something that had rarely happened in the past.

Even the police are beginning to look at the Muslims in a different light. After the confrontations in January, leaders of the Nation of Islam and several black organizations met with law-enforcement brass to ease the tensions between them. As a result, the Los Angeles Police Department and county sheriffs developed training films to educate officers on the Nation of Islam. "We now have a very positive working relationship with them," says deputy chief William Rathburn, commander of the L.A.P.D.'s South Bureau.

Since the meetings began, there have been no further incidents between Muslims and the police. At the same time, gang-related crime is down nearly 17% through February in L.A.P.D.'s South Bureau. "We don't attribute all of that to the Nation of Islam," says Rathburn. "But I would not say they're not responsible for some of it." The new attitude toward the group is summed up by Jim Cleaver, a black deputy to Los Angeles county supervisor Kenneth Hahn: "I am not a borderline Muslim, and I am not about to become a Muslim," he says. "I just respect what they do." ■

The Ultimate Fall Guy

Once again, Poindexter takes the hit for Iran-contra

The retired Navy admiral had walked the gangplank for his skipper in the 1987 congressional hearings, insisting that "the buck stops with me" in the Iran-*contra* affair. But once he faced trial on five charges of destroying documents and lying to Congress, John Poindexter switched signals and called Ronald Reagan as his star witness to share some responsibility for the Administration's secret policies to sell arms to Iran and assist the Nicaraguan *contras*. The former President failed to help his loyal National Security Adviser. Confused, forgetful and oblivious to the public record, Reagan would not even concede that Congress had been deceived. A federal jury in Washington last week thus pushed Poindexter over the side again, convicting him on all counts. The scandal's ultimate fall guy faces a maximum 25 years in prison and a $1.25 million fine.

In an ironic twist, it was the reluctant testimonies of Reagan and former National Security Council aide Oliver North, both of whom had every reason to want Poindexter acquitted, that proved devastating to the defense. Prosecutor Dan Webb, whose snapping-terrier style may have discouraged Poindexter from taking the stand, boldly ridiculed Reagan's videotaped deposition. In his closing argument, Webb contended that Reagan "didn't have the foggiest idea" whether Poindexter had broken laws. Webb charged that the ex-President was so "biased" that he winked at Poindexter while testifying, as if to say, "John, did that answer help you?" Indirectly accusing Reagan of dissembling in a TV speech claiming there had been no trade of arms for hostages in the 1985-86 weapons sales to Iran, Webb said Poindexter had destroyed a presidential finding precisely because it "put the lie" to Reagan's declaration. Attacking the credibility of a popular President was a risky tactic, but it worked.

The methodical Webb was even rougher on North, who was called by the prosecution but proved so antagonistic that Judge Harold Greene declared him a "hostile witness." Webb got North not only to admit to the jury that he had lied to Congress, but also that he had done so right after Poindexter had told him to "take care" of legislators' questions about the NSC's illegal help to the *contras*. On his return from the meeting, North got an electronic note from Poindexter saying "Well done."

As the final major prosecution in the long-running affair ended, Poindexter was the first defendant to be held accountable for more than specific, narrow criminal acts. North had destroyed countless NSC papers, deceived Congress and accepted the gift of a security system, which was illegal while he was on the Government payroll. Poindexter too was convicted of shredding a presidential finding and erasing 5,000 electronic messages (backup copies were discovered). But for the first time in the scandal, jurors were willing to sustain charges of a conspiracy to obstruct Congress and cover up the Iran-*contra* folly. "Admiral Poindexter did it because he wanted to protect the political viability of Ronald Reagan. And I consider that to be a selfish motive," Webb said after the verdict. No jury, of course, has been required to address the underlying constitutional question: To what extent can Congress limit a President in carrying out foreign policy?

So far, the sentences for those convicted have been light. As Judge Gerhard Gesell explained in putting North on probation, "You were a low-ranking subordinate working to carry out initiatives of a few cynical superiors." North had only three major bosses. Robert McFarlane, who preceded Poindexter as National Security Adviser, pleaded guilty to mere misdemeanors and was placed on probation. Whether Poindexter will be treated more severely is up to Judge Greene. That leaves Reagan, whose accountability now rests with historians rather than the courts.

The public record on Iran-*contra,* from the Tower commission to the congressional hearings and the various cases brought by independent counsel Lawrence Walsh, is incontestable on the key points: Reagan approved the weapons sales to Iran in the hope they would lead to the release of American hostages; he ordered that the *contras* be financed from private and foreign sources, even though Congress had expressed its opposition by cutting off U.S. funding. And he wanted both dealings kept secret from the American public.

Whether Reagan knew that jacked-up weapons prices had created profits that went to the *contras*, and whether he would have disapproved if he did know, are only peripheral uncertainties. Iran-*contra,* which violated laws and contradicted Reagan's proclaimed policies, was undeniably the President's doing. ***—By Ed Magnuson.***

Reported by Jerome Cramer/Washington



GREG GIBSON—AP

The admiral walks the gangplank for the second time

His skipper failed to help him.

SIX CONVICTED, NONE IMPRISONED

OLIVER NORTH: The former NSC aide was convicted of three felonies: obstructing Congress, destroying documents, and receiving an illegal gratuity. Fined $150,000 and sentenced to community service.

ROBERT MC FARLANE: The former National Security Adviser pleaded guilty to four misdemeanor charges of withholding information from Congress. Sentenced to two years' probation.

RICHARD SECORD: The arms merchant pleaded guilty to lying to congressional investigators. Eleven other charges were dismissed. He was placed on probation for two years.

ALBERT HAKIM: Secord's partner pleaded guilty to giving an illegal gratuity (a home-security system) to North. Sentenced to two years' probation and fined $5,000.

CARL CHANNELL and RICHARD MILLER: Both *contra* fund raisers, who worked with North, pleaded guilty to conspiracy to defraud the Government. Each drew two years' probation.

JOSEPH FERNANDEZ: The former CIA station chief in Costa Rica had all charges dismissed when the Justice Department and the CIA objected to the use of classified documents at his trial.

A Tough Guy's Toughest Fight

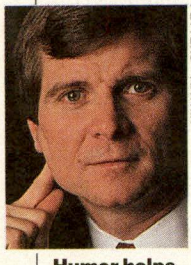
Lee Atwater battles a tumor

A political operative who specializes in bareknuckle campaigns, Lee Atwater is facing his roughest contest yet. The Republican National Committee chairman was hospitalized last week in Montefiore Medical Center in New York City for treatment of a brain tumor known as an upper-grade astrocytoma. Chief neurologist Dr. Paul Kornblith described it as "so aggressive, we had to go after it with hammer and tongs." Dr. William Shapiro of the Brain Tumor Cooperative Group, a nationwide research organization of neurosurgeons, estimates that Atwater, 39, has only a 10% chance of surviving more than five years.

Characteristically, Atwater is going all out against this latest adversary. He opted last week to undergo a specialized treatment, in which tubes containing massive doses of radioactive isotopes were implanted directly into the tumor in the right lobe of his brain. After five days, the tubes were removed, and Atwater was expected to return home this week. In three months, doctors will test the results.

The illness interrupted a string of personal pluses for a man who last year was appointed the second youngest R.N.C. chairman in the party's history. A first album of his blues-guitar music (Atwater's avocation) was released last week, and Atwater's wife Sally is expected to give birth to their third daughter this week.

Friends say Atwater speaks confidently of overcoming his illness and keeps in touch with the White House and the R.N.C. He grills doctors for highly technical information about the nature of his disease and his treatment. At the same time, he is following editor Norman Cousins' prescription that laughter is the best medicine. Atwater has watched videotapes of the Three Stooges and W.C. Fields' film *Never Give a Sucker an Even Break.* Black humor also helps: he presented some friends with copies of his new album and a souvenir tuft of his hair, which has been falling out from radiation treatments.



FETTERS—MATRIX

Humor helps

Atwater's illness comes at a critical time for his party. In elections this fall, the Republicans face 36 gubernatorial races and 34 Senate contests. Atwater had vowed he would be "brutal" about targeting congressional districts to reduce the Democrats' 82-seat House majority, but even he admits he has since lost his taste for hand-to-hand political combat. ■

The Political Interest

Michael Kramer

The Free-Trade Hypocrisy



ALEX QUESADA—MATRIX

Burning sugarcane in Nicaragua: protectionism has cost the region 400,000 jobs

Few political mantras are incanted as reverentially as "free trade"—and few are ignored as hypocritically in practice. The latest folly involves the Caribbean Basin Initiative, a program begun in 1983 to assist 28 Caribbean and Latin American nations. By most measures, the CBI has failed. Its intelligent premise—trade, not aid—has never been fully realized. Pro-protection interests have consistently crippled Latin attempts to sell products in the U.S. on a cost-effective basis. Now Oregon Senator Bob Packwood is leading a charge on behalf of the region's apparel and footwear industries, an effort most everyone believes will be killed by domestic union opposition.

What's worse, unless George Bush changes course and breathes life into his free-trade rhetoric by assaulting the U.S.'s insane sugar program, Latin America's economy will deteriorate even further—and the $800 million assistance package the President plans for Nicaragua and Panama will have little or no long-term benefit.

Unlike most farm programs, the sugar quotas guarantee all U.S. producers a profit by inflating prices to double the worldwide level while severely restricting imports. The big winners are the nation's 12,600 sugar producers, who are enriched by about $260,000 a year apiece in excess profits. The big losers are U.S. consumers: the sugar program amounts to a hidden sales tax of more than $3 billion a year.

Not only are sugar quotas bad consumer policy, they are also bad trade policy. The international group concerned with such matters calls the U.S. sugar scheme an unfair trade practice, an ironic finding given Washington's pique at other nations. As foreign policy, the sugar program is an unmitigated disaster. In the CBI nations, where sugar is the most important export commodity after coffee, more than 400,000 jobs have been lost since 1982 because of sugar protectionism, and the CBI's few positive effects have been wiped out.

None of this has gone unnoticed. In 1988, with trade representative Clayton Yeutter screaming loudest, the Reagan Administration declared U.S. sugar policy an abomination and tried unsuccessfully to change it. As Bush's Agriculture Secretary, Yeutter has apparently flipped. The Administration's proposed farm-program reforms leave sugar policy intact.

Why? "Because the sugar lobby is too powerful," concedes an Administration official. "Too powerful" is putting it mildly. Public Voice, a Washington consumer watchdog group, will soon release a survey showing that between 1985 and 1989, even liberal Democrats took significant sums from Big Sugar's political-action committees—men like House Speaker Tom Foley ($26,500), House Democratic whip Bill Gray ($14,500) and Senators Al Gore ($13,500) and Paul Simon ($15,250). All have voted with Big Sugar in the past and will probably do so again when New Jersey Senator Bill Bradley's reform bill comes to the floor later this spring.

"It's like this," says Louisiana Senator Bennett Johnston, whose state is the nation's second largest sugarcane producer. "I see reform as a job-for-job loss to Latin America. You say I have a vested interest? You're damn right I do." Says a Bush aide: "Fact is, we need the support of Democrats like Bennett, which makes sugar the lowest of low priorities." An honest explanation. And a rotten one too. ■



VYTO STARINSKAS—AP

The latest dropout

GOVERNORS

Heading for The Exit

The Governors of the economically beleaguered Northeast are calling it quits. First Michael Dukakis, surveying Massachusetts' shattered miracle, announced he would not seek re-election this fall. Then Connecticut Democrat William O'Neill said he had no taste for the difficult campaign he faced after hiking the sales tax to 8% and chopping $600 million out of the state's $7 billion budget.

The latest dropout is Democrat Madeleine Kunin of Vermont, who announced last week that she will not seek a fourth term. She has been forced to cut social programs and propose a 3% income tax hike. Kunin blames Washington for "telling the American public they can have it both ways: no tax increases and increased social services. Unfortunately, Governors can't play by these rules." ■

TAXES

The Ultimate Penalty

"It's purely a business decision," said the note left by Alex Council for his wife Kay in their High Point, N.C., home in 1988. "You will find my body on the lot on the north side of the house." In a chilling tale for taxpayers, the widow last week told a Senate subcommittee that her husband, 49, killed himself so she could use his $250,000 life insurance policy to fight a claim by the Internal Revenue Service that the Councils owed $300,000 in taxes.

"We didn't do anything wrong," Kay Council, 48, testified. "We just got caught up in the middle of a big IRS screw-up." She said she sold their house, paid lawyers $70,000 to take on the IRS and "was cheated of growing old with the man I love."

It was cold comfort, but a federal tax court in October 1988 ruled that the Councils did not owe $300,000 to the IRS. The court said they owed nothing. ■



U.S. AIR FORCE PHOTO

The long-hidden F-117A fighter on a test flight in Nevada

AIR FORCE

Bait and Switch On Stealth

The real reason the Pentagon unveiled the hitherto secret F-117A Stealth fighter last week was not to show off a nifty new plane or demonstrate military *glasnost.* It was part of a campaign to persuade Congress and the public to build another, far more expensive, radar-evading Stealth plane: the B-2 bomber. But while the Air Force purchased 59 Stealth fighters for a total cost of $6.26 billion, it wants to buy 132 Stealth bombers for a staggering $72 billion. Some critics say the B-2 program could actually cost more than twice that.

The color photographs and eight-minute video of the delta-winged F-117A did not make the case for new technology. For one thing, the Pentagon admitted that when two of the fighters were used during the Panama invasion, their precision bombs missed their targets by several hundred yards. Moreover, an Air Force report released last week indicated that the life-span of the older B-52 bombers will extend well into the next century, reinforcing growing support in Congress for a drastic cut in the B-2 program—or even killing it altogether. ■

TREASURE

Going for The Gold

Three tons of gold bars, nuggets, bullion and rare coins from the California goldfields were lost in 1857, when the steamship *Central America* sank in a hurricane off the Carolinas. Now this lost treasure, confirmed 18 months ago and worth up to $1 billion today, is in the eye of another hurricane, this time in a Norfolk, Va., courtroom.

Finders keepers, says the Columbus-America Discovery Group, which won exclusive salvage rights in federal court last year through the arcane principle of "tele-possession" because its unmanned robot, equipped with cameras and mechanical arms, can operate in waters too deep for divers. But ten British and American insurance companies insist that the loot is theirs since their predecessor companies paid off the loss more than a century ago. Even the Ivy League has joined the fray. Columbia University, whose researchers provided sonar maps of the ocean bottom, is also angling for a share.

Amid this typhoon of claims and counterclaims, Federal Judge Richard Kellam must decide whether the salvage rights won by the robot lead to ownership or merely a finder's fee. And perhaps a bottle of rum? ■



COLUMBUS—AMERICA DISCOVERY GROUP, INC.

The *Central America's* sunken cargo, photographed by a robot

DIPLOMACY

A Hurry-Up Summit

Despite Lithuania and strategic-arms talks that have hit some snags, the Bush-Gorbachev meeting is pushed up to May 30

By RICHARD LACAYO

When plans were first made for Eduard Shevardnadze's trip to Washington, the aim was to prepare for the upcoming summit meeting between George Bush and Mikhail Gorbachev. By the time the Soviet Foreign Minister arrived for three days of talks last week, the sessions had taken on far greater importance. In the wake of Gorbachev's campaign to thwart Lithuania's drive for independence, Shevardnadze's visit would be watched for signs of the damage done to U.S.-Soviet relations by Moscow's tough line—and to gauge Bush Administration priorities in the era of waning superpower tensions.

By the time the Soviet Minister departed, it was clear that the fate of the tiny Baltic republic, which unilaterally declared its independence from Moscow, though big enough to be a stumbling block in the rush toward better relations, was still too small, for now, to be a decisive obstacle. "We have an awful lot at stake in the U.S.-Soviet relationship," Bush said after meeting with the Soviet Minister for 2 hours and 20 minutes on Friday. "An enormous amount at stake."

Shevardnadze's trip was intended to give both sides a chance to make last-minute progress on major arms-control agreements that Bush and Gorbachev hoped to sign the next time they met. As it happened, the sessions also unveiled a new Soviet flexibility on Germany and Israel. But the most newsworthy outcome of Shevardnadze's three days of talks with Bush and Secretary of State James Baker was simply the announcement of a date for the summit—several weeks earlier than Washington had anticipated. The announcement that the encounter would start on May 30 in Washington dispelled any question that Lithuania was important enough to derail the meeting. Before departing, a satisfied Shevardnadze could announce: "This summit will certainly become a major event in world affairs."

That did not mean relations were on the smoothest possible track. A "tough-love working relationship" was the term White House press secretary Marlin Fitzwater used to describe U.S.-Soviet dealings these days. Tough in more ways than one. During Shevardnadze's five sessions with Baker, some serious snags appeared in the Strategic Arms Reduction Talks (START). Afterward, a senior Soviet official said it was "impractical" to assume that a pact limiting the most destructive portions of the superpower arsenal would be signed at the Bush-Gorbachev meeting. Nonetheless both U.S. and Soviet sides agreed that all the major issues involved—if not the fine print—would be resolved by May 30.

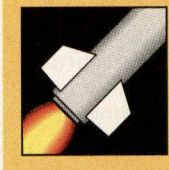
Even before those differences surfaced, George Bush was having trouble satisfying congressional critics who want firmer White House support for Lithuania, while at the same time avoiding any U.S. steps that might play into the hands of Mikhail Gorbachev's conservative opponents at home. Every time Gorbachev turns up the pain on Lithuania, Bush winces, and he had plenty of reason to grimace last week. As Soviet armored vehicles paraded through Vilnius, the capital, Moscow closed Lithuania's border with Poland and expelled Western reporters from the republic.

The U.S. Congress, meantime, stepped up its efforts to pressure Bush into showing displeasure with Moscow's tactics. By a 416-to-3 vote, the House passed a nonbinding resolution urging the President to recognize an independent Lithuania "at the earliest possible time." Meanwhile, 31 Senators sent a letter to the White House calling on Bush to spell out U.S. responses—from trade sanctions to cancellation of the summit—if the Soviets took further measures against Lithuania.

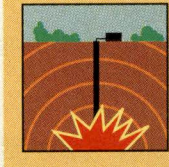
Unwilling to go that far, Bush seemed to be hoping that Gorbachev would keep him from having to face the issue. Last month Bush sent Gorbachev a letter underlining his expectation that the Soviet leader would not resort to force in Lithuania. Shevardnadze brought a lengthy return letter from Gorbachev, but it turned out to be a missive about arms control.

The Soviet Minister's visit also began amid a flurry of mixed signals about Lithuania. On his arrival Tuesday, Shevardnadze asserted that his government's "main weapon" for resolving any issue is "honest dialogue." His claims were buttressed in Moscow, where Lithuanian leaders had gone to seek a meeting with

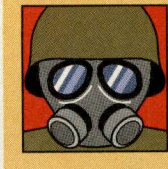
WHERE THE TREATIES STAND



START Only an agreement on the major issues in the Strategic Arms Reduction Talks will be ready for the summit. The treaty reduces the strategic nuclear warheads on each side to 6,000, but bomber-carried weapons bring the number closer to 11,000.



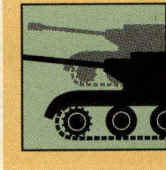
Threshhold Test Ban The treaty, capping underground blasts at 150 kilotons, was signed in 1974 but not ratified. A T.T.B. verification protocol and a treaty on peaceful uses of nuclear energy should be ready for signature at the summit.



Chemical Weapons A convention reducing Soviet and U.S. chemical weapons to 20% of current U.S. levels is almost certain to be approved at the summit. Major uncertainties remain about verification procedures.



Open Skies The Bush initiative to establish mutual surveillance flights over Warsaw Pact and NATO territory could be concluded at a Budapest meeting convening later this month. Serious differences may remain for summit resolution over the types of sensors to be used and on the quota of flights.



Conventional Forces in Europe Under the pact, U.S. and Soviet troop strength on the central front will be capped at 195,000. The Soviets want 6,000 aircraft above an agreed 4,700 ceiling on combat planes. The C.F.E. treaty will be signed later this year.

TIME Chart by Steve Hart

Gorbachev, a sign that the ongoing Soviet pressure campaign was bearing fruit. The Soviet leader refused to see the delegation but sent Aleksandr Yakovlev, a close ally and member of his presidential council. By Thursday, however, Soviet troops had moved into the chief prosecutor's office in the Lithuanian capital. They expelled staff members loyal to the former prosecutor, who was dismissed by Moscow two weeks ago and replaced by a successor chosen to enforce Soviet law in the rebellious republic.

In Washington, Shevardnadze offered another surprise. He told his American opposite number that Gorbachev wanted a five-day summit, to begin on May 30. White House officials had been counting on a visit in late June. They had envisioned a meeting that would allow the Soviet President time for sight-seeing and for plenty of leisurely photo opportunities to remind Americans of the U.S.-Soviet goodwill that has blossomed under the Bush Administration.

Why the rush? Gorbachev's reasons were ostensibly domestic. In addition to his headaches in the Baltics, the Soviet leader faces a June session of the Congress of the Russian Federation, the deliberative body of the Russian republic. That will be followed by the crucial 28th Communist Party Congress, starting on July 2. At that meeting Gorbachev is expected to consolidate the transfer of his power base from the party to the newly formed presidency. "He cannot simply turn up at these meetings," said a Soviet spokesman. "He has to prepare for them." Administration officials admitted that the earlier summit allows Gorbachev to send a strong signal, as one put it, "that Lithuania isn't going to stand in the way of better relations."

The accelerated schedule was one reason why work on the START treaty would not be finished in time for a summit signing, a goal the two men set for themselves when they met for the first time in Malta last December. Problems still remain to be worked out on verification, the range limit of air-launched cruise missiles and methods for counting warheads on future types of missiles. Moreover, according to a report in last week's Washington *Post,* the START treaty has begun to look a good deal less sweeping than advertised. Originally, the treaty was expected to cut in half the U.S. and Soviet nuclear arsenals. Now it seems that START will countenance deployment of nearly as many U.S. warheads as at present.

In their private meetings last week, U.S. and Soviet negotiators bogged down in an area that the U.S. had thought was resolved: sea-launched cruise missiles. An agreement forged last winter would have allowed both nations to abide by "binding declaratory limits" on the unmanned nuclear-tipped weapons launched from submarines or surface ships. The deal would have allowed the U.S. to keep a larger number of SLCMs, as long as it told Moscow how many were in the American stockpile.

Last week the Soviets said they want "equal verifiable limits" instead, meaning no U.S. advantage. The surprise reversal led to some tense debates between the negotiators and caused Bush to admonish Shevardnadze when the two men met on Friday in the Oval Office. "We have some difficulties on arms control," the President told his visitor. "I hope they can be resolved."

Some other Soviet shifts were more welcome. Bowing to the inevitable, Shevardnadze announced that his side was dropping its insistence on neutrality for a unified Germany—an important change in Moscow's position. He continued to hold, however, that Moscow would not agree to the unified nation's joining NATO. Shevardnadze suggested that Germany might become part of both the Western alliance and the Warsaw Pact but offered no specifics. "We were equally firm in our view that

DIANA WALKER



Talking about the weather in the Rose Garden, amid rumbles from the Baltics



AP

Soviet armored car moves through Vilnius

a unified Germany must remain a member of NATO," Baker reported later.

Shevardnadze further informed his hosts that Moscow was willing to implement an agreement offering direct flights for Soviet-Jewish immigrants to Israel, provided that Israel give assurances the newcomers would not be settled "in the occupied territories." Because the Soviets include not only the West Bank and Gaza but also East Jerusalem in that term, the Israelis are virtually certain to balk. In addition, Shevardnadze held out the possibility that Moscow would resume the diplomatic ties with Israel that were severed in 1967 after the Six-Day War, though he conditioned that move on the "overall Middle East situation."

Even without a START treaty, Bush and Gorbachev should be able to sign a goodly clump of summit agreements. Among the topics: cooperation in trade, science, the environment and activities in space. Plans call for Baker and Shevardnadze to hold one more preparatory meeting next month in Moscow. "It's still our hope that major issues will be resolved by the summit, but that's got to take a lot of work," said Baker.

That meeting may also settle matters like the itinerary for Gorbachev's U.S. visit. The President, who favors one-to-one diplomacy, had hoped to take Gorbachev to the Bush family retreat in Kennebunkport, Me. Bush is now resigned to the likelihood that most of the summit will consist of working sessions in Washington, with the possibility of a side trip to Camp David. According to a White House official, the President has begun to accept that Gorbachev is not a "relaxing kind of guy." With the clock ticking on START and pressure continuing to build in the Baltics, the next few weeks are likely to be anything but relaxing. ***—Reported by Anne Blackman/Moscow and Michael Duffy and Christopher Ogden/Washington***

The Alternative Is Dictatorship

Shortly before going to Washington, Soviet Foreign Minister Eduard Shevardnadze met with a TIME *group, led by editor in chief Jason McManus. Excerpts:*

Q. President Bush seems to be trying hard not to make Lithuania a point of contention between our two countries. Is that your perception too?

A. I am convinced that your President is not interested in seeing a deterioration in U.S.-Soviet relations. I have no doubt that he is interested in the success of *perestroika.* This is a realistic policy. Sometimes people say—I always do—that there is no alternative to *perestroika.* That is not completely true. There is an alternative. If *perestroika* fails, then we will see a dictator come to power. And everyone knows what a dictatorship means. Without overstating the case, it is in the interest of our entire human civilization for *perestroika,* democratization and the renewal of our country to succeed. I think the U.S. Administration understands this.

Q. How do you feel about a united Germany belonging to NATO?

A. At a press conference in southern Africa, I was asked a similar question. I said we are a hospitable nation, and we invite a new united Germany to join the Warsaw Pact. Why not? That would be an interesting, unorthodox option. But, it is said, that would not suit the West.

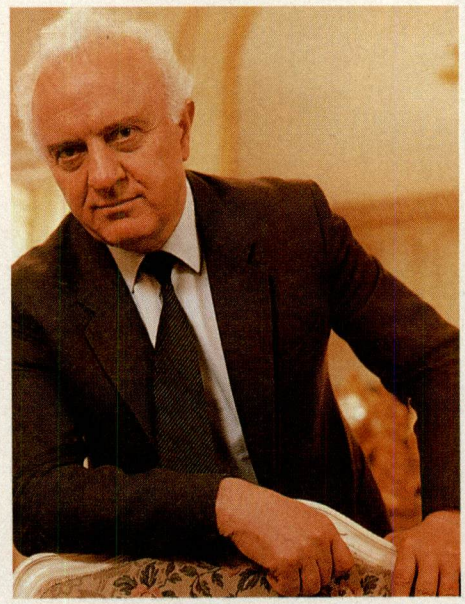
Why can't Germany stay an independent state, outside of any military or political alliance? What is so bad about having a neutral state in the heart of Europe with a status that would be acceptable to all in East and West? There are also some unexpected options to think about: for example, a new united Germany with responsibilities to both NATO and the Warsaw Pact. There are possibilities for discussion here.

Q. How would this dual responsibility to NATO and the Warsaw Pact work?

A. I cannot say right now, but we have some ideas. There is one thing I am convinced of: a united Germany, when it comes about, should consider itself a full-fledged member of the European community of nations. This united Germany should become a major factor in the stability of Europe.

Q. You have just been named to Mikhail Gorbachev's Presidential Council. What is this new body, and how does it fit in with existing institutions like the Politburo?

A. Presidential power and the entire system of presidential rule in our country are in the formative stage. The Politburo will deal with purely political and party matters; its leadership will try to exercise its influence through the activities of its members. I believe this is similar to how the Republican and Democratic parties work in your country.



LUC DELAHAYE—SIPA

"There are possibilities for discussion"

The President, as defined in our constitution, is responsible for the general state of domestic and foreign policy. The members of his council will be his advisers. In addition, each member will have his own sphere of responsibility.

From the first days of *perestroika,* I was in favor of introducing presidential rule, but at that time, I found myself in the minority. We have come to realize now that the presidency is a necessary and useful institution. Its main task is to protect democracy. ■



ALEXANDER AVAKIAN—WOODFIN CAMP

Tallinn residents demonstrate their conviction that the Soviet annexation is illegal

Next to Break from the Pack?

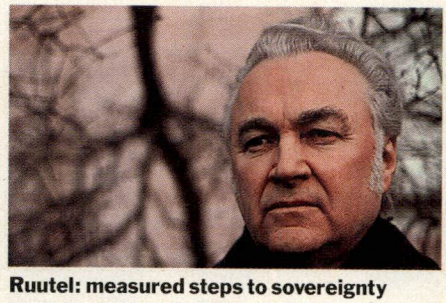
Estonia is on a more cautious collision course with Moscow, but for Mikhail Gorbachev, the gauntlet has been thrown down

By JOHN KOHAN TALLINN

Mikhail Gorbachev does not like waiting. After trying several times to reach Estonian President Arnold Ruutel by telephone last week, he was in no mood for small talk when he finally got through late Tuesday evening. The Soviet President told Ruutel that he had "lost his temper" over the Estonian parliament's decision two weeks ago that declared "the state supremacy of the Soviet Union to be illegal" in the republic. What exactly did that mean? Gorbachev demanded. If the Estonians no longer recognized the Soviet constitution, what law was operating?

Ruutel had a ready response: Estonian law. Displeased, Gorbachev called the decision "improper" and summoned the Estonian President to Moscow immediately to explain himself. When Ruutel declined, the Soviet leader turned tough. If the declaration was not rescinded, Gorbachev warned, Moscow would impose the same "regimen" there as in rebellious Lithuania. Ruutel replied that Estonians understood the consequences of their actions.

And so the gauntlet was thrown down in another Baltic rebellion against the Soviets that could further complicate superpower relations. Even as Eduard Shevardnadze and the Bush Administration were trying to muffle Lithuania's impact in Washington, Estonia was setting off on a similar course of defiance. As Ruutel told a group of visiting TIME editors in Tallinn last week: "We understand the concern abroad that we are, perhaps, too bold in our demands and are undermining Gorbachev's position. But the interests of the superpowers should not be advanced at the expense of small nations."



VINCENT LELOUP—JB PICTURES

Ruutel: measured steps to sovereignty

Some Estonians have concerns about the brash way in which Lithuania declared outright independence, but sympathy with the decision is widespread. Says Enn-Arno Sillari, First Secretary of the independent Estonian Communist Party: "I'd like to think the Lithuanians are paving the way for us." The Estonians prefer to take more measured steps toward sovereignty. Instead of a complete break with Moscow, the Supreme Soviet two weeks ago called for an unspecified transition period leading to "the formation of the constitutional institutions of the Republic of Estonia."

The Estonians contend that, technically speaking, they are not seceding. They are simply restoring the sovereignty that Moscow guaranteed them "unconditionally and for all time" in 1920—then violated under the terms of the 1939 Molotov-Ribbentrop pact, which led to Stalin's annexation of the Baltics. Estonian legislators want the issue of independence placed on the agenda for a Helsinki conference that Gorbachev has proposed to lay the foundation for his much touted "common European home." Legalists in Tallinn cite the Austrian State Treaty of 1955, which guaranteed the country's neutrality in exchange for the withdrawal of Soviet troops, as a model for Soviet military disengagement.

Like the Lithuanians, the Estonians are bracing for a showdown over the issue of military conscription. The Estonian parliament has approved a law on alternative military service, and plans to dismantle local draft boards. Local movements like Geneva-49, a citizens' action group opposed to the draft, have denounced service in the Soviet army as a violation of the 1949 Geneva Conventions barring citizens of occupied states from having to serve in the occupation forces.

Estonia is already engaged in a "banking war" with Moscow. Even though the Baltic republics were given the green light last November to pursue radical economic reforms, when enabling laws went into effect in January, the Estonians were ordered to turn over the 2.3 billion–ruble reserve in the local savings bank to the Moscow-controlled State Bank. Tallinn's branch of the U.S.S.R. Bank for Foreign Economic Affairs, now part of the new Estonian Republican Bank, was further told to close down any hard-currency accounts abroad and let Moscow handle future external cash transfers. The Estonians grudgingly agreed. They plan to introduce their own currency by the end of the year and to open a new, commercial shareholders bank.

A shadow parliament now exists alongside the Estonian Supreme Soviet. The new Congress of Estonia is a largely symbolic body, elected by citizens of the old Estonian republic and their descendants. But the Congress claims to be the "bearer of supreme authority" in the republic and has been recognized by the Supreme Soviet. The initiative has helped inflame non-Estonians, who make up 40% of the republic's population of 1.5 million. In the predominantly Russian-speaking cities of Narva and Kotla-Jarve, local councils have refused to recognize the parliament's independence call.

Now that Estonia has aligned itself with Lithuania, will Latvia be next? Members of the independence-oriented Popular Front there say that when a newly elected Supreme Soviet convenes next month in Riga, odds are good that the parliament will also vote for independence. Agrees Estonian parliamentarian Marju Lauristin in Tallinn: "We are in a bicycle race, where the teams change leaders to keep up the pace. The Lithuanians have broken away from the pack. Now it is our turn. Perhaps the Latvians will follow." The question is when, if ever, they will be allowed to cross the finish line. ■

MIDDLE EAST

Stumbling Toward Armageddon?

Iraq's threats against Israel heat up a region that keeps growing more dangerous, even as the superpowers back away from unstinting support for their respective allies

By JILL SMOLOWE

An ordinary politician who had been accused of secretly developing nuclear weapons might simply issue a fervent denial or a terse "no comment." But there is nothing ordinary about Iraq's President Saddam Hussein. One week after his agents were caught trying to smuggle electrical devices used in nuclear weapons from Britain to Iraq, Saddam issued an angry disclaimer that served only to provoke greater international unease and outrage. "We do not need an atomic bomb," Saddam said. "We have the dual chemical. Whoever threatens us with the atomic bomb, we will annihilate him with the dual chemical." Recalling Israel's devastating 1981 air strike against Iraq's Osirak nuclear reactor, Saddam warned, "I swear to God we will let our fire eat half of Israel if it tries to wage anything against Iraq."

Saddam's outburst set off alarms in Jerusalem. "Let there be no doubt," responded Israel's Prime Minister Yitzhak Shamir, "Israel will also know how to defend itself in the future and defeat the evil designs of its enemies." White House press secretary Marlin Fitzwater said the Bush Administration found Saddam's remarks "deplorable and irresponsible." Fitzwater called for concrete steps "to rid the region of chemical and other conventional weapons and to move toward peace."

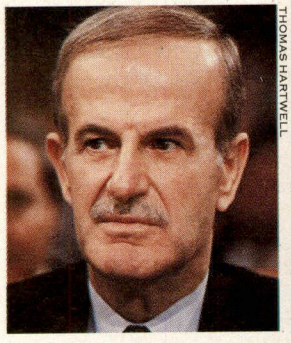
The inflammatory rhetoric showed that tempers are still hair-trigger short in the Middle East—while arms proliferation speeds virtually uncontrolled, rendering the region a tinderbox. Not only Iraq, but also Egypt, Iran, Israel, Libya and Syria have chemical weapons, and all possess the means to deliver chemical warheads to enemy targets, either by missile or by aircraft. Suddenly, Israel's long-presumed nuclear capability, still a monopoly despite Saddam's best efforts, does not seem to be an effective deterrent. "The situation is similar to the balance between the U.S. and the Soviet Union in the mid-1950s," says Gerald Steinberg, a strategic analyst at Bar-Ilan University outside Tel Aviv. "America had overwhelming superiority, but the Soviets could have caused great damage if they got off a first strike."

The comparison seems ironic in light of the ongoing thaw in superpower relations. As part of that rapprochement, Washington and Moscow have backed away from unstinting support of their respective allies in the Middle East. That has forced realignments in the Arab diplomatic constellation and weakened Israel's once unchallenged claim to being of strategic importance to the U.S. But the unwinding of East-West tensions has done little to alleviate regional stresses. Instead, the Middle East arms race is escalating.

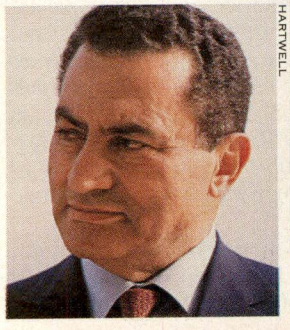
The superpower retreat has had the most dramatic impact on Syria and Israel. U.S. officials speak of a "rough symmetry" between Moscow's announced intention to draw down its military support for Syria and Washington's cooling approach toward Israel. In Damascus, Moscow's moderating attentions have curbed President Hafez Assad's hopes of achieving strategic parity with Israel. In the past the Soviets funneled enough hardware into Syria to leave the country with a $15 billion military debt; now Moscow speaks of Assad's need for "reasonable defensive sufficiency."

Assad's response has been to try to break out of the diplomatic isolation incurred by his strident anti-Israel policies and support for terrorism. To that end, he is cultivating a more moderate image in the West and repairing relations with other Arab states, including Egypt. Last month Assad told former U.S. President Jimmy Carter that he was ready to enter into bilateral negotiations with Israel.

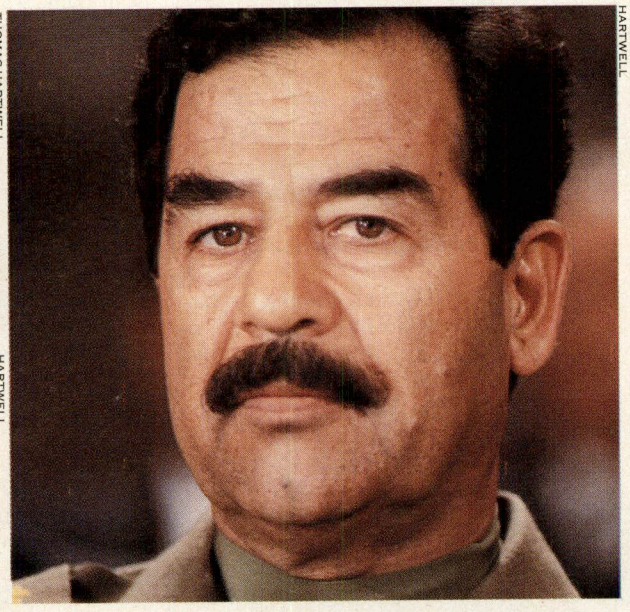
For Israel the slackening of superpower tensions has brought significant rewards. Jerusalem has renewed diplomatic relations with Hungary, Poland and Czechoslovakia, severed since 1967. Warming relations with Moscow have led to a flood of Soviet Jewish immigrants, perhaps as many as 100,000 this year. Their influx will help Israelis maintain a demographic edge in the combined areas of Israel and the occupied West Bank and Gaza Strip against an ever increasing Arab population.



THOMAS HARTWELL



HARTWELL



HARTWELL

Will Arab leaders increase the strains or hunt for more peaceable solutions? Clockwise from top left: Assad, Saddam, Mubarak

"I swear to God we will let our fire eat half of Israel if it tries to wage anything against Iraq."

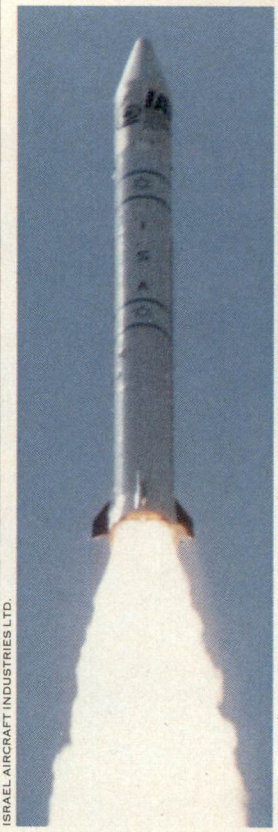
—Saddam Hussein

Jerusalem's gains are offset by strains in the U.S.-Israeli relationship that have been growing since the Palestinian *intifadeh* erupted in the occupied territories 28 months ago. Those differences hit a new intensity last month, when Shamir rejected Secretary of State James Baker's plan to initiate talks between Palestinians and Israelis in Cairo on elections in the occupied territories. Jerusalem was further chilled by Senator Robert Dole's recent proposal for cuts in foreign aid to America's five chief recipients in order to free funds for the fledgling democracies of Eastern Europe and Central America. Among those affected would be Israel, which receives $3 billion annually.

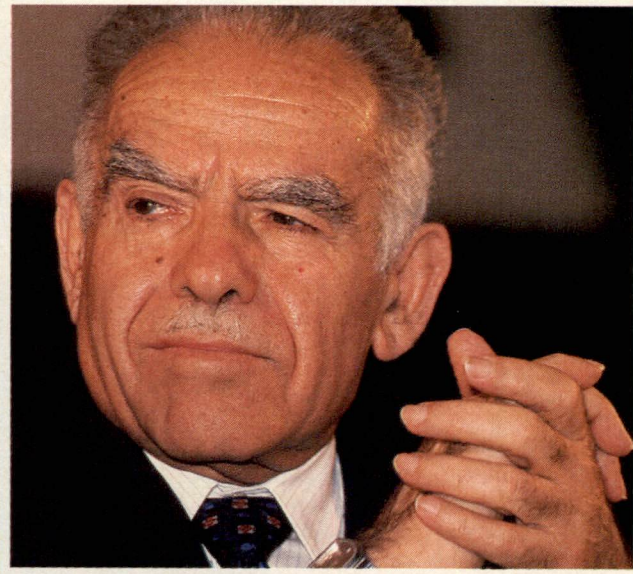
Those larger issues, however, have been overshadowed by the extraordinary—and extraordinarily dangerous—ambitions of Saddam. During the Iran-Iraq war, he shocked the world by using chemical weapons against Iran and rebellious Iraqi Kurds. Now he may be maneuvering to challenge Egypt's President Hosni Mubarak for leadership of the Arab world. Saddam's bellicose posturing discomfits many of his fellow Arab leaders, particularly Mubarak, who heads the only Arab country to have signed a peace treaty with Israel. But none of Saddam's peers dare to risk challenging his anti-Israeli threats. When the foreign ministers of Egypt, Jordan, North Yemen and Iraq met last week in Amman, they defended the right to counter Israel's undeclared nuclear arsenal with any available weapons.

Saddam's paroxysm seems particularly reckless and unbalanced. It began last month with the hanging of a British-based, Iranian-born journalist as a spy, after the reporter went to investigate an explosion at a military complex south of Baghdad. The provocative behavior has since accelerated. Analysts offer several possible motivations. They point to Saddam's fear of a pre-emptive strike by Israel and his determination not to suffer a reprise of the 1981 Osirak humiliation. There is also his hunger for domination, backed by a 1 million–man military, far and away the largest of any Arab state. Then there is the man himself: insecure, ruthless and megalomaniac—a supremely unpredictable combination.

By launching Ofek-2, Israel proves that it has missiles able to carry a warhead 1,500 miles, well within range of Baghdad



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"Let there be no doubt: Israel will also know how to defend itself in the future and defeat the evil designs of its enemies."

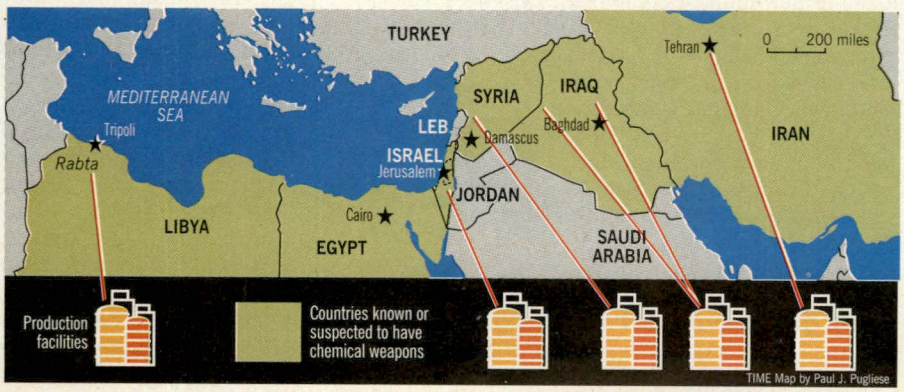
—Yitzhak Shamir

"We must not take his threats lightly," warns former Israeli Defense Minister Yitzhak Rabin. Yet Israelis are acutely aware that they lack the surgical options that made the 1981 Osirak strike possible. Iraq has dispersed its most sensitive weapons facilities in heavily reinforced sanctuaries. It has also strengthened air defenses and developed missiles capable of reaching Israeli targets.

In turn, Israel has increased its own vigilance. Last week the country dramatized its determination to maintain a military and technological edge by launching Ofek-2, a satellite intended to spy on its immediate neighbors. The lift-off proved that Israel has missiles capable of carrying a warhead 1,500 miles, well within range of Baghdad. Since last July, Israel and the U.S. have been working on a ground-based missile that can fly nearly two miles a second, the speed required to intercept a tactical ballistic missile at high altitude. The program, called ARROW, is 80% funded by Washington. Israel hopes to launch the first test missile this summer.

One positive effect of Saddam's threats was to produce a rare moment of unity last week among Israel's factious politicians, pushing aside the machinations that followed the March 15 collapse of Israel's national unity government. Last Wednesday Labor leader Shimon Peres claimed that he had cobbled together a coalition to displace the caretaker Shamir. Peres plans to present his new government to the Knesset this week for a vote of confidence.

Whether Peres takes power or not, neither he nor anyone else seems capable of braking the new arms spiral. "The superpowers can't impose a settlement," says Martin Indyk, executive director of the Washington Institute for Near East Policy. "They can only encourage the parties to settle." Perhaps the only hope is that the sheer terror of Armageddon, if not reason, will bring all parties back to their senses. That terror helped keep the superpowers from each other's throats for 45 years. Whether it can do so in the Middle East is another question altogether. ***—Reported by Michael Duffy/Washington, Dean Fischer/Cairo and Jon D. Hull/Jerusalem***



CHINA

No Smiling—It's Subversive

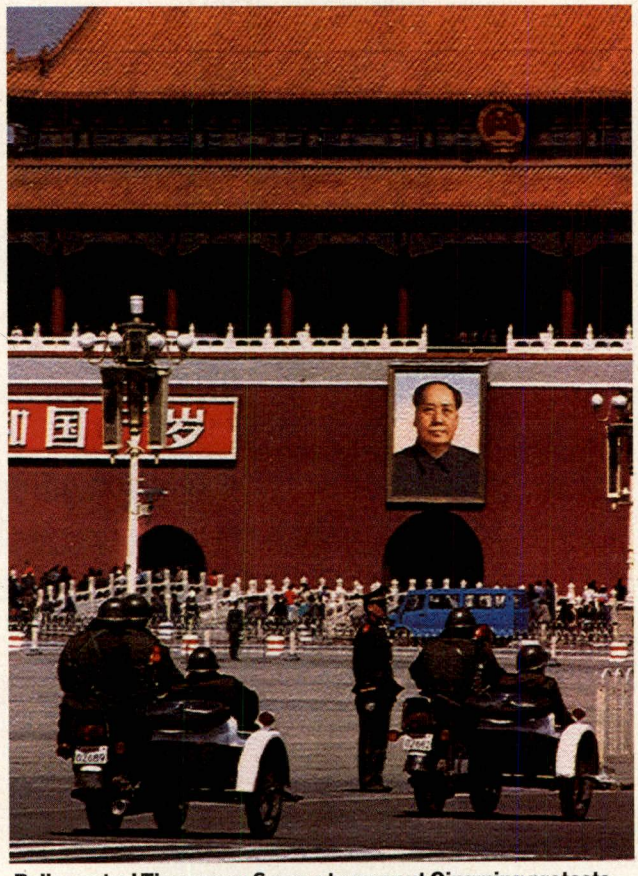
Facing the anniversary of the democracy movement, authorities go to ludicrous lengths to quench "bourgeois liberalization"

The call to protest was deliberately low key. In fax messages Chinese dissidents abroad urged sympathizers on the mainland to honor the April 15 anniversary of the beginning of last year's pro-democracy upheaval by simply taking a stroll through Beijing's Tiananmen Square. But the country's security watchdogs were eavesdropping. Last week, at the suggested start of the modest commemoration, police seized the 100-acre square in the heart of the capital. As soldiers guarded the perimeter, thousands of schoolchildren performed a ceremony to honor the nation's revolutionary-war dead. When the security forces melted away and Tiananmen was reopened to the public, scores of plainclothes agents kept people from gathering in large numbers.

The scene was repeated four days later. This time the protest was scheduled to coincide with Qingming, a festival in which Chinese offer respect to the dead by sweeping their graves. To ensure that the ritual did not turn into a mass tribute to the hundreds, perhaps thousands, who perished in the massacre of demonstrators last June, authorities ordered that Beijing's cemeteries admit only those with death certificates that proved their loved ones had died within the past year. Citizens were warned to avoid any display of black armbands or white flowers associated with mourning. "We were not only told to stay away from the square," said an incredulous professor in Beijing. "They also said we could not stroll in public and smile at the same time."

No detail of resistance is too small for China's hard-line leadership to crush these days, despite the lifting of martial law in Beijing last January. The campaign of repression that followed the June Tiananmen massacre continues unabated, as authorities attempt to roll back all vestiges of "bourgeois liberalization."

Anywhere from 10,000 to 30,000 people, by Western diplomatic estimates, have been arrested in connection with last year's protest. Many have never been charged or brought to trial. For those who do appear before a judge, the prospects are grim. Earlier this year Ren Jianxin, the head of China's Supreme People's Court, signaled that the country's move toward a more independent judiciary had been reversed. Justice, he said, cannot "be executed without the guidance" of the Communist Party.



HENRIETTE—AFP

Police patrol Tiananmen Square to prevent Qingming protests

Try as they might, authorities have not quashed dissent entirely.

The security forces have also been hauled further into line. Last month top officers of the People's Armed Police Force, who were criticized for failing to contain last year's upheavals, were replaced by army generals. Police officers were given doses of ideological indoctrination and loads of new antiriot equipment. Despite the shape-up, Chai Ling, 23, one of the three main leaders of the beleaguered democracy movement, managed to escape a nationwide dragnet. Chai turned up in Paris last week after ten months on the run within China.

The Communist Party itself is still being "rectified," though less dramatically than the police. Key sympathizers of deposed party leader Zhao Ziyang, who was sacked for supporting last year's protests, have been demoted or dismissed. Last week Premier Li Peng told reporters that Zhao, who has not been seen in public since last May, is a "free man" but is still under investigation for political crimes. Meanwhile, the party process of Maoist-style "self-criticism," or recantation, continues.

As that process demonstrates, thought control is enjoying a new heyday in China. Publishing houses are pouring out tracts that extol doctrinaire Marxism. Censorship of the press has been tightened further, and foreign journalists are frequently subjected to open police surveillance.

Because students were in the vanguard of the democracy movement, campuses have been the special targets of the orthodox juggernaut. Beijing has ordered that the 564,000 students graduating this year be assigned jobs at the "grass-roots level"—in small cities or the countryside. Normally they would have been given mid-level government posts or allowed to seek work on their own.

In the meantime, the nation's 597,000 university freshmen have spent the past school year in virtual isolation from upperclassmen and faculty members considered politically suspect. All 800 first-year students at Peking University, a hotbed of last year's activism, were dispatched to an army camp outside the capital for intensive military training and ideological studies. If the brainwashing continues, says a professor in Beijing, "we will see the ruin of a whole generation, which is probably the best-educated group in the country's history."

But the picture is not entirely bleak. Try as they may, the authorities have not managed to triumph completely. A government survey of university students late last year found that only 20% endorsed the views of the Communist Party. "The students are defiantly cynical," says an instructor. "When they heard they were not supposed to smile during Qingming, they laughed uproariously." And miles away from Tiananmen Square, beneath Beijing's Marco Polo Bridge, anonymous protesters managed to pay tribute to the brief freedom of last summer. On the dry riverbed they arranged hundreds of pebbles to spell out LONG LIVE JUNE 3. The slogan honored citizens who gathered on that night last year in a courageous attempt to stop the tanks from rolling into the great square. —**By Lisa Beyer. Reported by Sandra Burton and Jaime A. FlorCruz/Beijing**



AFP

Chai Ling

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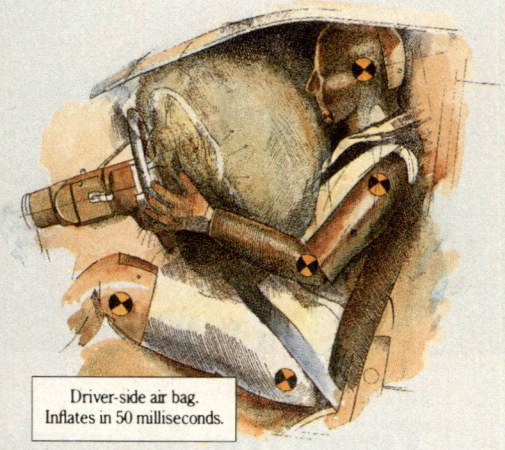
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CHRIS MORRIS—BLACK STAR

THE POLL TAX

Old System: Local government was financed by a combination of central-government grants and local "rates," a tax based on property values. Local councils levied the rates on businesses and homeowners. Rates accounted for 25% of local governments' income.

New System: Rates are being replaced by a poll tax. Almost all Britons over 18 must pay a per capita amount set by the local authority. The central government will set and collect a uniform business rate, which will be redistributed to local governments.

↓ Queen Elizabeth II paid $27,880 in property taxes last year for her private estates of Sandringham and Balmoral. She will be exempt from the new levy: royalty is not subject to personal taxation.

↑ Richard McMillan, an 89-year-old pensioner, and his wife paid $656 in taxes for their Berkshire cottage last year. This year: $1,476. He returned his Order of the British Empire to Buckingham Palace in protest.

↑ Malcom Parker, a factory worker in Wales, lives with his wife Joan and three grown children in a semidetached house in Gwent. Last year they paid rates of $528, but this year their poll taxes add up to $1,704. Family earnings are just above the eligibility level for rebates.

BRITAIN

Time for Maggie to Move Over?

Tax riots, inflation and a shaky economy shred Thatcher's popularity and prompt voters to think of life without her

Margaret Thatcher's ten-year grip on power never depended much on the affection of her countrymen. She won three successive general elections by sheer force of character, the clarity of her goals and a lack of plausible opposition. As the Thatcher revolution rolled on, she acquired an almost mythic invincibility; popularity seemed to matter little as long as voters believed her to be the most trustworthy manager of the national interest.

That confidence in Thatcher's competence, however, has been ebbing fast in recent months. For the first time, there is a growing sense that the Iron Lady has finally worn out her welcome—and that Britain might be ready for fresh leadership.

Opinion surveys show a record low in the electorate's confidence. According to the latest Gallup poll, only 24% approve of Thatcher, vs. 45% a year ago. This is not just another bout of midterm blues. Assorted grievances focused on her personality, as well as her performance, have coalesced around what even top Conservative party leaders consider a major political blunder: imposing a poll tax that has mobilized a majority of Britons in opposition, including many Tory members of Parliament. The levy was designed to replace the local property tax with a head levy, making all adults pay something toward community services. The last time Britain tried to introduce a similar tax was in 1380—and that helped provoke the Peasants' Revolt. Thatcher should have known better. Characteristically, she refused to back down and now is paying a high political price.

She may be paying as much for the rising inflation that is gnawing at living standards, undermining the very economic boom her government created. The inability to control interest rates, inflation, wages and at the same time maintain a strong pound mocks her greatest achievement: reversing Britain's postwar economic decline. Even Thatcher's stature as a world leader is being questioned at home and abroad, especially since West Germany's Helmut Kohl, viewing himself as the "chancellor of unification," seems to have taken command of the Continent. Thatcher's standoffish positions, symbolized by her opposition to European monetary union, are isolating her.

Last week the Prime Minister's credibility was further shaken by anarchic violence that much of the country—and the world—witnessed live, on television. Suddenly, the rage of embittered and alienated young people was dramatized for all to see.

A London protest demonstration against the poll tax degenerated into riot, assault, looting and arson. More than 350 policemen and 86 civilians were injured. Police blamed some 3,000 hard-core leftists for turning the antitax march of around 40,000 people into a six-hour street battle.

Critics laid responsibility for the violence on the Prime Minister for dividing the country so deeply between haves and have-nots. Within the Conservative Party, she still rules with a firm hand. But dissent has been rising over her leadership, which may cost many Tory M.P.s their seats.

Is this the beginning of the end for Thatcher? That is no longer inconceivable. But until an election, the only way the Prime Minister could be removed from office is by a revolt within party ranks or by resignation. Neither seems likely, for now.

Nevertheless, rivals are positioning themselves for the job. The leading contender is Conservative Michael Heseltine, 57, a former Defense Minister who walked out of the Cabinet in 1986 in a disagreement over the government's attitude toward the European Community, as well as Thatcher's domineering style. He represents a return to the patrician Tory values, including a traditional concern for the poor and disadvantaged. Heseltine has also staked out a more pro-Europe position. And for the first time since Thatcher came to power, voters are looking with favor on Labour Party leader Neil Kinnock.

If there is discontent over her management of foreign policy, Thatcher's main liability is her recent performance in running the economy. Inflation is crackling along at a 7.5% annual rate and headed for 9% by summer. Interest rates are pushing 15%, and 9% wage increases continue to outstrip productivity. Since elections must be called by June 1992, Thatcher has less than two years in which to turn the economy around—or face the real prospect of electoral defeat. A decade-long run of good fortune seems near the end—and the Prime Minister finds herself more vulnerable than ever before. —***By Frederick Painton.***

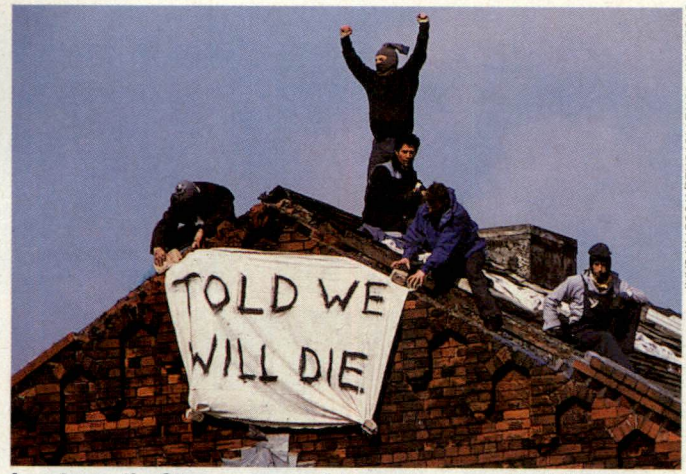
Reported by William Rademaekers/London

BRITAIN

"Explosion Of Evil"

Only a few days earlier, the governor of Manchester's Strangeways Prison had pronounced it "the fastest-improving establishment in the country." Not for long. As if to mock that boast, most of the prison's 1,648 inmates went on a rampage last week to protest against overcrowding and outdated facilities. At least two died and scores were injured in the red brick relic, which was built in 1868 to incarcerate 970 men.

Rioting started at a Sunday-morning service when one man charged down the aisle, hit the chaplain in the face, grabbed his microphone and started yelling obscenities into it. As the revolt spread, inmates brutalized other prisoners and smashed and set fire to the facility. Some climbed on roofs and threw tiles at riot police who gathered below. Strangeways governor Brendan O'Friel described the outburst as "an explosion of evil . . . possibly the worst incident in the history of the prison service." ■



STODDART—KATZ PICTURES/WOODFIN CAMP

Inmates on the Strangeways roof drape a message about their fears



SOTHEBY'S

Samples of the Romanovs' best

AUCTIONS

A Taste of Czardonnay

Czar Nicholas II and his family died in a Bolshevik fusillade in 1918, but their Crimean wine cellar and attendant vineyards lived on. In 1922 Stalin added to the former imperial wine collection by rounding up bottles from other czarist palaces. Last week many of those rare dessert wines finally fell into capitalist hands. On Sotheby's London auction floor, Western wine dealers ponied up $1,074,544 for 13,000 bottles of the Romanovs' best.

The wines date from the 1830s to 1945, and 62 bottles still display a twin-headed-eagle seal. A Swiss buyer paid a record $12,705 for three bottles of 1891 port. Why did Moscow dispose of the vintage hoard? It needs the hard currency. ■

SCANDINAVIA

Arson Aboard A Star?

The ferry route had long been popular for its inexpensive overnight rides from Oslo, Norway, to Frederikshavn, Denmark. Perhaps 495 passengers and crew were aboard the *Scandinavian Star* on Saturday morning as it chugged through the North Sea's Skagerrak Strait, off the southern coast of Norway. Then, at about 2:30 a.m., two fires broke out on the 10,000-ton *Star,* killing at least 100 people and leaving scores missing.

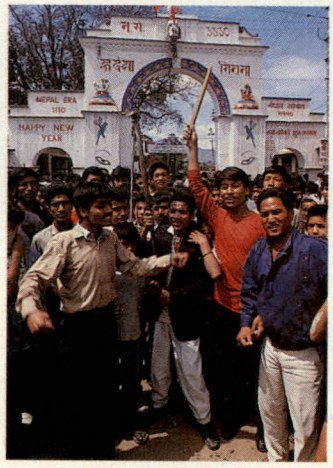
The first blaze started on a lower deck of the vessel and was easily extinguished. About 15 minutes later, a second fire erupted one deck above the first, trapping sleeping passengers in their cabins and automobiles. Eventually the flames were beaten down, and the ship was towed into the Swedish port of Lysekil. *Star* Captain Hugo Larsen reportedly said he was "99% sure" the disaster was caused by arson. ■

NEPAL

Battle Royal In Katmandu

King Birendra Shah has ruled Nepal since 1972 without much of a nod to democracy. Political parties are outlawed, and the King effectively controls the parliament. Last week, as he confronted an increasingly militant popular movement for democracy, the monarch decided to appear conciliatory. He dismissed his hard-line Cabinet and promised to create a new government that would "consult people holding different political views."

Rather than ease tensions, Birendra's move sparked the worst violence and the most serious threat to his authority since pro-democracy forces took to the streets two months ago. As 200,000 demonstrators marched toward the royal palace in Katmandu, the capital, police started firing. Dozens of people were killed, and some witnesses claim the toll was much higher. Opposition leaders vowed to continue seeking a multiparty government and limits on Birendra's sweeping powers. ■

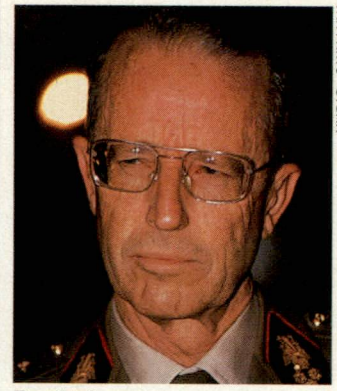


Pro-democracy protesters

BELGIUM

Commoner for A Day, or Two

Fractious politics are a Belgian speciality: in the past decade the government has fallen eight times. Belgians have instead looked to their monarch, Baudouin, for stability—until last week, when the King became a commoner for two days. Confronted with a bill passed by parliament that legalized abortion, Baudouin, a devout Roman Catholic, had the Cabinet declare him unable to reign so he could avoid signing the measure into law. The Cabinet promulgated the law instead.



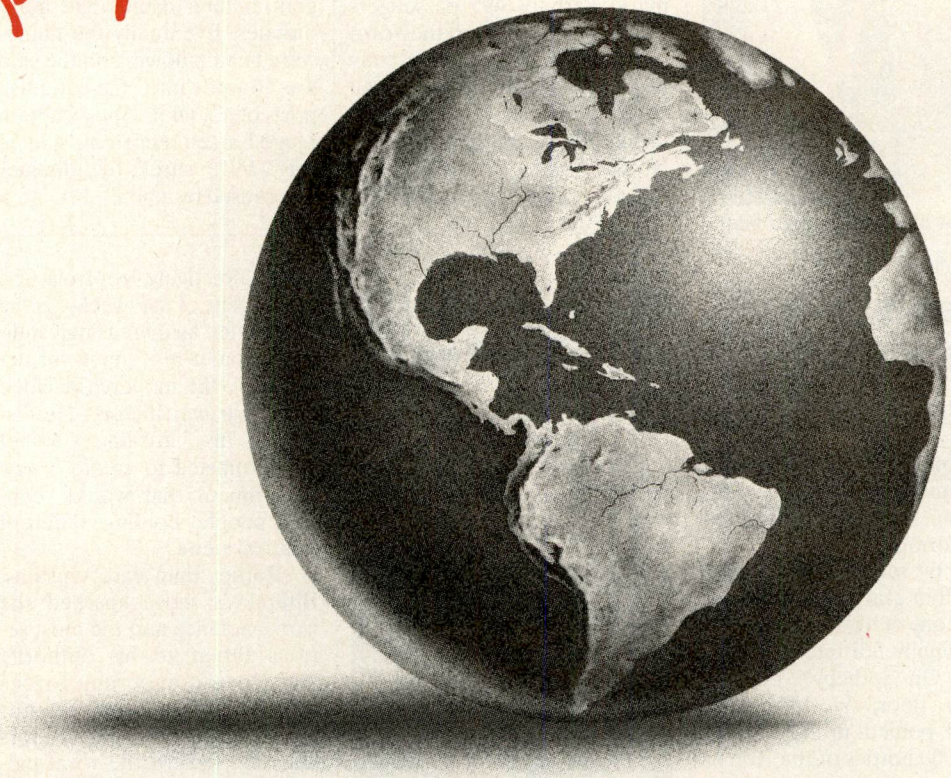
VAN PARYS—SYGMA

Baudouin

In an emergency session, legislators voted the next day to restore the King to his throne. Baudouin's action apparently was legal under an obscure article of the constitution, but there were outcries by the press and political leaders that he had played a "dirty trick." ■

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- **To work with others to resolve problems created by past handling and disposal of hazardous substances.**
- **To participate with government and others in creating responsible laws, regulations and standards to safeguard the community, workplace and environment.**
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Monsanto Company
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Morton International, Inc.
MTM Chemicals
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ACTIONS, NOT WORDS.

The Proxy Punch-Out

Corporate raiders are using some old-fashioned tactics to spar with management

By CHRISTINE GORMAN

Canny corporate raiders know there is more than one way to fell an obstinate opponent. Throughout the 1980s the knockout blow was typically delivered in a high-stakes takeover battle, with much fancy legal footwork and powerhouse debt financing. But in recent months the collapse of the junk-bond market and the passage of anti-takeover laws in more than 30 states have forced a switch in tactics. Now the savviest challengers are clambering back into the ring with an old-fashioned approach to kayoing corporate management. The new arena: the annual stockholders' meeting. The main event: the proxy fight.

In such a battle, the raider, instead of trying to buy up a majority of the company's stock, holds a smaller stake and seeks to engineer a coup by enlisting the support of other stockholders. Unlike more routine shareholder proposals, which try to persuade management to change its stance on, say, investment in South Africa, the goal of a proxy fight is to urge stock owners to throw management out altogether. They may do so by casting their votes, in the form of variously hued proxy cards, for the dissident raider and his own roster of director nominees, who promise to do a better job than the incumbents.

The power of the proxy was evident last week when the directors of UAL agreed to sell the parent company of United Airlines to its employees for $4.5 billion, or $201 a share. They had little choice. Coniston Partners of New York, which owns 11.8% of the company, had threatened a proxy campaign at the shareholders' meeting on April 26, which would have replaced the directors with another board more amenable to a buyout.

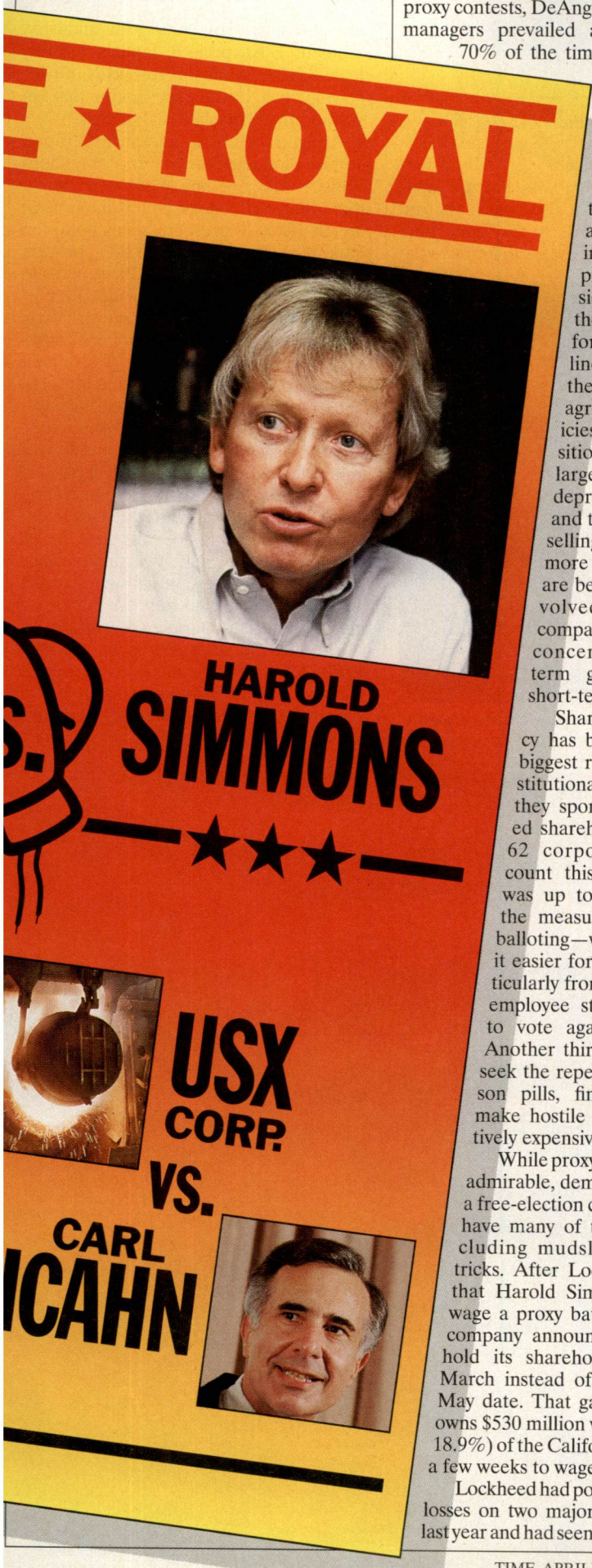
Unlike most proxy showdowns of the past, many of the current fights are being waged at Fortune 500 companies. In March, Dallas investor Harold Simmons tried to convince shareholders at Lockheed's annual meeting that he could do better than the present management to rescue the defense contractor from its financial troubles. And on May 7, shareholders of USX (formerly U.S. Steel) will vote on raider Carl Icahn's proposal to get out of the steel business once and for all. Icahn had threatened an all-out proxy fight if the matter were not put to a vote. Already 18 major proxy battles have been launched so far this year, up from only a handful last year.

Experts on corporate history point out that over the years the buyout and the more democratic proxy fight have alternated as the favored means of shaking up management, depending largely on the availability of capital. "When you can't buy, you have to persuade and compromise," observes Harry DeAngelo, director of the J. Ira Harris Center at the University of Michigan. While the proxy fight is a less certain instrument than the buyout, notes Harvard finance professor John Pound, "it is much more consistent with the American political system, in which officials should be held accountable to their constituents."

What do raiders find appealing about proxy fights? They are cheaper to run than a 1980s-style takeover battle. Investment bankers calculate that the fees and other expenses from an employee buyout add up to between 3% and 4% of the total value of a deal, while hostile takeovers are waged for about 2% of the total. Proxy fights, on the other hand, can be financed for less than 1% because the object is not to buy shares but to garner votes. Furthermore, unlike leveraged buyouts, successful proxy fights can be waged without saddling a company with takeover debt. And even if the dissident shareholders lose the battle, they of-



POSTER BY GERARD HUERTA



ten win the war. In a 1989 study of 60 major proxy contests, DeAngelo found that while managers prevailed against challengers 70% of the time, they had usually been booted out within three years of the fight.

Institutional investors, who have come to dominate the stock market, are increasingly flexing their muscle in proxy contests. Pension-fund giants find they can no longer afford to sit on the sidelines or simply sell their stock if they disagree with a firm's policies. Reason: their positions have grown so large that they would depress market prices, and their own profits, by selling out. As a result, more of these investors are becoming actively involved in determining company policies, often concentrating on long-term growth instead of short-term gains.

Shareholder democracy has become one of the biggest rallying cries for institutional investors. In 1989 they sponsored or supported shareholder proposals at 62 corporations. At last count this year, that figure was up to 112. Almost half the measures call for secret balloting—which would make it easier for shareholders, particularly from a company's own employee stockholder groups, to vote against management. Another third of the proposals seek the repeal of so-called poison pills, financial ploys that make hostile takeovers prohibitively expensive.

While proxy battles have all the admirable, democratic qualities of a free-election campaign, they also have many of the drawbacks, including mudslinging and dirty tricks. After Lockheed discovered that Harold Simmons planned to wage a proxy battle, the aerospace company announced that it would hold its shareholders' meeting in March instead of on its traditional May date. That gave Simmons, who owns $530 million worth of shares (or 18.9%) of the California company, just a few weeks to wage his campaign.

Lockheed had posted $430 million in losses on two major defense contracts last year and had seen its share price drop from $54¾ to $33⅝. Simmons said he could do better. Drawing on a war chest of $8 million, Simmons made his arguments in videotape presentations to employees, in letters and personal visits to shareholders and in full-page ads in major newspapers. Lockheed retaliated with its own ads, letters and presentations, which seemed to attack Simmons' patriotism and charged him with a "record of pension-law violations." Though the outcome of the vote will not be known for a few weeks, Lockheed management is clearly feeling the heat. Last week it promised several concessions aimed at appeasing institutional investors, including the creation of three board seats for representatives of major shareholders.

The threat of a proxy battle was also behind USX's move to appease Carl Icahn, who controls 13% of the company. For years, Icahn has been trying to get the Pittsburgh firm to spin off its steel business, which now makes up 30% of its operations. He claims that dividing USX into two separate companies would result in share prices that total $48, instead of the current $36. USX disagrees, but consented to a nonbinding shareholder vote on the matter. Most industry watchers believe that Icahn will lose.

As in politics, incumbent officials have certain advantages in proxy contests. They know how the company works and how best to get in touch with shareholders. They can spend as much as they want from the corporate treasury on their campaign. And, in contrast to political candidates, corporate officials are permitted to persuade someone who has voted against them to change his ballot. It is only the proxy with the latest date that counts.

Managers are also finding allies in state legislatures. A controversial anti-takeover measure that passed the Pennsylvania statehouse last week could make proxy fights harder to wage. The bill, which Governor Robert Casey is expected to sign later this month, would limit the voting rights of potential raiders. Furthermore, it would enable target companies to lay claim to the short-term profits earned by a successful raider. Because the bill effectively makes takeovers impossible without management's consent, Richard Breeden, the chairman of the Securities and Exchange Commission, charges that it could leave incompetent managers "free to run a company into the ground."

Such measures are clearly an overreaction to the takeover craze of the '80s, and the newly activist institutional investors are unlikely to stand for them. Some large investors are already pressuring companies incorporated in Pennsylvania to repudiate the legislation. Now that shareholders are testing their strength, they are unlikely to be pushed out of the ring anytime soon. And corporate managers may come to fear them every bit as much as they feared the hostile raider. — ***Thomas McCarroll/New York and William McWhirter/Chicago***

CLOCKWISE FROM UPPER LEFT: JOHN ROSSINO—LOCKHEED; MILTON HINNANT—DALLAS MORNING NEWS; JOHN CHAISSON—GAMMA LIAISON; WALT EISEMAN—VISUAL PERCEPTIONS; MARIA ROBLEDO; CHRIS SORENSEN

A Blueprint for Reform

Japan pledges to open up, but will the trade gap really close?

Why can't the U.S. be more like Japan? And vice versa? Those were the questions underlying much of the discussion at trade talks between the two nations in Washington last week. In some cases the medicine prescribed was far too bitter to swallow. If Japanese negotiators had their way, for instance, American consumers would curb their use of credit cards, lose the deduction on home mortgages and pay a stiff new gasoline tax. For its part, the U.S. wanted Tokyo to make it easier for large department stores to set up shop in Japanese cities, to boost public spending, to crack down on Japanese price-fixing and bid-rigging practices, and to shorten the workweek of Japanese employees to five days by eliminating half-day Saturday shifts. The ambitious talks were part of the Structural Impediments Initiative launched by President George Bush last May, which seeks to make fundamental economic changes in the two countries in order to reduce the $49 billion U.S. trade deficit with Japan.

The two-day talks stretched to four, and ultimately Japan agreed to far-reaching reforms that would open Japanese markets more widely than ever before to American business. At the same time the U.S. vowed to take steps to improve the competitiveness of American industry. President Bush praised Japan's recently elected Prime Minister Toshiki Kaifu for showing "true leadership," noting that "in one month we have had real success."



AP

Kaifu sees pain followed by long-term gain

Among other concessions, Japan promised to lessen the power of tiny shops to obstruct the opening of new department stores that could stock larger amounts of foreign wares. It presently takes up to ten years for a store opening to be approved; Tokyo said it would shorten the process to about a year. Japan also pledged stiffer antitrust penalties for companies that rig bids to freeze out foreign suppliers. Moreover, Tokyo vowed to increase government spending on public works such as airports, roads and sewers. Besides creating business opportunities for U.S. contractors, such projects would facilitate the flow of imported goods to Japanese retailers.

In return, the Bush Administration largely restated its previous pledges to encourage Americans to save and invest more of their earnings. Washington once again stressed its determination to cut the U.S. budget deficit, to improve American education and to upgrade the work force. Much like the Japanese promises, the vague U.S. statements made little mention of how the goals would be accomplished. Nonetheless, U.S. Trade Representative



Carla Hills commended the "progress and hard work on both sides." Hills called the deal "the most ambitious effort we've seen from the Japanese. It constitutes a clear blueprint for reform."

Congressional leaders, who have threatened tough trade sanctions against Japan unless it opens its markets further, greeted the Japanese pledges with practiced caution. Said Texas Democrat Lloyd Bentsen, chairman of the Senate Finance Committee: "Put me down as a skeptic who has seen too many agreements in which the results don't match the rhetoric." Many lawmakers are withholding judgment until they can see signs that the agreement is benefiting U.S. companies. Observed Senator John Danforth of Missouri: "In any commercial agreement with Japan, seeing is believing."

But the ambitious plan is likely to do little to narrow the U.S. trade gap with Japan anytime soon. Most of the proposals, if enacted, are to be phased in over a period of years. And while U.S. exports to Japan nearly doubled from $23 billion to $45 billion between 1985 and 1989, the trade deficit showed little improvement. Reason: the growing demand of American consumers for Japanese products all but canceled out the rise in U.S. exports.

The accord comes at a time when the high-flying Japanese economy has hit a downdraft. Shares traded on the Tokyo Stock Exchange have lost some 25% of their value this year, and the yen has fallen more than 8% against the dollar. Japanese policymakers denied that the financial turbulence had made them any more willing to reach last week's agreement. "We would have done this if the yen were strong and stocks were going up," said one senior Tokyo official.

At a news conference, Prime Minister Kaifu said the accords, though "painful" in the short run, would ultimately "improve the quality of life of the Japanese people, promote consumer benefits and bring our economy into better harmony with the world economy." Among other advantages, the agreements would create lower prices for Japanese shoppers by encouraging increased competition from foreign goods. Moreover, consumers and businesses would gain from proposed changes in property-tax laws that would rein in the cost of real estate (one square meter in Tokyo can now cost $250,000). Far from being bitter, that medicine would be quite palatable.

—By John Greenwald. Reported by Gisela Bolte/Washington and Barry Hillenbrand/Tokyo

PROMISES, PROMISES

JAPAN AGREED TO:

- **Streamline the retail distribution system and make it easier to open large department stores.**
- **Stiffen penalties for antitrust violations such as bid-rigging by Japanese companies.**
- **Change tax laws so that residential real estate will become more affordable.**
- **Expand airports and harbors to facilitate the flow of imports.**
- **Reduce the workweek for government employees from 5 ½ days to five days and encourage the private sector to follow suit.**

UNITED STATES AGREED TO:

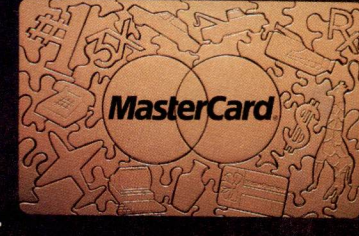
- **Improve procedures to meet targets to balance the budget by 1993.**
- **Create Family Savings Accounts that would allow couples to earn tax-free interest on up to $5,000 a year.**
- **Seek to reduce the tax rate on capital gains as a way of boosting investment.**
- **Study ways to lower the cost to U.S. corporations of raising capital.**
- **Boost federal spending for basic research and development.**
- **Support national goals for improving the educational system to provide students with necessary job skills.**

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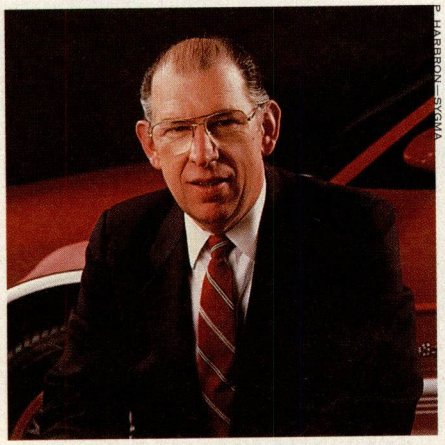
GM Gets Itself A Car Guy

Robert Stempel will take over the top job in August

He has come about as far as he could from his first job as a gas-station mechanic in Bloomfield, N.J. But those early skills may prove handy now. A good overhaul by an experienced repairman is just what General Motors needs. Last week GM's board departed from a 34-year company tradition of putting financial men in the driver's seat when it chose Robert Stempel, 56, to take over as chairman after Roger Smith retires in August.

Widely admired among his troops as "a car guy," Stempel, the first career engineer to run the company, earned an M.B.A. in night school and a reputation for decisiveness and innovation while working his way up at GM. As head of the Adam Opel operation in West Germany in the early 1980s, for example, he was credited with igniting the transformation of GM's inefficient European arm into a powerhouse. Overseas car operations contributed $2.6 billion of the company's $4.2 billion in 1989 earnings. Having won his stripes under the hood, Stempel must now take swift action to restore GM's sharply reduced share of U.S. auto sales. During the nearly ten years that Smith has run GM, the automaker's U.S. market share has slipped from 45% to 35%.

Stempel is expected to continue such Smith policies as investing in state-of-the-art manufacturing technology, improving quality and cracking down on costs. In contrast to the somewhat autocratic Smith, though, the new chief is by nature a team leader, known for listening to the troops. To rebuild customer enthusiasm, GM needs some better ideas. Industry experts who applauded Stempel's appointment hope his thorough grasp of what makes cars go will help him move more of them out of the showrooms. ■



P. HARBRON—SYGMA

The chairman and former grease monkey

Money Angles

Andrew Tobias

It's Not Easy to Be Short

With the U.S. economy shaky and the Japanese stock market down 25% in three months, this may be the time to sell short. There are two reasons to short stocks right now (and one not to):

1) If the stocks you pick go down, you make money. Short a stock at 40 that drops to 30, and you've made ten bucks. It may be too late to short United Airlines, which dropped from 294 to 140 before news of the latest buyout plan (you'd have made $15,400 shorting 100 shares), but with the Dow Jones industrial average only 4% below its Jan. 2 all-time high, there's still plenty of room for stocks to fall.

2) Your broker will love you for it. He'll get to charge a commission when you initiate the short (selling shares of a stock you don't yet own) and another when you "cover" (buying them back), just as he would if you bought and sold a stock normally. But your broker's real thrill will be the interest he earns on the proceeds of your sale. Because even though you didn't own the shares you sold (your broker borrowed them for you from another customer), you really did sell them, and your broker really did receive cash. By rights, you should earn interest on that cash. But unless you're a very big, insistent customer, you won't. Your broker keeps it. Wall Street makes hundreds of millions of dollars this way each year.



ILLUSTRATION FOR TIME BY PATRICK MC DONNELL

The reason not to sell short:

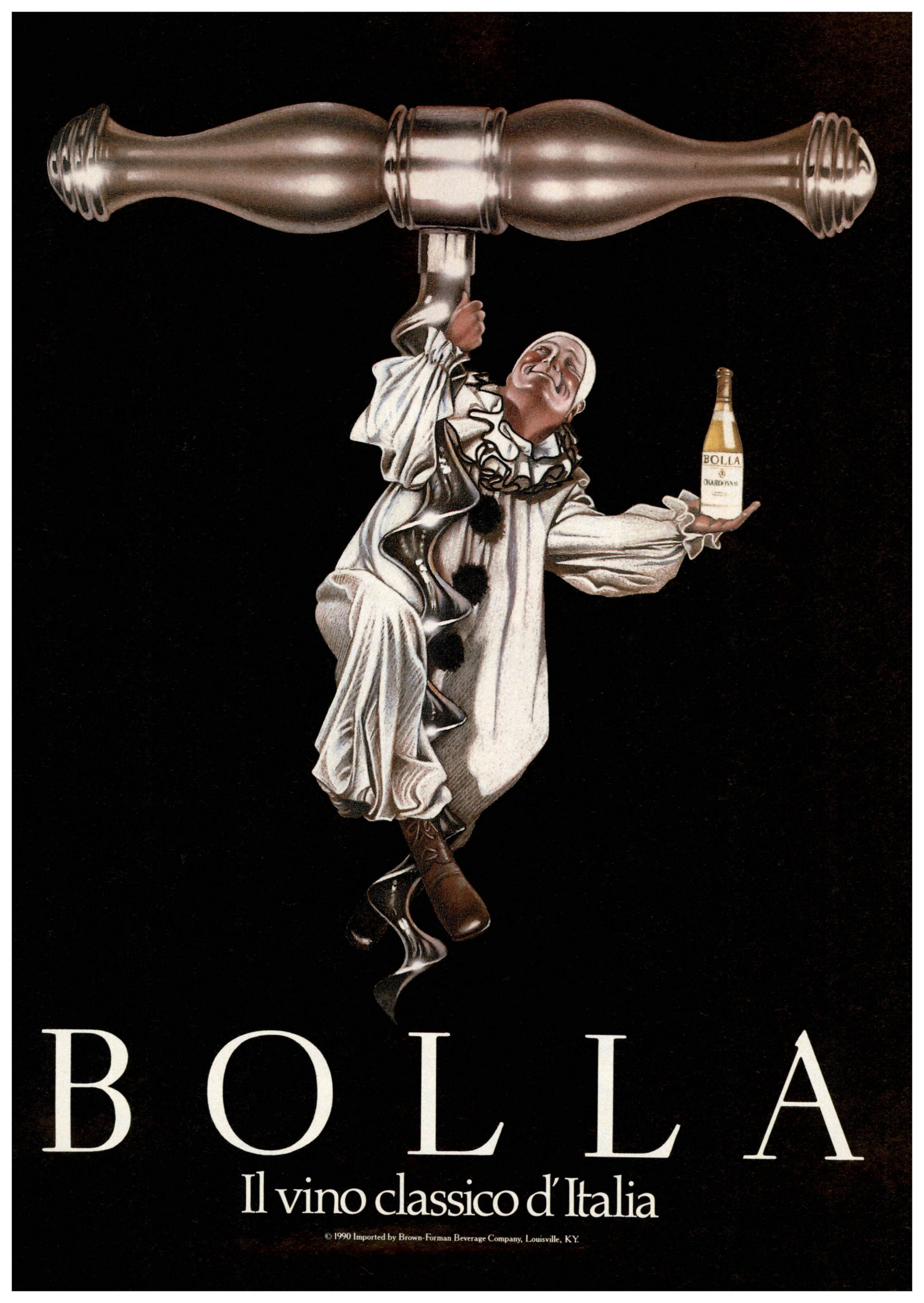
You'll lose money. Well, conceivably you won't; you may just lose sleep. But probably. To begin with, there are the aforementioned commissions. On top of that, if the stock pays a dividend, you don't get it—you *pay* it. (With short sales, everything works in reverse.) Mainly, though, if the stock you've shorted goes up instead of down, you lose a dollar for every point it climbs.

You may think it's easy to pick stocks that will go down. It certainly seems easy enough when you're not trying. But it's actually even harder than picking stocks that will go up. Over time, more stocks rise than fall.

Granted, in a bear market almost all stocks fall. But how sure are you we're in for a bear market? Or that a good deal of the damage hasn't already been done? (The Dow is near its all-time high, but many lesser stocks are off 20% or more.) "Our Fund Timing Index has risen to its highest and most bullish level in history," reported a recent issue of Norman Fosback's *Mutual Fund Forecaster,* which looks for a 32% rise in the market over the next twelve months. Sure, Wall Street seems gloomy these days, says Fosback, but that's the time to buy.

If you do find a stock you're certain is overpriced—like the Germany Fund not long ago, selling for twice the value of its assets—often you won't be able to short it after all, because your broker can't find anyone to lend the shares. Or if he can, you get caught in a "short squeeze," in which the stock gets bid up to even more absurd levels by short sellers forced to buy back and return borrowed shares.

Far better, if you're convinced the market's headed down, to buy puts (at least with puts, your loss is limited to the size of your bet) or leave all this to the managers of your mutual fund. Some funds, like Fidelity Magellan, feel obligated to remain nearly fully invested at all times. But others, like Mutual Shares, may go heavily into cash, or, like the closed-end Zweig Fund, short stocks themselves. ■



BOLLA

Il vino classico d'Italia

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For those who know where they're going. And can't wait to get there.

If you like being in the driver's seat, get behind the wheel of a Ford Probe GT. Restyled for 1990, with a full array of engineering eye-openers, Probe GT lets you take to the road with plenty of drive.

Intercooled Turbo.

At the heart is a highly-motivated 2.2 liter intercooled, turbocharged EFI engine. Guided by either a five-speed or new automatic transmission, it's definitely designed for those who want to get ahead.

Anti-Lock Brakes.

Even those who know where they're going sometimes have to make unexpected stops along the way. That's why Probe GT offers an available anti-lock braking system (ABS) that lets you stop with confidence.

Driver Adjustable Suspension.

This computerized suspension automatically adjusts to your selected mode (Soft, Normal-Auto or Sport-Auto), giving you tailor-made handling for performance in the turns or just cruising at speed.

Speed-Sensitive Steering.

A controlled feel of the road goes beyond just the leather-wrapped steering wheel. Because Probe GT's remarkable power steering responds to your speed, letting you enjoy almost effortless steering when parking and a tight, firm feel when out on the road.

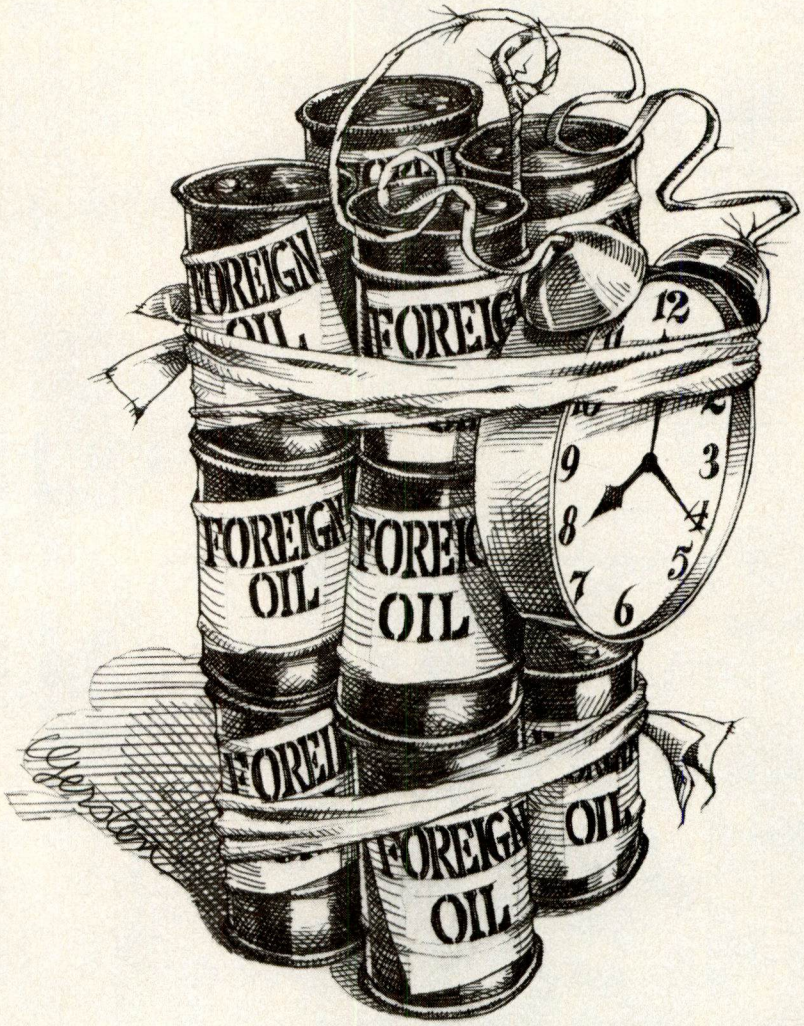
Compact Disc Player.

If the preceding information sounded like music to your ears, wait till you turn on our AM/FM stereo with optional cassette and compact disc. It's the ultimate in performance, which seems only fitting.



Buckle up–together we can save lives.


Specifications:
Wheelbase (in.) 99.0
Length/Width (in.) 177/68.3
Curb Weight (lb.) 3000
Powertrain: Intercooled, turbocharged, electronically fuel-injected 2.2L SOHC, 4-cylinder, 12-valve engine, 145 hp @ 4300 rpm, 190 lbs. ft. torque @ 3500 rpm, front-wheel drive, 5-speed manual or 4-speed automatic transmission
Suspension: 4-wheel independent, automatic adjusting suspension (AAS) with anti-sway bars front/rear
Brakes: 4-wheel disc brakes, ABS available
Tires: P205/60VR 15″
Ford Probe GT
Have you driven a Ford...lately?
Ford



IT'S ONLY A MATTER OF TIME.

We now import more than 40 percent of all the oil we use. And that percentage is growing. Our excessive dependence on foreign oil could blow up in our faces at any moment if our supply were somehow disrupted.

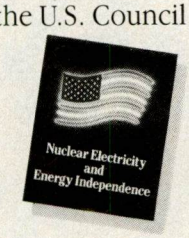
But the more we use nuclear energy, instead of imported oil, to generate our electricity, the less we have to depend on uncertain foreign oil supplies.

America's 112 nuclear electric plants already have cut foreign oil dependence by 4 billion barrels since the oil embargo of 1973, saving us $115 billion in foreign oil payments.

But 112 nuclear plants will not be enough to meet our rapidly growing demand for electricity. We need more plants.

Importing so much oil is a danger we must not ignore. We need to rely more on energy sources we can count on, like nuclear energy.

For a free booklet on nuclear energy, write to the U.S. Council for Energy Awareness, P.O. Box 66080, Dept. BB01, Washington, D.C. 20035.



U.S. COUNCIL FOR ENERGY AWARENESS

Nuclear energy means more energy independence.

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Business Notes



AP

Ryan testifies; Keating, far left, watches

THRIFTS

Take This Job And Do It!

Neither his inexperience nor his admission of having used marijuana and cocaine in the early 1970s seemed as pressing as the need simply to find *someone* to oversee the troubled savings and loan industry. And so, after berating Timothy Ryan, 44, for his utter unpreparedness for the job, the Senate last week approved his appointment to head the Office of Thrift Supervision by a generous 62-37 vote.

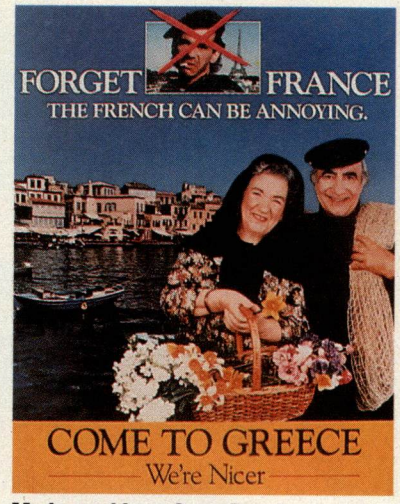
During his confirmation hearings, Ryan, a former Labor Department lawyer, readily conceded that he knows little about the thrift industry or the S&L cleanup, the cost of which Comptroller General Charles Bowsher estimated last week at up to $500 billion. If Ryan was in an awkward position, so were some of his Senate inquisitors, who are themselves under a cloud in the S&L mess. They are accused of favoritism toward thrift owner Charles Keating Jr., who made sizable contributions to their campaigns—and who was a rapt spectator at the Senate hearings. ■

HOLLYWOOD

Honesty! What A Concept!

An AT&T commercial upbraids consumers: "We're tired of taking your crap! If we fold, you'll have no damn phones!" A Porsche ad promises male owners instant sex. And a United Airlines spot boasts, "Most of our passengers get there alive!" In the new Paramount film, *Crazy People*, the advertising copywriter who pens these lines is committed to an insane asylum. Since this is Hollywood, though, the writer, played by Dudley Moore, soon becomes the hottest property on Madison Avenue and falls in love with Daryl Hannah.

Paramount added zing to the tale by using the names of real companies, but ABC and CBS have declined to run some commercials for the film because they include fake ads that might upset major network advertisers. Paramount pleads that the movie is a comedy. Starting this week, moviegoers can make that judgment for themselves. ■



Madcap ad from *Crazy People*

GOODWILL

Made Just For Him

When Raymond Dunn Jr. was born 15 years ago, he had an undersize brain, was severely retarded and was allergic to all foods except one—Gerber Meat-Based Formula. Designed for babies who could not tolerate foods based on cows' milk, the product was canceled in 1985, when soybean formulas displaced it. That threatened disaster for Raymond, who still could not eat anything else. His mother Carol Dunn of Yankee Lake, N.Y., made an appeal to Gerber.

Since then, the company has been in constant contact with Dunn, giving her its remaining stock and notifying her of new formulas that her handicapped son, who weighs only 31 lbs., might tolerate. Last week 20 members of Gerber's research and development teams volunteered to produce batches of the formula for Raymond free of charge. Says Gerber spokesman Jim Lovejoy: "Our purpose has always been helping parents with their children." ■

AUTOMOBILES

The Boss Says Buy

Having seen their bonuses evaporate because of poor profits, and up to 10% of their salaries escrowed pending the success of a cost-cutting program, Chrysler's top 100 executives are now being formally "encouraged" by Chairman Lee Iacocca to buy the company's weak stock. The idea is to coax managers to increase their stake in the company's performance.

In an industry legendary for lack of management accountability, Chrysler has been making strong moves to tie executive compensation directly to the company's fortunes. Iacocca is pressing top execs to buy stock equivalent in value to their annual salaries. "I want them to feel exposed," he says. "I want them to put pressure on the people to deliver, to get earnings up, to reduce costs." Ironically, the chairman himself sold 95,339 of his 287,205 shares of Chrysler stock last year. That leaves him with more than $3 million in stock—twice his annual salary. ■


IBM

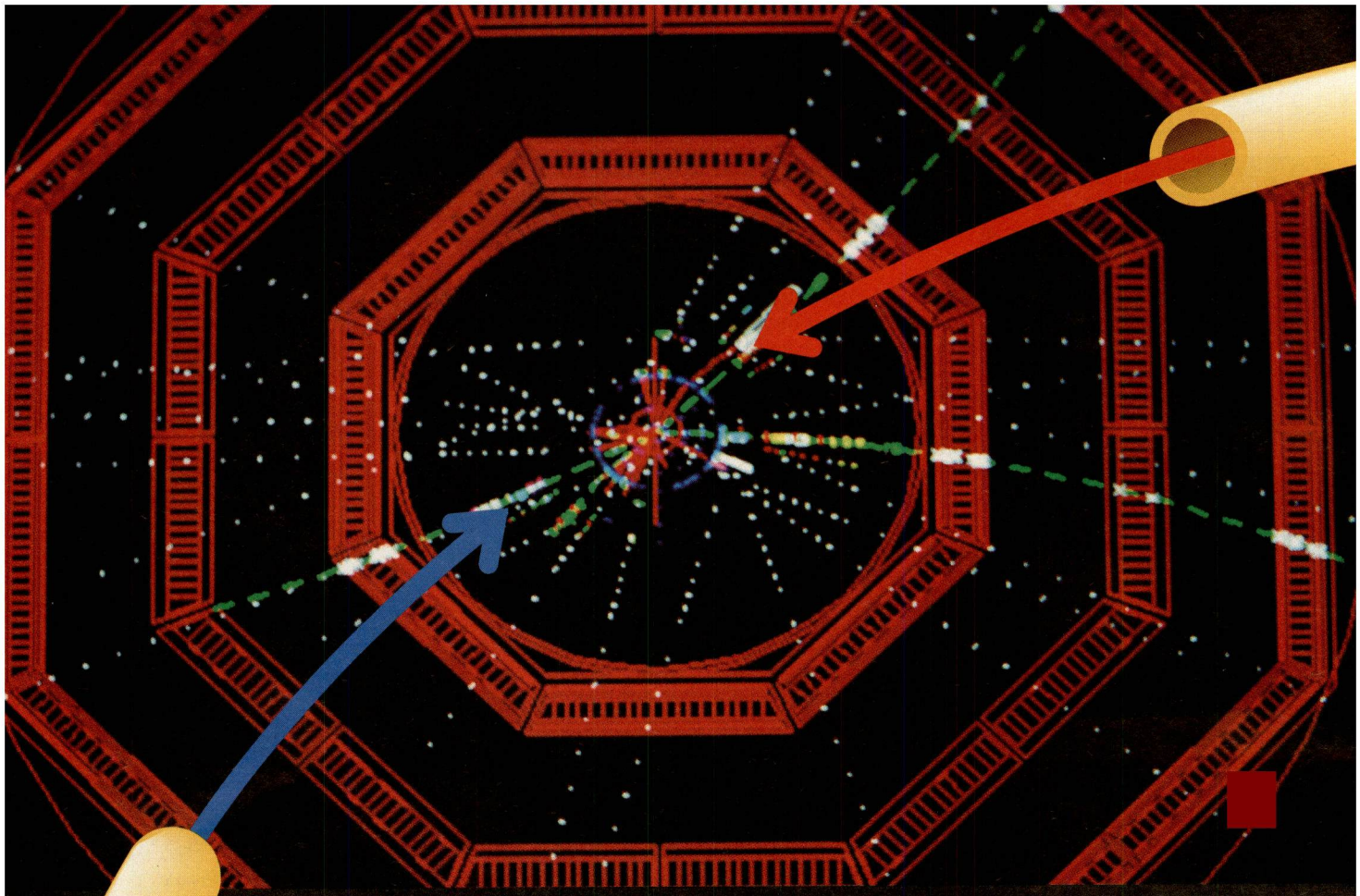
Magnified 6 million times: the company name spelled in xenon atoms

TECHNOLOGY

Big Blue's Tiniest Logo

They are among the most famous initials in the world, found almost anywhere computers are used. But last week the letters IBM appeared in the pages of the British science journal *Nature* in an unprecedented form. Two IBM researchers, in a scientific and marketing tour de force, had spelled out their corporate emblem by dragging atoms across a crystal of nickel one at a time. The result: the world's smallest corporate logo, measuring 660 billionths of an inch long.

It was a remarkable demonstration of the precision with which single atoms can now be manipulated, a skill that could conceivably be used someday to build atom-size transistors or to custom-design molecules. Using an instrument called a scanning tunneling microscope and working on a surface chilled to near absolute zero, researchers Donald Eigler and Erhard Schweizer were able to get individual atoms to respond to the magnet-like tug of a fine tungsten needle. But don't expect to see atom-etching booths at your local science fair. It took 22 hours to haul 35 xenon atoms across the bumpy nickel surface. And when the temperature rose above −380° F, the masterpiece flew apart. ■



At Europe's CERN, particle collisions create tiny fireballs 400 million times as hot as the sun, spraying out new matter

PETER MENZEL

COVER STORIES

The Ultimate Quest

Armed with giant machines and grand ambitions, physicists spend billions in the race to discover the building blocks of matter

By MICHAEL D. LEMONICK

The elevator doors opened into a cavernous room in an underground tunnel outside Geneva. Out came the eminent British astrophysicist Stephen Hawking, in a wheelchair as always. He was there to behold a wondrous sight. Before him loomed a giant device called a particle detector, a component of an incredible machine whose job is to accelerate tiny fragments of matter to nearly the speed of light, then smash them together with a fury far greater than any natural collision on earth.

Paralyzed by a degenerative nerve disease, Hawking is one of the world's most accomplished physicists, renowned for his breakthroughs in the study of gravitation and cosmology. Yet the man who holds the prestigious Cambridge University professorship once occupied by Sir Isaac Newton was overwhelmed by the sheer size and complexity of the machine before him. Joked Hawking: "This reminds me of one of those James Bond movies, where some mad scientist is plotting to take over the world."

It is easy to understand why even Hawking was awed: he was looking at just a portion of the largest scientific instrument ever built. Known as the large electron-positron collider, this new particle accelerator is the centerpiece of CERN, the European Organization for Nuclear Research and one of Europe's proudest achievements. LEP is a mammoth particle racetrack residing in a ring-shaped tunnel 27 km (16.8 miles) in circumference and an average of 110 meters (360 ft.) underground. The machine contains 330,000 cubic meters (431,640 cu. yds.) of concrete and holds some 60,000 tons of hardware, including

nearly 5,000 electromagnets, four particle detectors weighing more than 3,000 tons each, 160 computers and 6,600 km (4,000 miles) of electrical cables. Tangles of brightly colored wires sprout everywhere, linking equipment together in a pattern so complicated, it seems that no one could possibly understand or operate the device. In fact, it takes the combined efforts of literally hundreds of Ph.D.s to run a single experiment.

LEP and other large accelerators have been built to probe the nature of matter on a scale far smaller than that of the atom. The goal is to answer ancient and fundamental questions: What is the universe made of, and what are the forces that bind its parts together? These questions cannot be answered without an understanding of what happened in the Big Bang, the unimaginably hot and dense fireball that 15 billion years ago gave birth to the universe and all it contains.

In a very real sense, accelerators are time machines that re-create the primordial fireball in miniature to unlock its secrets. The collision of two accelerated particles releases enormous bursts of energy. But that energy instantly condenses into a new array of particles, some of which may not have existed since the Big Bang.

This power to go back 15 billion years in time has touched off one of the most heated competitions in the history of science, a race that pits Europe's LEP against U.S. entries led by the powerful Tevatron at Fermi National Accelerator Laboratory (Fermilab) near Chicago and the Stanford Linear Accelerator Center (SLAC) in California. Huge teams of physicists at the rival centers are working day and night to discover the next new particle and to explain the behavior of those already found. In recent years, each lab has had its share of triumphs.

But none of the current generation of accelerators are big enough or powerful enough to re-create the very earliest fractions of a second after the Big Bang, where answers to the most intriguing mysteries are thought to lie. So U.S. physicists have embarked on a bold quest: the building of a colossal collider that will dwarf today's accelerators. Called the superconducting supercollider, it will have a tunnel that will circle for 87 km (54 miles) under the cotton and cattle country surrounding Waxahachie, Texas. Expected to be completed around the year 2000, the SSC will cost $7 billion to $8 billion.

That enormous price tag has fueled a growing controversy over how much the U.S. can afford to spend on such megaprojects, especially when the knowledge to be gained is so abstract. Critics complain that the money could be better spent on more practical goals, like fighting poverty and improving education. Some scientists, including many researchers in other branches of physics, fear that funding for the SSC will come out of their own budgets. Cynics have argued that the SSC is just another pork-barrel construction project, being foisted on the public by the powerful Texas congressional delegation and backed by a President from Texas.

Yet the support for a giant accelerator goes deeper than a desire for federal dollars. To many scientists and politicians, national pride is at stake. Proponents insist that the SSC is necessary to keep the U.S. in the forefront of particle-physics research. Americans dominated the field from the mid-1940s to the 1970s, but Europe's CERN started stealing much of the glory in the 1980s. Without the SSC, its proponents contend, many of the best American physicists will emigrate to Europe. In fact, the brain drain has already begun: last year, for the first time, the number of American experimenters working at CERN surpassed the total number of scientists from CERN's 14 member countries who had moved to U.S. research centers.



COURTESY OF CERN

Aerial view of the large electron-positron collider site near Geneva

The international competition has spurred remarkable progress in the effort to understand nature's mysteries. Says theoretical physicist Steven Weinberg of the University of Texas at Austin: "Before, we had a zoo of particles, but no one knew why they were the way they were. Now we have a simple picture." That picture, known as the Standard Model, is based on a set of theories that attempt to describe the nature of matter and energy as simply as possible. The model holds that nearly all the matter we know of, from garter snakes to galaxies, is composed of just four particles: two quarks, which make up the protons and neutrons in atomic nuclei; electrons, which surround the nuclei; and neutrinos, which are fast-moving, virtually massless objects that are shot out of nuclear reactions. These particles of matter are, in turn, acted upon by four forces: the strong nuclear force, which binds quarks together in atomic nuclei; the weak nuclear force, which triggers some forms of radioactive decay; electromagnetism, which builds atoms into molecules and molecules into macroscopic matter; and gravity. An entirely separate set of particles—the bosons—are the agents that transmit these forces back and forth between particles, people and planets.

The basic "family" of particles is supplemented by two more exotic families, each of which has a parallel structure: two quarks, a type of electron and a type of neutrino. These two extra families are all but extinct in the modern universe, but they apparently existed in the searing heat of the Big Bang, and only accelerators can re-create them. In fact, all of the quarks in all of the families have been found or re-created—except for the one called the top, which is believed to be the heaviest of all (its mass is at least 90 times that of a proton). Because it would complete the set and thus vindicate decades of theory building, the top quark has become the object of an intensive international search. And because the top is so massive, it will take the energy of the most powerful accelerators to produce it.

But researchers will be awfully disappointed if all they succeed in doing is to fill out the known family tree of particles. Too much predictability can make science dull. Says Samuel Ting, an M.I.T. physicist and one of the head researchers at CERN: "I will only consider our experiment a success if we discover something really surprising—new types of quarks, for example—that would explode the standard theory."

Anyone able to take particle physics beyond the Standard Model will automatically win prizes, prestige and added power in the profession. The quest has attracted some of the most driven personalities in science. The leaders, including Ting, CERN director Carlo Rubbia and Stanford's Burton Richter, are known for their relentless ambition, feisty competitiveness and monumental egos. All have already won Nobel Prizes, but that seems only to have increased their desire for greater achievements. In the

Electrons and their antimatter counterparts are pulled into the ring and accelerated to light speed

TIME Diagrams by Joe Lertola



DAVID PARKER – PHOTO RESEARCHERS

Tunnel at CERN

Stanford Linear Collider

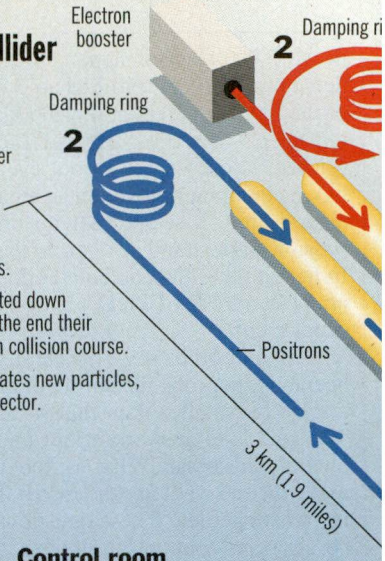
Operational since 1987
Maximum collision energy: 120 billion electron volts
Type: electron-positron collider

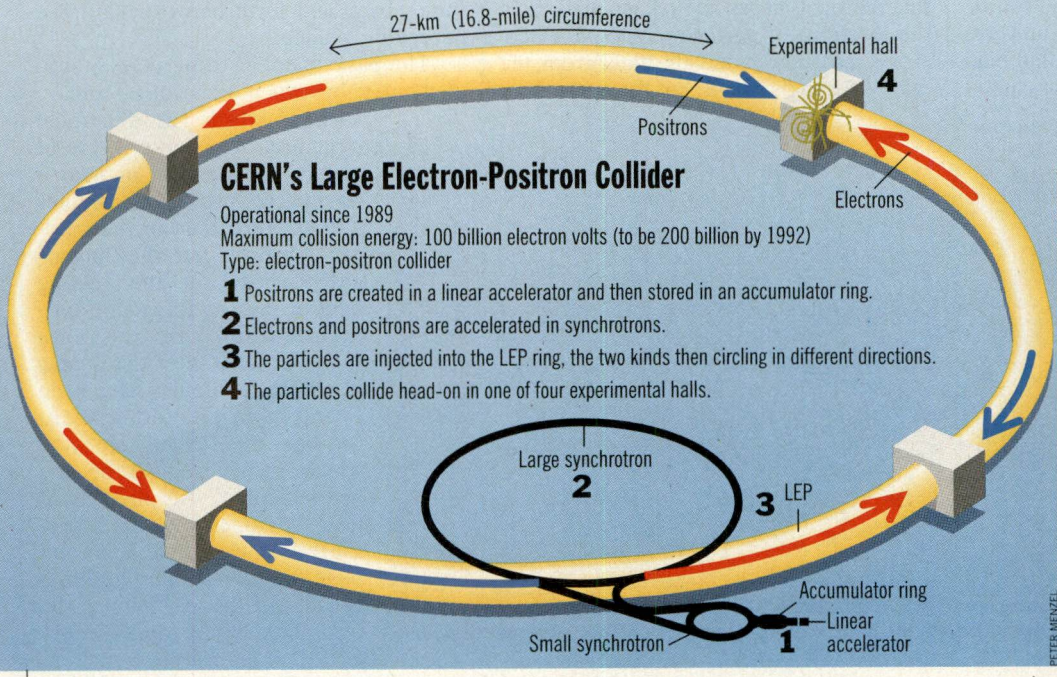
1 Electrons are shot at a target to produce positrons.

2 Positrons and electrons are collected in damping rings.

3 The particles are accelerated down a 3-km (1.9-mile) tunnel. At the end their paths are bent into a head-on collision course.

4 The energy of collision creates new particles, which are recorded in the detector.





CERN's Large Electron-Positron Collider

Operational since 1989
Maximum collision energy: 100 billion electron volts (to be 200 billion by 1992)
Type: electron-positron collider

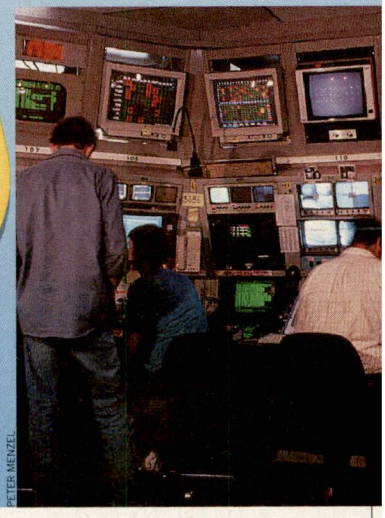
1 Positrons are created in a linear accelerator and then stored in an accumulator ring.

2 Electrons and positrons are accelerated in synchrotrons.

3 The particles are injected into the LEP ring, the two kinds then circling in different directions.

4 The particles collide head-on in one of four experimental halls.

Control room at Stanford



PETER MENZEL

rush to get results, they push their staffs mercilessly and are furious—at least in private—whenever they come in second.

It is this rivalry that speeds the accumulation of knowledge. Observes Jack Steinberger, another Nobel laureate at CERN: "Competition in science is not always a pretty thing, but it's always stimulating and productive." The search for the nature of matter requires brash risk takers because it is a venture into the unknown and perhaps the unknowable. Explains Roy Schwitters, director of the new SSC project: "The physics we do is like a voyage of discovery. You can imagine you're Columbus. We're setting sail to who knows where—a new world, we hope."

Only a few places are equipped to catch glimpses of that new world. A look at the major explorers:

Fermilab. The machine most likely to find the top quark first is Fermilab's mighty Tevatron, which has been operating for 6½ years beneath the waving grasses of the Illinois prairie. In the Tevatron, strong magnets guide subatomic particles through a circular tunnel that is 6.4 km (4 miles) in circumference. The accelerator is built as a ring so that particles can go around the track again and again, picking up speed with each lap. The ring was built large so that the particles would not have to make sharp turns.

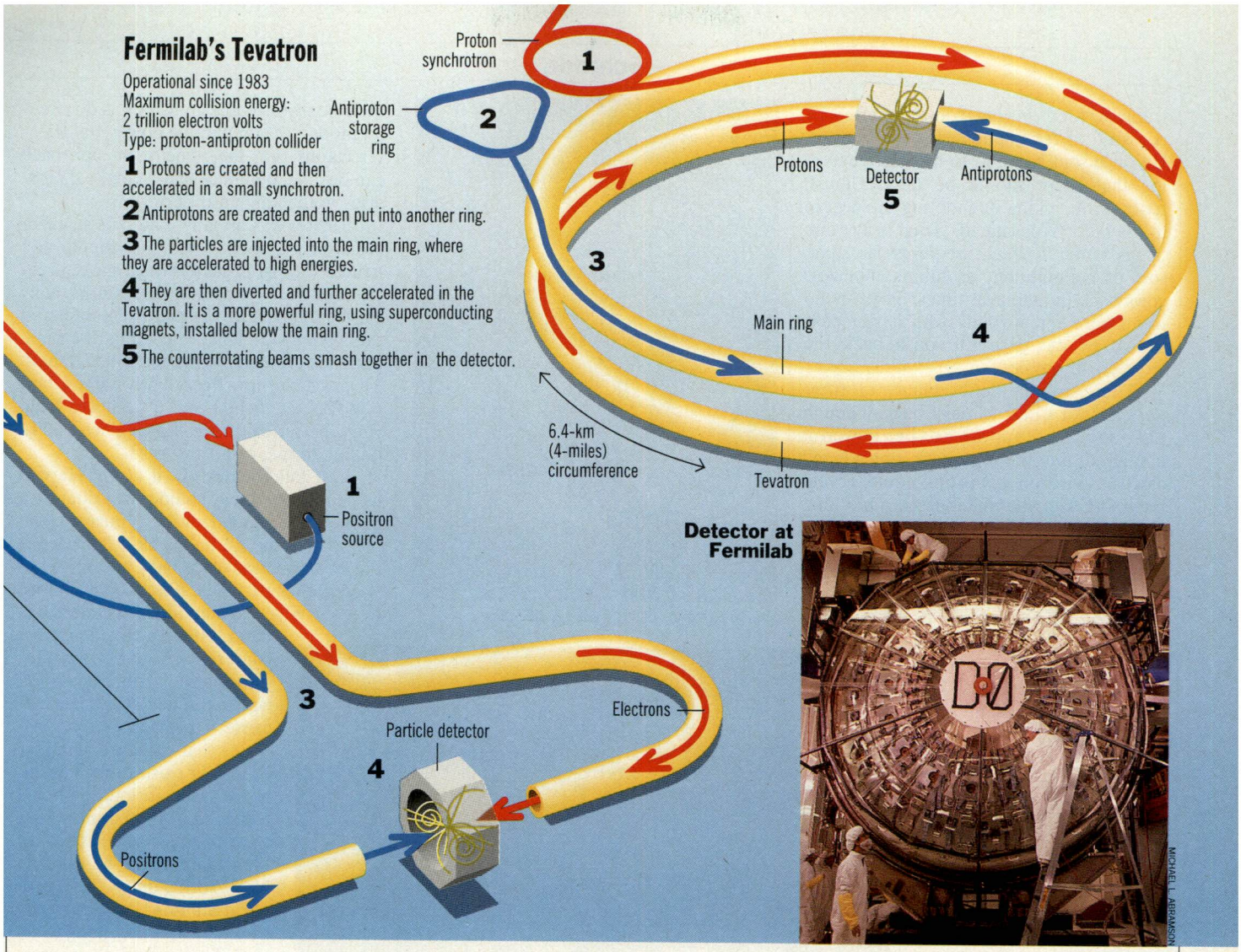
When the machine is running, one beam of particles travels in a clockwise direction while a separate beam goes the opposite way. After reaching maximum speed, the two beams are forced together, and the particles begin to smash head-on into one another, creating fireballs that are 400 million times as hot as the sun—but so tiny and short-lived that they pose no danger to the accelerator. The Tevatron can produce 50,000 such collisions in a single second. In each of these explosions, the original particles are transformed into a shower of new, short-lived particles. The collisions take place in a detector, which contains a giant magnet that bends the newly created particles in different directions. Scientists cannot see the fresh matter directly, but its characteristics are recorded in computers, and the trails it leaves can be pictured as brightly colored streaks on a video display screen.

Though the Tevatron is considerably smaller than CERN's LEP, the collisions that Fermilab's accelerator produces are much more powerful. Reason: the Tevatron smashes protons into antiprotons, while LEP uses electrons and positrons.* Protons and antiprotons collide with much more force because they pack more energy than electrons and positrons. Think of it as if the Tevatron were crashing Mack trucks together, as opposed to Volkswagens.

The Tevatron collisions produce dense blizzards of particles. Most are uninteresting because they have been observed before, but the chances are relatively good that hidden somewhere in the debris is an exotic new particle. Finding it, though, is no easy task. One reason CERN chose to make LEP an electron-positron machine is because of its comparatively "clean" collisions; though fewer particles are produced, they are easier to locate and study.

Fermilab's physicists believe they have already seen what might be the top quark, but they will have to gather a lot more data to confirm such a discovery. Confidence is already building. Contends James Trefil, a George Mason University physicist: "If the top quark is going to be found, it is going to be found at Fermilab sometime in the next five to six years."

*Antiprotons and positrons are examples of antimatter, a rare set of particles that mirror normal matter. A proton is positively charged, but an antiproton is negative. The counterpart of the negative electron is the positive positron.



Detector at Fermilab

MICHAEL L. ABRAMSON

Fermilab is led by director John Peoples, who is widely respected for being a hands-on physicist. But experiments at the lab are not dominated by superstars, such as CERN's Rubbia and Ting. Instead, the atmosphere is one of relative consensus and collegiality. Explains researcher Melvyn Shochet, who commutes to Fermilab from the University of Chicago: "We have pushed to set up a more democratic system, rather than an autocratic system where one person heads up the project." When one team of scientists goes off duty and another comes on, they often share an informal dinner right in the control room. "There's Chinese food with chopsticks, dripping all over the logbooks," says Fermilab physicist Drasko Jovanovic.

It would be a mistake, though, to assume that Fermilab's scientists are any less competitive than their rivals at other labs. The masters of the Tevatron positively gloated last year when they defeated Stanford in a race to measure the mass of the Z^0 particle, a boson that carries the weak force. Says Thomas Devlin, a Rutgers physicist working at Fermilab: "That was fun to beat out our West Coast colleagues. They were hopping mad for a time, but they learned they weren't the only ones to walk on water. It's time they recognized that we also can do good work."

CERN. "Many people doubted that Europe could pull off this venture," said French President François Mitterrand in a speech at the gala official opening of CERN's new accelerator last November, "but the achievement of LEP shows that Europe can harness its cultural diversity." In fact, LEP, which took more than four years and nearly $1 billion to build, is much more than a European showcase; it is a laboratory for the entire world. It has attracted scientists from 29 countries in both the West and the East. More than one-third of the Soviet Union's particle physicists are registered to work at CERN, as well as a quarter of their colleagues from China.

Most of LEP's 2,000 scientists are split into four teams, each of which operates one of the four particle detectors spread around the accelerator ring. The team leaders are Americans Ting and Steinberger and Italians Ugo Amaldi and Aldo Michelini. The groups compete just as fiercely with one another as they do with outside rivals, creating a setting that is more charged with tension than the comparatively fraternal atmosphere at Fermilab.

The tone and pace for the whole CERN operation is set by Rubbia, a pushy director with a thirst for glory and little patience for laggardly performances. Says one senior CERN researcher: "Rubbia is insensitive, abusive, intolerant and high-handed." Yet no one denies his brilliance, energy and vision. "He works incredibly hard," observes a staffer, "and every waking minute is dedicated to physics." Concedes a critic: "If he was not respected intellectually, he would not be able to get away with the way he behaves. The other mitigating factor is that he is rude to everybody, high and low; he doesn't discriminate." Says Rubbia: "This is my life. There are no half measures."

Rubbia's hard-driving style has paid off. In the early 1980s he was leader of a CERN detector team that discovered the W and Z^0 bosons, crucial linchpins in the Standard Model. That earned Rubbia and colleague Simon van der Meer the Nobel. But Rubbia sometimes goads his scientists into announcing results prematurely. In 1984, for example, he said CERN had found evidence of the top quark, but later had to retract the claim.

By all accounts, the toughest team to belong to at CERN is Ting's. The stern leader would never allow chopsticks and

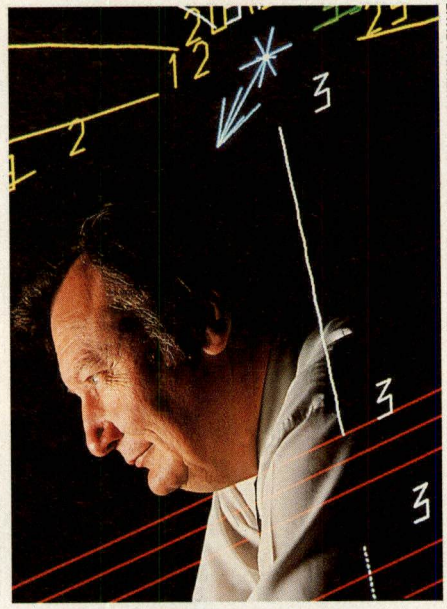
Chinese food in his control room—or any kind of refreshment, for that matter. He once sent a memo to his staff decreeing that there should be no tardiness, food, drink, joking or shooting the breeze in his lab. "Working for Ting," says one of his senior staffers, "requires the same sort of commitment as taking monastic vows back in medieval times. There is no room here for anybody who is not consumed by the desire to push back the frontiers of physics."

There are no doubt plenty of frontiers left for CERN to push back. Though LEP does not appear to be powerful enough to find the top quark, the "clean" electron-positron collisions could reveal many other exotic phenomena. One long shot is the much-sought Higgs boson, named for British theoretical physicist Peter Higgs, one of the first to recognize its importance. According to some theories, the Higgs boson is what gives all particles their mass. The idea is that everything in the universe is awash in a seaof Higgs bosons, and particles acquire their mass by swimming through this "molasses."

But what the CERN researchers really expect, and hope, to find is something totally unpredicted. "In science nobody really knows what is going to come next," says Rubbia. "We always pretend that we know the answers, but nature keeps advising us that we don't."

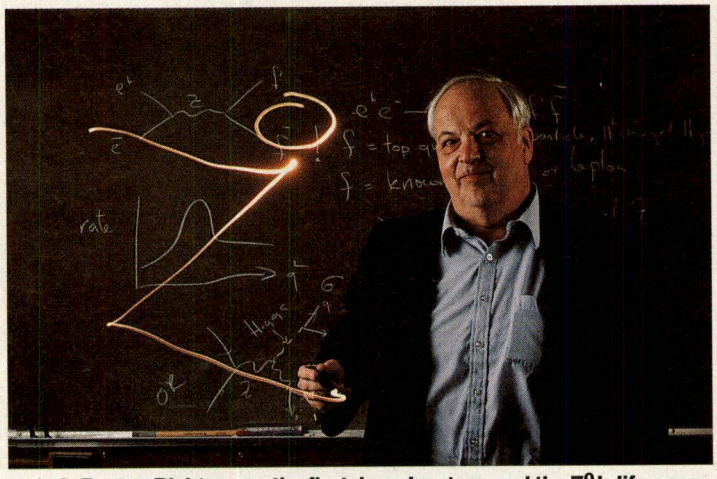
To keep finding new answers, Rubbia is determined to improve CERN's technology. He plans to boost LEP's power 50% in the next year or two. CERN is also trying to persuade its member nations to put up the money to build a proton-proton collider in the same tunnel with LEP. Called the large had ron collider, it would be four times as powerful as the Tevatron and almost half as forceful as the proposed superconducting supercollider in Texas. Rubbia thinks he can finish the LHC several years ahead of the SSC and thus beat the Americans to many important discoveries. If the LHC measures up to Rubbia's expectations, SSC could end up standing for superfluous supercollider.

SLAC. Burton Richter, director of the Stanford Linear Accelerator Center, is the maverick of particle physics. While others have recently concentrated on circular accelerators, he has touted the merits of linear models. His latest machine shoots streams of electrons and positrons down a straightaway and then loops them through two semicircular sections onto a collision course. Linear accelerators cannot produce nearly as many collisions as do circular models of comparable power, but Richter claims that the noncircular approach can be an economical way to make discoveries in the vanguard of physics.



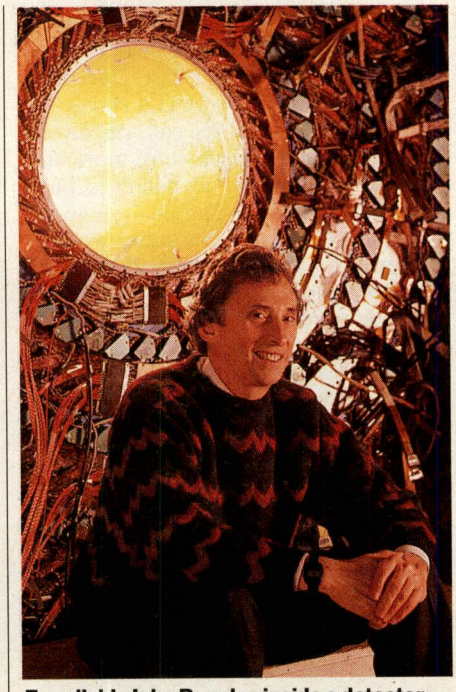
DAVID PARKER—PHOTO RESEARCHERS

Carlo Rubbia, CERN's tough director



PETER MENZEL

SLAC's Burton Richter was the first, by a day, to reveal the Z^0's life-span



MICHAEL L. ABRAMSON

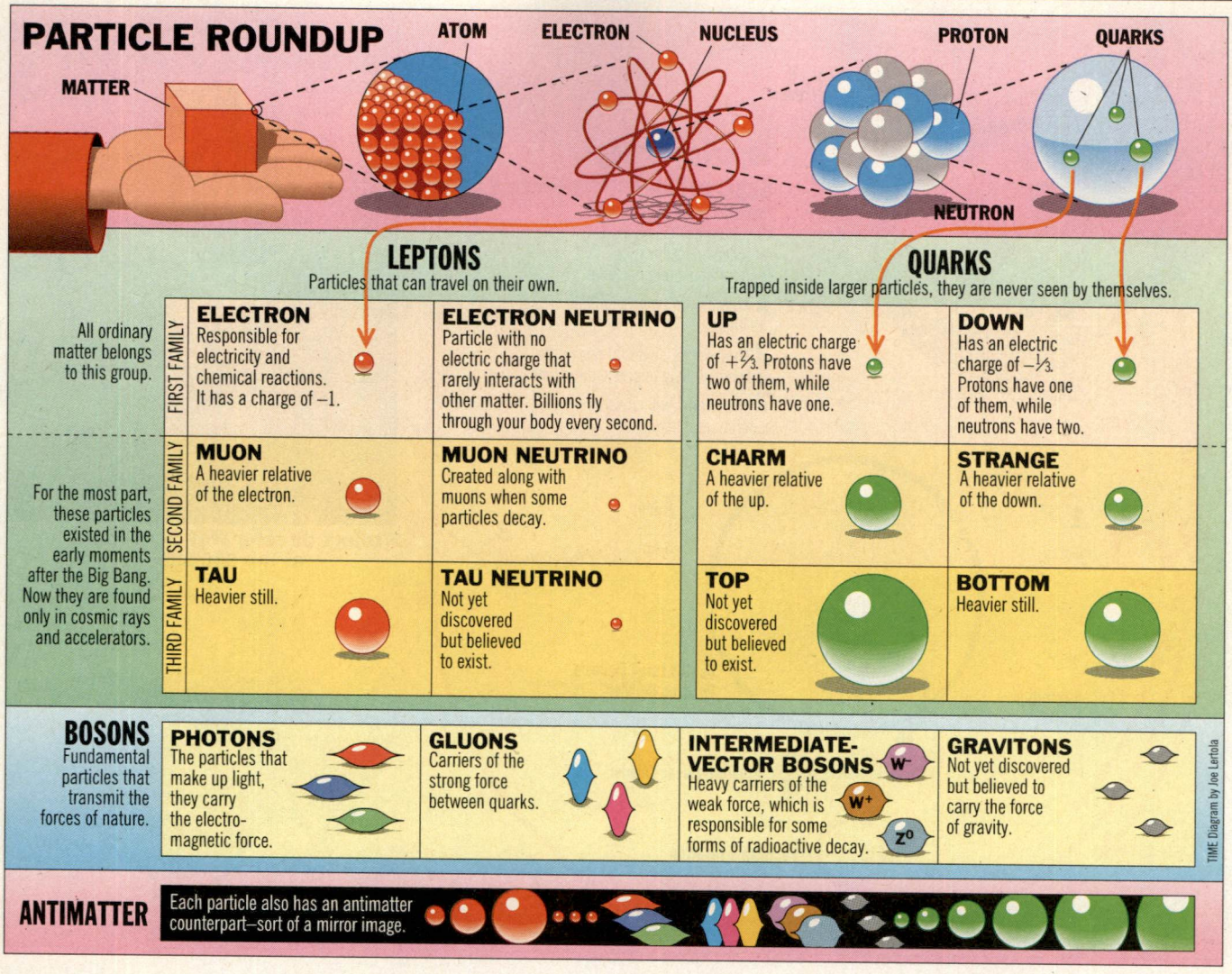
Fermilab's John Peoples inside a detector

Richter has already made his share of breakthroughs. In 1974 he found and named the psi particle, which gave physicists conclusive evidence that quarks really exist. For spotting the psi, Richter shared the Nobel with Ting, who found the same particle at the same time and called it the J. The particle now bears both names, but, says Richter, "when you're talking to Ting, you'd better call it the J/psi. When you're talking to me, call it the psi/J."

Last fall Richter did it again. He was using his new linear collider in a duel with his better-equipped rivals to measure the life-span of the Z^0, the particle that carries the weak nuclear force back and forth between other particles. Just one day before CERN was set to announce its measurement, Richter called a press conference to put forward his own figure. The calculation was extremely significant because it provided strong evidence that only three families of matter exist. CERN's Steinberger was furious at being upstaged. "I guarantee our results are more accurate than Stanford's," he told the New York *Times*. "The people at Stanford knew perfectly well that we were going to do this. They timed their press conference to get in ahead of us, even though we have ten times as much useful data. They've done some nice work, but I don't like it when they try to beat us by one day."

Richter believes that LEP is the end of the line for circular electron-positron colliders. He once calculated that a LEP-style machine with ten times LEP's power would have to be at least 2,700 km (1,680 miles) around. Thus Richter is convinced that linear colliders are the machines of the future. He is hoping to build a 7-to-8-km (4.4-to-5-mile) linear model that he figures could be five times as powerful as LEP. The only catch: it would require acceleration technology that has not yet been invented.

Superconducting Supercollider. For all Rubbia's and Richter's plans, the SSC will clearly have the best chance of unlocking the deep secrets of the universe. Its scale and complexity will make even LEP look puny. The 10,000 magnets will require as much steel as a battleship and enough superconducting wire to circle the earth's equator 25 times. The counterrotating beams of protons, each as thin as a fork's tine and containing quadrillions of parti-



cles, will whip around the ring-shaped tunnel 3,000 times, producing up to 100 million collisions, every second.

Building such a mammoth machine from scratch is scary even to Schwitters, a Harvard physicist and leading particle experimentalist who left Fermilab to take charge of the SSC. Says he: "We have to build the equivalent of the Fermilab complex and then the SSC itself." Moreover, since no one has ever built an accelerator of such size and power, each component will have to be reliably mass-produced, which will inevitably cause unanticipated problems. Schwitters is determined to use the best possible designs, even if Congress grimaces at the $7 billion-plus price tag. Former Fermilab director Leon Lederman, one of the early champions of the SSC, thinks it would be idiotic to cut corners on such a complex machine. Says he: "The worst thing in the world would be to build a machine that doesn't work, or one where you have to struggle along."

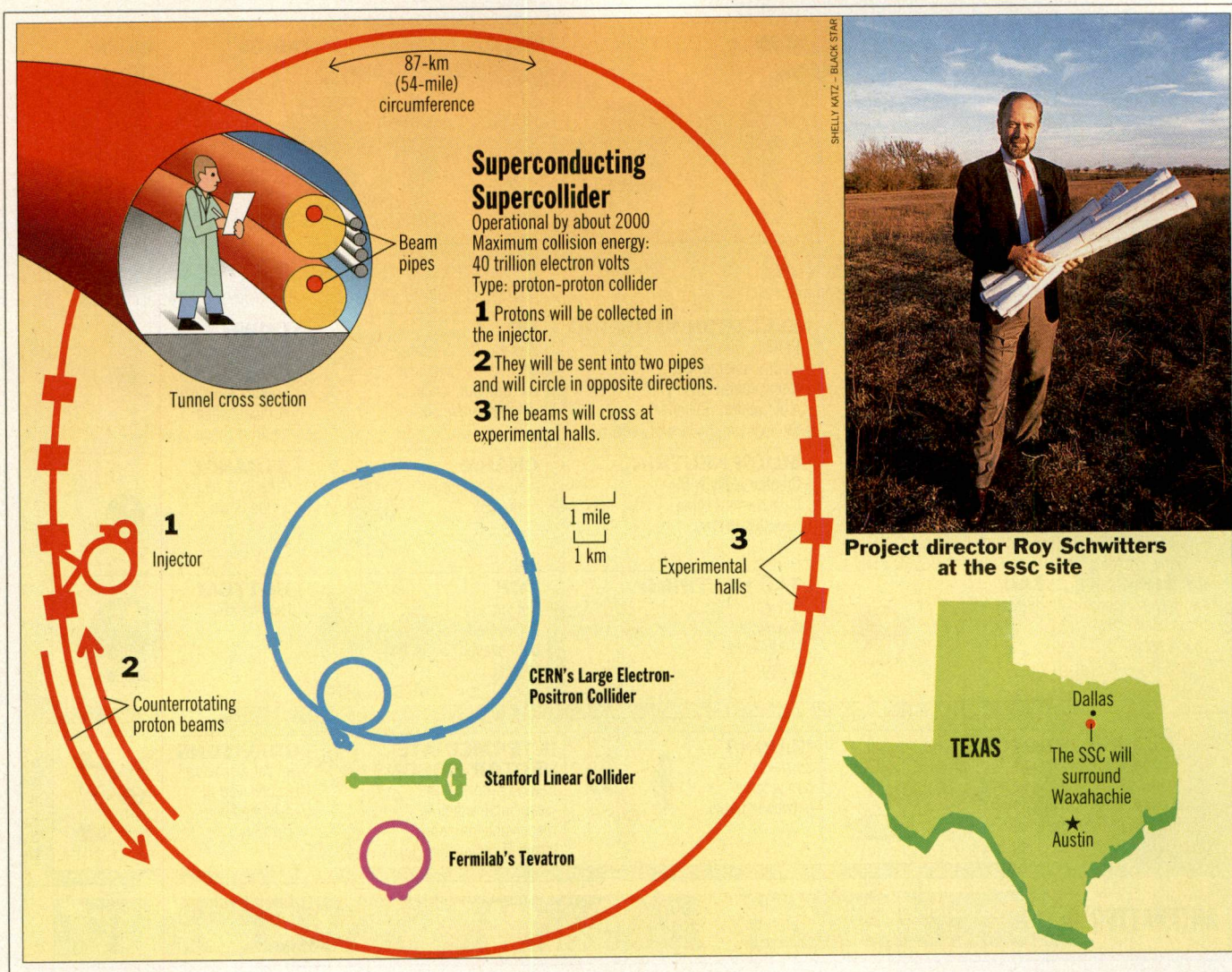
Another challenge facing Schwitters, who alternates between private fights with Government bureaucrats and public appearances in cowboy boots and a ten-gallon hat, is to recruit hundreds of physicists to work on the accelerator. That may not be so easy. Once it is built, the SSC will be a magnet for young, ambitious scientists. But since Congress will have to appropriate hundreds of millions of dollars each year for the next half-decade for the project, there is always a chance that the money will suddenly dry up, along with jobs. CERN's budget, on the other hand, is shouldered by 14 European governments, thereby spreading the risks and costs.

But for the top physicists, who will have no trouble finding jobs even if the SSC construction were to stop suddenly, the lure of the giant collider is irresistible. In fact, the leaders of the 500-scientist teams that will eventually run the SSC's enormous detector experiments are already beginning to organize. One such collaboration is being formed by Ting. Politically shrewd, he has wooed physicists from a number of weapons laboratories and Southeastern universities, which until now have not been powers in the field of particle physics. Observers expect he will run the experiment in the strictly hierarchical fashion he has displayed at CERN. At the same time, physicists from Lawrence Berkeley Laboratory, Fermilab, Argonne National Laboratory and Japan are drawing up a collaboration that will be run along the more democratic lines of Fermilab. The clash of cultures between the CERN and Fermilab styles of management may make the sociology of the SSC nearly as interesting as the science.

The science should be nothing short of spectacular. By the SSC's projected start-up date of 2000, most of the *i's* and *t's* of the Standard Model should long since have been dotted and crossed. Finding the Higgs boson should complete the task. But, contends Columbia University's Frank Sciulli, "there are intrinsic limits to the model, and people believe those limits are going to show up in the SSC, along with a whole new layer of matter we didn't know of before."

The layer that theorists most eagerly hope for is a new class of matter called supersymmetric particles, whose existence is predicated on the so-called grand unified theories now being explored by physicists. Some think that supersymmetric particles are the long-sought components of "dark matter," the invisible stuff that is believed to make up 90% or more of the universe.

Supersymmetric particles could also give a boost to superstring theory, one of the hottest ideas in theoretical physics.



SHELLY KATZ – BLACK STAR

Project director Roy Schwitters at the SSC site

Superstring theory holds that every particle is really a vibrating loop of stringlike material that exists in ten-dimensional space (most of these dimensions are confined to such a small scale that we never notice them). Whether the string takes on the role of a quark or an electron or a Higgs boson depends simply on how it vibrates.

Or the theorists may be on the wrong trail entirely. While such ideas as supersymmetry and superstrings may be elegant physics, the supercollider could just as easily reveal a subatomic monkey wrench. That could force a crisis in physics, followed by a far more basic set of theories than physicists now dream of. It may be, for example, that quarks are not fundamental after all, but are themselves made of still more basic building blocks. Some forward thinkers have already coined a name for the ingredients of quarks: preons.

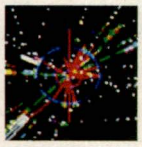
But is finding such exotic particles worth the multibillion-dollar price tag of the SSC? Is it a good investment? No one can know what the payback will be, but past breakthroughs in physics have tended to create whole new industries. Radar, X rays, television, microwaves, semiconductors, computers, lasers—technologies that now produce as much as a quarter of the U.S. gross national product—stemmed from discoveries in quantum physics made between 1910 and 1930. "If all of the physics generated by the SSC and its cousins doesn't have a profound effect," says Lederman, "it will be the first time in history."

There is no reason for the U.S. to shoulder the full cost of the SSC. When the supercollider was first proposed, it was assumed that other countries would help support the project both scientifically and financially, much as CERN's LEP is backed by its participating nations. Several foreign governments have offered to do just that. The Japanese have made involvement in the SSC a high priority, and even India has offered to donate $50 million worth of goods and services. Unfortunately, nothing has come of these overtures. Part of the problem, insiders say, is lack of follow-through by the staff at the Department of Energy, which is overseeing the venture. But the SSC remains all-American largely because a few key Congressmen still believe that sharing knowledge about subatomic particles is somehow akin to sharing the secrets of the atom bomb.

Whether or not the U.S. pays the entire cost of the of the project, there are no guarantees that the SSC will yield practical results anytime soon or that the physicists will not be back ten years from now asking for an even costlier machine. In the end, the only real justification for building the supercollider is for its value to science, for what it may add to the storehouse of human knowledge. It is difficult to put a price on such a commodity. How much is it worth to know what matter is made of, or what happened in the very first moments after the Big Bang? The answer will vary from individual to individual. Some people think the space program was a big waste of money. Others believe it was worth the cost just for one picture of the earth floating like a fragile island of life in the black void of space.

Particle accelerators have come a long way since the 1930s, when they were literally no larger than a bread box. Since then, each bigger and better machine has pushed physics to a new energy level and has uncovered important and fascinating new facets of matter. If the SSC is built, it should do the same—taking yet another step in a mind-stretching adventure whose end is not yet in sight. ***—Reported by Philip Elmer-DeWitt/New York, J. Madeleine Nash/Chicago and Christopher Redman/Geneva***

Can We Really Understand Matter?



By EUGENE LINDEN

Few tasks are more daunting than standing in the path of a charging theoretical physicist who is hell-bent on getting funding for the next particle accelerator. As practitioners of the hardest of the hard sciences, physicists do little to discourage their aura of intellectual supremacy, particularly when suggesting to Congress that a grand synthesis of all the forces of nature is at hand if the Government will only cough up a few billion dollars more. But what if this confidence is misplaced? What if the barriers to knowledge are higher than many physicists like to admit?

For much of this century, scientists have known that the comfortable solidity of things begins to break down at the subatomic level. Like the Hindu veil of Maya, the palette from which nature paints atoms proves illusory when approached. From afar, this world appears neatly separated into waves and particles, but close scrutiny reveals indescribable objects that have characteristics of both.



Physicists have prospered in this quirky realm, but neither physics nor the rest of science has fully digested its implications. Inside the atom is a world of perpetual uncertainty in which particle behavior can be expressed only as a set of probabilities, and reality exists only in the eyes of the observer. Though the recognition of this uncertainty grew in part out of Albert Einstein's work, the idea bothered him immensely. "God does not play dice with the universe," he remarked.



The set of mathematical tools developed to explore the subatomic world is called quantum mechanics. The theory works amazingly well in predicting the behavior of quarks, leptons and the like, but it defies common sense, and its equations imply the existence of phenomena that seem impossible. For instance, under special circumstances, quantum theory predicts that a change in an object in one place can instantly produce a change in a related object somewhere else—even on the other side of the universe.

Over the years, this seeming paradox has been stated in various ways, but its most familiar form involves the behavior of photons, the basic units of light. When two photons are emitted by a particular light source and given a certain polarization (which can be thought of as a type of orientation), quantum theory holds that the two photons will always share that orientation. But what if an observer altered the polarization of one photon once it was in flight? In theory, that event would also instantaneously change the polarization of the other photon, even if it was light-years away. The very idea violates ordinary logic and strains the traditional laws of physics.

The two-photon puzzle was nothing more than a matter of speculation until 1964, when an Irish theoretical physicist named John Stewart Bell restated the problem as a simple mathematical proposition. A young physicist named John Clauser came upon Bell's theorem and realized that it opened the door to testing the two-photon problem in an experiment. Like Einstein, Clauser was bothered by the seemingly absurd implications of quantum mechanics. Says Clauser, now a research physicist at the University of California, Berkeley: "I had an opportunity to devise a test and see whether nature would choose quantum mechanics or reality as we know it." In his experiment, Clauser, assisted by Stuart Freedman, found a way of firing photons in opposite directions and selectively changing their polarization.

The outcome was clear: a change in one photon did alter the polarization of the other. In other words, nature chose quantum mechanics, showing that the two related photons could not be considered separate objects, but rather remained connected in some mysterious way. This experiment, argues physicist Henry Stapp of Lawrence Berkeley Laboratories, imposes new limits on what can be established about the nature of matter by proving that experiments can be influenced by events elsewhere in the universe.





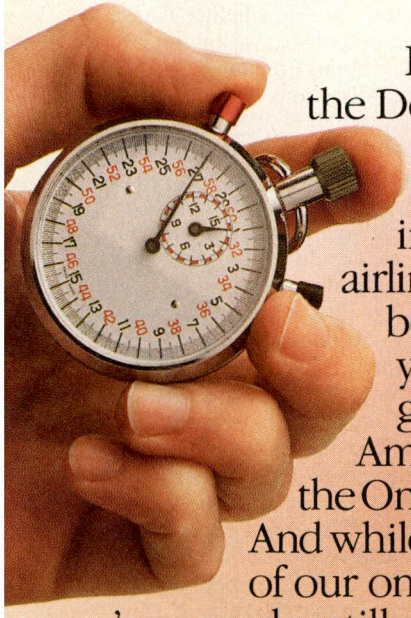
ILLUSTRATION FOR TIME BY PETER SIS

Clauser's work pointed out once again that the rules of quantum mechanics do not mesh well with the laws of Newton and Einstein. But most physicists do not see the apparent disparity to be a major practical problem. Classical laws work perfectly well in explaining phenomena in the visible world—the motion of a planet or the trajectory of a curveball—and quantum theory does just as well when restricted to describing subatomic events like the flight of an electron.

Yet a small band of physicists, including Clauser and Stapp, are disturbed by their profession's priorities, believing that the anomalies of quantum theory deserve much more investigation. Instead of chasing ever smaller particles with ever larger accelerators, some of these critics assert, physics should be moving in the opposite direction. Specifically, science needs to find out whether the elusiveness of the quantum world applies to objects larger than subatomic particles.

No one worries about the relevance of quantum mechanics to the momentum of a charging elephant. But there are events on the border between the visible and the invisible in which quantum effects could conceivably come into play. Possible examples: biochemical reactions and the firing of neurons in the brain. Stapp, Clauser and others believe that a better understanding of how quantum theory applies to atoms and molecules might help in everything from artificial-intelligence research to building improved gyroscopes. For now, though, this boundary area is a theoretical no-man's-land. Certainly physicists are a lot further from understanding how the world works than some would have Congress believe. ■

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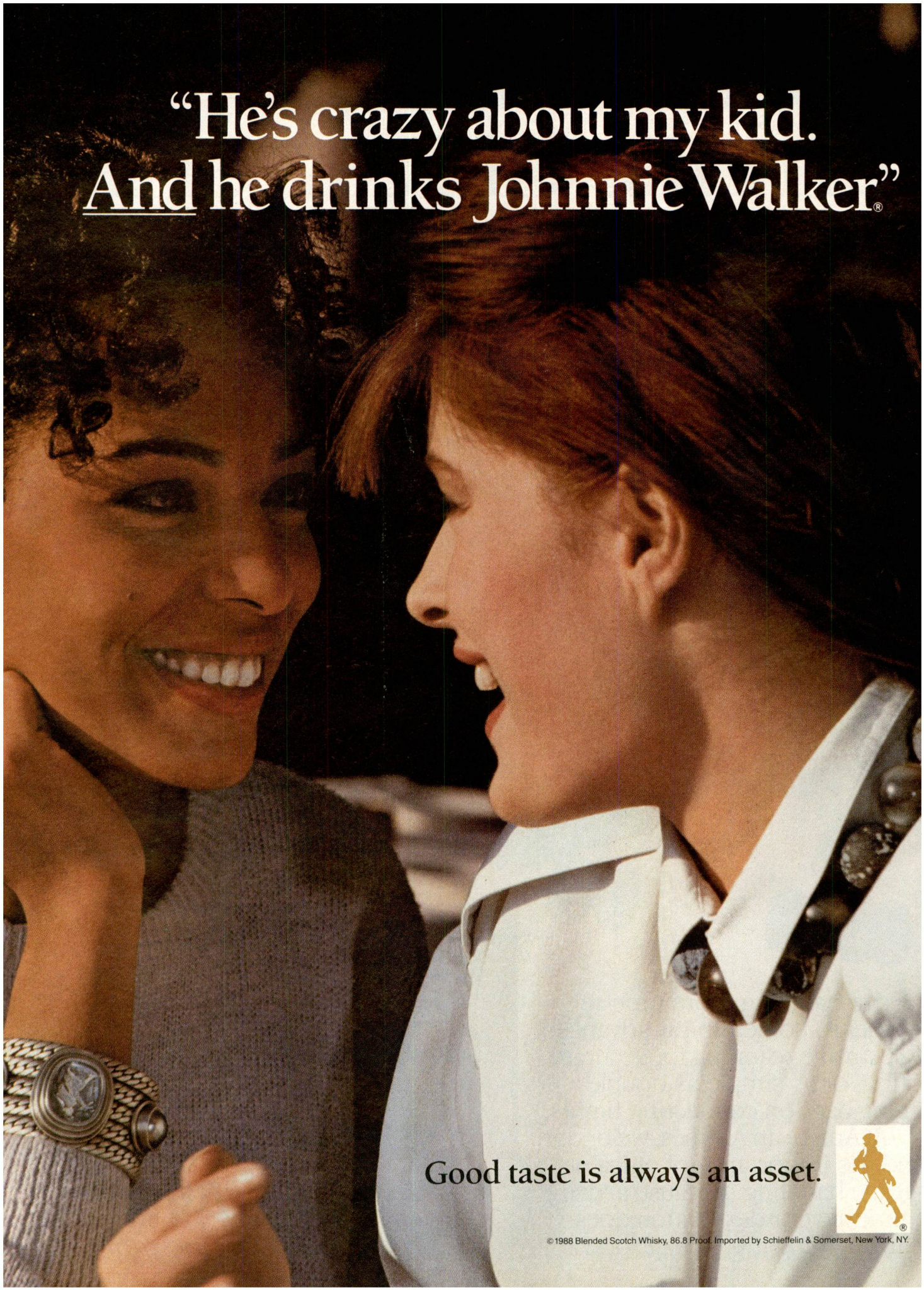
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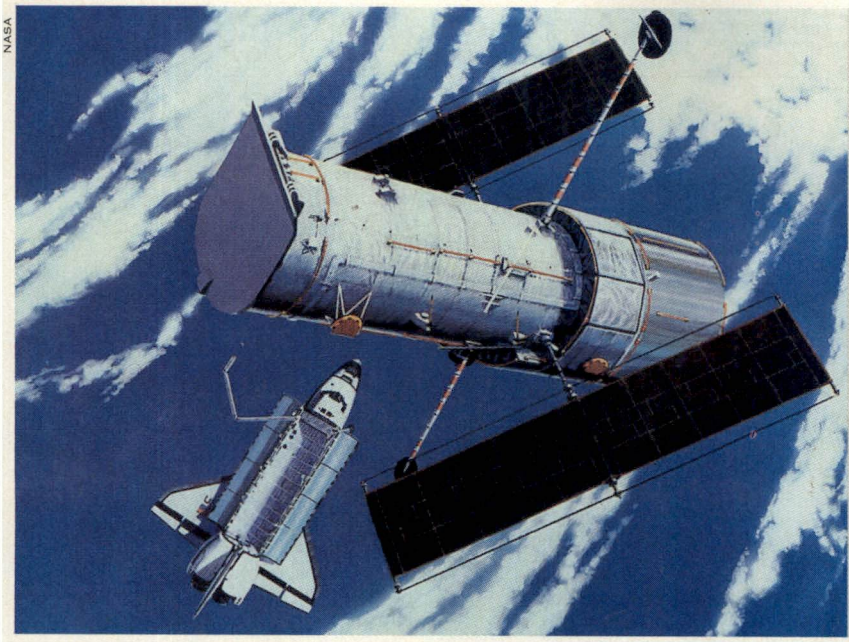
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It will analyze rather than photograph the light from galaxies and gas clouds, revealing clues to their exact chemical makeup.

"New Window on the Universe"

With an unclouded view of the most distant stars, the sharp-eyed Hubble telescope will be able to look far back into time

By DICK THOMPSON

Even on a clear night, astronomers cannot see forever. Light from the stars is diffused and distorted by the earth's atmosphere. To the casual stargazer, that produces a beautiful twinkle, but to the astronomer it is a tragic blur. Star watchers have long dreamed of somehow getting above the atmosphere to have an unobstructed look at the universe.

Now their opportunity has come. This week the space shuttle *Discovery* was scheduled to take off and deliver into earth orbit the Hubble space telescope, a bus-size instrument that will see the cosmos ten times as clearly as any ground-based telescope ever has. Scientists have impatiently awaited the historic launch through three years of delays caused by the shuttle's problems in the aftermath of the *Challenger* explosion.

Once aloft in the dark void of space, the Hubble promises a leap in astronomical observing power unlike anything since 1609, when Galileo first pointed a telescope at the heavens. As never before, astronomers have a realistic hope of seeing planets that orbit distant stars, watching tidal waves of energy swirl around black holes and spotting the birth of galaxies. The Hubble, says presidential science adviser D. Allan Bromley, "will open entirely new windows on the universe."

Named for Edwin Hubble, the great astronomer who discovered in the 1920s that the universe is expanding, the space telescope has a mirror 2.4 meters (7.9 ft.) in diameter that will focus light on an array of cameras and instruments. After recording and analyzing the radiation, the instruments will translate it into electronic impulses and beam it down to earth at a prodigious rate—fast enough to fill a 30-volume encyclopedia in 42 minutes. Moreover, the Hubble will literally view the stars in a new light: the space observatory can see ultraviolet radiation that fails to reach ground telescopes because it is largely blocked by the earth's ozone shield.

Building the Hubble and putting it into space has cost the U.S. Government $1.5 billion, and that is only the beginning of the investment, which will likely top $5 billion. The telescope is being run by scientists at the new Space Telescope Science Institute, housed at Johns Hopkins University in Baltimore. The data will be collected by some 380 institute researchers and computer technicians and will be used by scientists all over the world. Over the Hubble's expected 15-year life-span, teams of astronauts will shuttle to and from the telescope to service and upgrade it.

The Government's Hubble budget alone will amount to an annual injection of more than $150 million into the scientific community. No wonder that researchers were awaiting the launch with both excitement and apprehension. "A lot is riding on that pillar of fire," observed institute director Riccardo Giacconi.

The Hubble will not make ground telescopes obsolete, since there is a limit to how many scientists can use it and how much light it can gather at one time. The huge new Keck Telescope, which is nearing completion atop Mauna Kea in Hawaii, will complement the space observatory. Privately developed by the University of California and Caltech and financed mainly by the W.M. Keck Foundation, the Keck has a dish 10 meters (32.8 ft.) in diameter. That is nearly twice the size of the next largest telescope, a problem-plagued 6-meter (19.7-ft.) dish in the Soviet Union. The Keck may not see the heavens as sharply as the Hubble, but the bigger, ground-based telescope can take in much more light in a short period of time. By combining high-quality images and a large quantity of data, the Hubble and the Keck will usher in a new era for astronomy.

One advantage of the Hubble is that it will offer the clearest pictures yet of the most distant objects in the universe. And the farther away those objects are, the longer the light has been traveling. So the Hubble is a spyglass that enables astronomers to look way back in time to earlier ages of the cosmos. Says institute astronomer Eric Chaisson: "The space telescope should allow us to see sufficiently far out into space and sufficiently back into time so that we can begin to probe the regions at which galaxies actually formed, and that's the greatest missing link in all of modern astrophysics."

The Hubble will also cast its sharp eye around stars in this galaxy, looking for traces of planets. So far, only dusty disks thought to be planetary precursors have been observed near some suns. "With the space telescope we have a fighting chance of seeing a planet," says European Space Agency physicist F. Duccio Maccheto.

Another mission will be to focus on planets around the sun and send back pictures as sharp as those from the Voyager spacecraft—with one major difference. "On a flyby, you get one moment in time and look at whatever is looking at you," says institute planetary scientist Robert Brown. Hubble will allow astronomers to study planets over a long period. On Mars, for example, dust storms arise from small regions and eventually cover the entire planet. Now scientists will be able to follow that mysterious phenomenon.

Even with their powerful new tools, astronomers will not be satisfied. While upgrading the Hubble in the 1990s, NASA plans to ring the earth with satellite observatories that can receive and analyze infrared radiation, X rays and gamma rays. "It's as if we never could see at all at the beginning of the decade, and by the end we'll have 20/20 vision," says Princeton's John Bahcall, president-elect of the American Astronomical Society.

The ultimate observatory would be on the moon, a real possibility in the next century. Just as Edwin Hubble used the best instrument of the 1920s to discover that our galaxy was not the only one in the cosmos, perhaps a moon-based telescope would reveal startling regions of space—and time—never seen before. ***—With reporting by Michael D. Lemonick/New York***

Petite Payloads

Pegasus puts into orbit the first of a new class of small satellites

The first satellites were tiny, antenna-studded devices that often weighed little more than the men and women who built them. But big was better as the space age progressed. The largest satellites today tip the scales at 15 tons, cost hundreds of millions of dollars and are roughly the size of Mack trucks. They must be put into orbit by giant rockets or space shuttles.

But in the skies over California last week, a launch took place that broke all the rules. A diminutive rocket named Pegasus, built by a Virginia-based entrepreneurial firm called Orbital Sciences, dropped from under the wing of a B-52 and carried into orbit a small 200-kg (450-lb.) satellite, one of a new type of craft that promises to bring space history full circle. Called lightsats, the new payloads pack as much function into a few hundred kilograms as satellites many times their size. At $8 million a launch, they could open space to new military and industrial uses.

The shrinkage has only begun. In July a second Pegasus is scheduled to launch seven 22.5-kg (50-lb.) communications satellites the size of car tires. And scientists are already dreaming about peppering space with swarms of "microspacecraft," each no bigger than a coffee can. ■

Carping over the Catechism

Americans criticize a Vatican text on church teachings

Not since 1566 has the Roman Catholic hierarchy attempted such a project: the summarizing of the church's central teachings on faith and morals in a single document. Four years in the making, a secret 434-page draft of the new *Catechism for the Universal Church* was sent last December to the world's 4,000 bishops. The prelates were instructed to dispatch their comments on the text to the Vatican by May 31, after which work will begin on the final version. Since then there has been widespread grumbling over both the document's old-fashioned conservatism and the rush-rush deadline for responding to it. Last week leaders of the U.S. bishops escalated the debate, sending the Vatican a sweeping and surprisingly blunt 51-page critique of the Catechism. They also pleaded for more time to consult with theologians and educators over what they called the "most significant" project of the church's magisterium, or teaching office, since the Second Vatican Council.



ANN STATES—SABA

Alabama's Archbishop Oscar Lipscomb

"We have given a positive response."

The bishops' critique was the work of a six-member committee headed by Alabama's Archbishop Oscar Lipscomb, 58, the chairman of the bishops' doctrinal committee. (Individual U.S. bishops, like those elsewhere, will also be sending separate responses to the Vatican.) The Lipscomb panel's chief objection is that the *Catechism* has not clearly distinguished a "hierarchy of truths" treating concepts like the meaning of Christ's crucifixion as more important than, say, teaching about angels.

The report chides Rome for ignoring a generation of progressive Bible scholarship. The Roman draft, the Americans say, seems to presume that "New Testament texts are the product of direct historical reporting" and resorts to "proof-texting," quoting Scripture out of context to prove a doctrinal point. In addition, the Americans feel that science has been slighted in favor of an almost Fundamentalist approach to creation.

Another U.S. complaint is that the English version of the *Catechism* seems to back away from some of the key ecumenical language adopted by the 1962-65 Second Vatican Council. While Vatican II declared that the true church of Christ "subsists" in the Roman Catholic Church, implying that there is a place for other Christians, the *Catechism* uses an exclusionary phrase, "has its existence in."

Reflecting the influence of feminism, the report sharply criticizes Rome's relentless use of non-inclusive nouns and pronouns (for instance, in referring to believers as "men" or "sons"), which the American bishops have been trying to banish from their own documents. One problematic passage in the *Catechism,* though it was not specifically cited by Lipscomb's panel, introduces a list of heroic women in the Bible by terming them "weak and feeble." The U.S. bishops did not dispute the text's predictable conservatism on controversial moral issues like birth control, but they did urge that such subjects get a "more positive" treatment rather than an inflexible listing of dos and don'ts.

In spite of the panel's numerous reservations about the *Catechism,* Archbishop Lipscomb maintains that "basically, we have given a positive response." The same could not be said, however, for the 15 Catholic scholars who gathered at Georgetown University last January to discuss the Vatican document. Jesuit Father Thomas Reese, who organized the Georgetown meeting, branded the draft as "fatally flawed." Father William Spohn of California's Jesuit School of Theology characterized Vatican drafters as religious Rip Van Winkles who have slept through a generation of progress in moral theology. Underlying such attacks from liberals is a not-so-hidden fear: that a hard-line *Catechism* will one day be used as a criterion for disciplining theologians and educators. ***—By Richard N. Ostling. Reported by Michael P. Harris/New York***

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SUSAN LAPIDES

Turning *Animal House* into a home: at Middlebury, female pledges to Sigma Epsilon munch pizza with their future brothers

Waging War on the Greeks

Fraternities and sororities are being forced to clean up their acts

By SUSAN TIFFT

Greek fraternities, those longtime social standbys of college life, are under siege. At the moment, their battlements are being assaulted by critics who want them to admit women to their all-male precincts. But that is just part of their problem. Fed up with hazing deaths, boozy parties, vandalism, rape, sexual harassment and acts of racial and ethnic intolerance, many schools are cracking down on fraternities and sororities—or simply abolishing them. "They haven't kept pace with the times," says Stan Levy, vice chancellor of the University of Illinois at Urbana-Champaign. "The attitudes of the Greeks are of an era that has long passed."

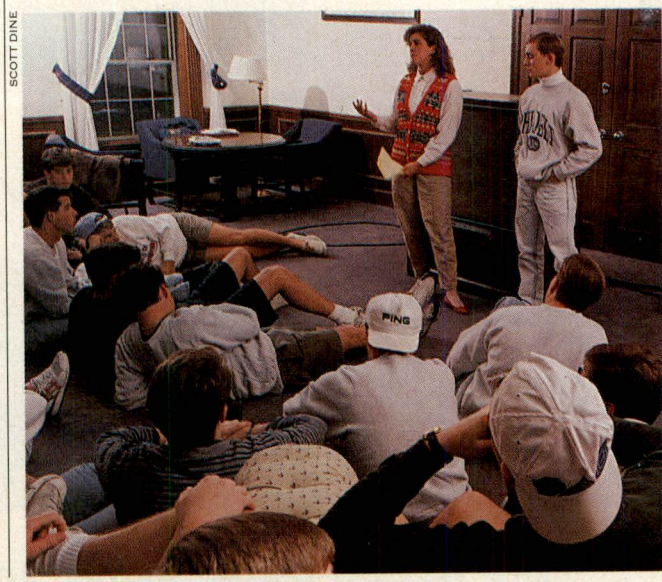
That reluctance to change has been traumatic for the fraternities at Vermont's Middlebury College. In January the school's trustees declared single-sex social organizations to be "antithetical to the mission of the college," and ordered Greek-letter groups to go coed or face elimination. Two fraternities now admit females. Last week, facing a final deadline, three pleaded for more time to persuade their national organizations to revoke century-old prohibitions against women. "The college is taking away a valuable option," laments Richard Cochran, 21, president of Chi Psi and a proponent of single-sex clubs. "Fraternities can be good in an all-male setting."

Many faculty members and college administrators disagree, and are making the going rough for fraternities and sororities. Last fall the faculty at Bucknell University voted to abolish all such clubs, blaming them for promoting "racism, sexism, élitism and anti-intellectualism." Bowdoin and Wesleyan are pressuring their fraternities to go coed or face possible sanctions.

Tufts requires its fraternities to sign an annual statement promising that they will conduct a "dry" rush and purchase a certain amount of insurance. Washington and Lee University in Lexington, Va., is reinstituting live-in house directors—adults who will supervise meals, serve as counselors and ensure that students do not abuse the property. Dozens of other schools are imposing restrictions on alcohol use and enforcing rigorous antihazing policies.

Some administrators see a cyclical pattern in the movement to rein in fraternities and sororities. "There is a need for college presidents to get hold of their institutions again," says Dale Nitzschke, president of Marshall University. "The pendulum in the '60s and '70s was swinging away from in loco parentis. Now we're moving more to the middle." Many of today's students actually seem to yearn for a firmer hand. Says Samantha Gladish, 21, president of the Panhellenic Council at Bucknell: "We need someone to guide and help us."

Paradoxically, these restrictive measures come at a time when Greek life is enjoying a nationwide renaissance. Fraternity membership has mushroomed to 400,000 from a low point of 149,000 in the long-haired '70s; sororities have shown a similar resurgence. Even at Yale, fraternities, once moribund, resurfaced soon after Connecti-



SCOTT DINE

ALCOHOL COUNSELING

Greeks at the University of Missouri-Columbia must attend alcohol-education programs and hire "carders" for functions where liquor is served. Says Panhellenic president Kristin Fjelland: "It was not safe to have the kind of parties we had in the past"

cut raised the drinking age to 21. Sororities have come back to Stanford after a 40-year hiatus. Harvard continues to outlaw fraternities, as it has since the turn of the century, but students have banded together unofficially in at least three such groups.

However, at many institutions—particularly small, residential, liberal arts colleges—such organizations are increasingly seen as being out of step with the larger goals of the school. "Our colleges and universities are holding to one philosophy, and Greek life is holding to another," explains Marshall's Nitzschke. In particular, the current push by many colleges and universities to recruit students of diverse ethnic backgrounds rubs up against the Greek tradition of exclusion. Although national bylaws no longer prohibit blacks, Jews and other minorities from becoming members, local chapters often perpetuate the biases of an earlier era. "Black students have told me there are some fraternities they just can't get into," says Lad Sessions, a philosophy professor at Washington and Lee.

Colleges are also worried about legal liability if students are hurt while participating in activities of fraternities or sororities they officially recognize. When Rutgers freshman James Callahan died two years ago after chugging Kamikazes—a nerve-numbing mixture of vodka, triple sec and lime juice—during a fraternity party, his family sued the school. Two months ago, Pennsylvania's York College suspended its Sigma Pi chapter after an intoxicated 20-year-old student fell off the roof of an apartment building during an off-campus fraternity party and died.

Many students adamantly defend Greek life, rejecting the notion that it is all beery parties and *Animal House* antics. "I don't believe we're sexist and racist, or at least not any worse than society at large," says David Skena, 19, student body president at Bucknell and a member of Sigma Alpha Epsilon. Like-minded undergraduates stress the positive side of Greek affiliation—the strong friendships, the charity work, the leadership opportunities.

Yet even some vigorous defenders of that tradition see that the changes imposed upon them may ultimately ensure their survival. When Sigma Epsilon pledged 16 women this spring to comply with Middlebury's coed policy, many male members were skeptical. Not now. "It's almost a rebirth, a new identity," says Sig Ep vice president John DeMatte, 22, excitedly. "We're getting a gender-awareness lesson every day." Michael Gordon, vice chancellor at Indiana University Bloomington, predicts that similar metamorphoses will occur elsewhere."We are heading toward a whole new understanding of what a fraternity is," he says. "First they were seen as literary gatherings, then drinking clubs. What they will be in the future is living-learning centers." —***With reporting by Katherine L. Mihok/New York***

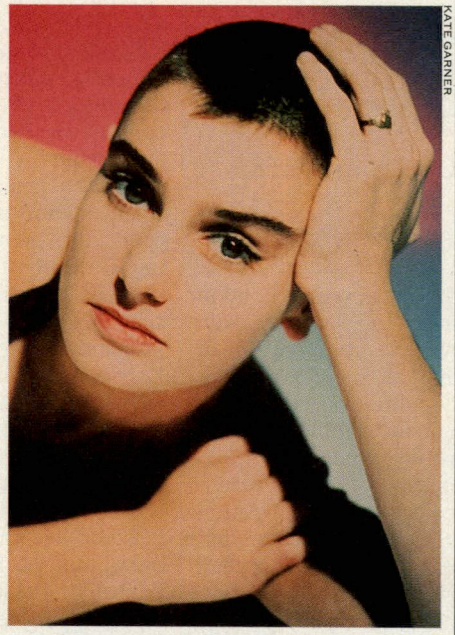
Approach of a Desolation Angel

Sinéad O'Connor is current pop's most haunting, unlikely star

By JAY COCKS

Lights out. The voice, hushed and full, sings of private places and deep secrets. Hearing it is like a long, seductive and slightly sinister climb up winding stairs to a dark room where someone waits. Or, perhaps, lurks.

The music is not customary hit material. It is a little too odd and altogether too witchy for these flighty, dance-heavy times. But a first hearing of Sinéad O'Connor might tempt anyone to believe that, for the moment, lite's out.


KATE GARNER

Startling, vivid songs about a stormy past

"To write harshly, that's my ambition."

Her just released second album debuted in one trade publication at the very top of the charts. Her first single, a rhapsodic rendering of Prince's ballad *Nothing Compares 2 U,* is also a runaway hit, currently No. 4 on the *Billboard* Top 100 and threatening to scale the peak. No wonder she can title her album *I Do Not Want What I Haven't Got*. Easy for her to say. It looks very much like Sinéad (say it Shin-*aid*) O'Connor will have it all.

Hearing such personal, even introverted music making such a commercial impact is like a time trip back to the late '60s. Indeed, O'Connor's writing (with few exceptions she does both music and lyrics) strikes a strong spiritual bond with Van Morrison, who is Irish, as she is, and who uses rock, as she does, as a vehicle for self-examination and psychic speculation. O'Connor, 23, speaks with reverence of Morrison but adds, with subdued asperity, "I don't particularly want to have any Irish connection. I hate 'scenes' of any kind. I'm just a girl, and it doesn't matter where you come from or what you look like."

Well, all right. When O'Connor was last in the U.S., in 1988, she had shaved her head bald, an attention-grabbing device that suited a time when she could hide behind the intricacies of her songs. Her hair these days is a half-inch black corona of fuzz, but she has never been shy about speaking out. "I would rather be compared to Patti Smith than anybody," she says. "I don't want to be compared to people like Suzanne Vega, because I don't like wishy-washy music." She declines to analyze her own work but is keen about rap, reggae and Michael Jackson ("He's a doll, he's a god") and is open as a wound about the lacerating Irish upbringing from which many of her lyrics spring ("I'm walking through the desert/ And I am not frightened although it's hot/ I have all that I requested/ And I do not want what I haven't got/ I have learned this from my mother").

Born in Dublin, O'Connor watched her parents split up "quite violently" when she was eight. Her brother responded to the domestic tumult by "fainting all the time." O'Connor's sister began having extensive conversations with strangers in bus stations. And Sinéad turned wild. She was busted for shoplifting and sent off first to reform school, then to boarding school. By the time her mother died in a car crash, her daughter hadn't seen her for nearly two years. "Her life never got better," O'Connor says, "and I suppose it was just as well that she died. But she was the person who, I suppose, meant the most to me. If it wasn't for her, I wouldn't be singing. She instigated that." The first album was dedicated to her mother. The new one is dedicated "to my father, with love," another sign that the healing has begun.

O'Connor is married now (her husband is her drummer, John Reynolds) and has a 2½-year-old son named Jake. But what makes her songs so startling and vivid is their perpetual tension between lyricism and a stormy, still close past that keeps bearing down hard. "To write harshly," she says, "that's my ambition." And to relive everything , rework it and maybe, finally, to resolve it. That's her likely destiny. And the listener's reward. — ***With reporting by Elizabeth L. Bland/New York***

A Musical Pilgrim's Progress

MICHAEL TILSON THOMAS

conducts like a sprightly Ichabod, arms flapping, legs skittering. The audience is unusual too; it's all ears

By JESSE BIRNBAUM

From a huge caldron on the kitchen stove in a London flat wafts the comforting aroma of classic chicken soup, enough to feed a hungry orchestra. From a small upright piano in the living room wafts a bittersweet trickle of melody, enough to feed a hungry spirit. Michael Tilson Thomas, the 45-year-old principal conductor of the London Symphony Orchestra, is cooking on both burners.

The soup, redolent of the shtetlach of Thomas' Jewish forebears, speaks for itself. The melody, from Anton Bruckner's sixth symphony, needs no elaboration either, but Thomas can no more resist parsing a composer's score than he can eclipse the twinkle in his brown eyes.

He is searching for the sound and phrasing of a passage that he wants to hear at a string rehearsal later today. With his right hand, its long thin fingers oddly flat at the tips and turned up like little spatulas, he plays the simple passage at heartbeat tempo. After a brief descent, the notes reverse direction, then fall, then rise slightly, then fall again and then, sighing, rise and fall into silence.

"What gets to me about that theme," Thomas tells his visitor, "is that it takes many directions but basically it's all one thing: falling." That reminds him of a Rilke poem, *Autumn*. "The leaves are falling," he says in singsong paraphrase, playing the passage again, "falling from on high as if from heaven's dying orchards. And each leaf falls with its own special gesture of denial, saying, *No, no, no, no, no, no, no, no.*"

Very nice. But invoking Rilke to demonstrate Bruckner is an impulse perhaps best confided to close friends, and certainly not to 100 or so impatient orchestra players. Besides, any conductor who was foolish enough to flog his musicians with images of leaves—let alone leaves whimpering in denial—would be hooted off the podium at the first fluttering whimp. Thomas learned a lesson on this point in his callow days during a rehearsal of *Also Sprach Zarathustra* with the Chicago Symphony. All his schoolboy nattering on the intellectual subtext of Strauss evoked only sly mockery from the musicians. At length, Thomas got the message.

"O.K.," he said. "Four bars happy, and then on the G-flat, six bars sad." The players came through.

The London Symphony fiddlers know happy and sad too, and they get really sad when they are subjected to boring lectures. Thomas' approach, therefore, will be straightforward. "I'll just say, 'Let the phrase fall gently downward, legato—smoothly.' The violinists will know that the left hand must be the most intense and the right hand must be the lightest, exactly at the right moment. As they do it again and again, it will work into their own reflexes and their own minds and will become more natural, more beautiful. That's when it gets exciting—when I suddenly hear them play it, and think, 'God, that's it! I could just give them a downbeat, and they could play all by themselves.' That's my true success."

That's what they all say, though everybody knows there isn't a pit bull alive that can drag a conductor off the stage. In any case, true success nowadays means more than the ability to produce a memorable performance. It means winning the directorship of a major ensemble, a substantial recording contract, the admiration of players, the acclaim of critics and audiences.

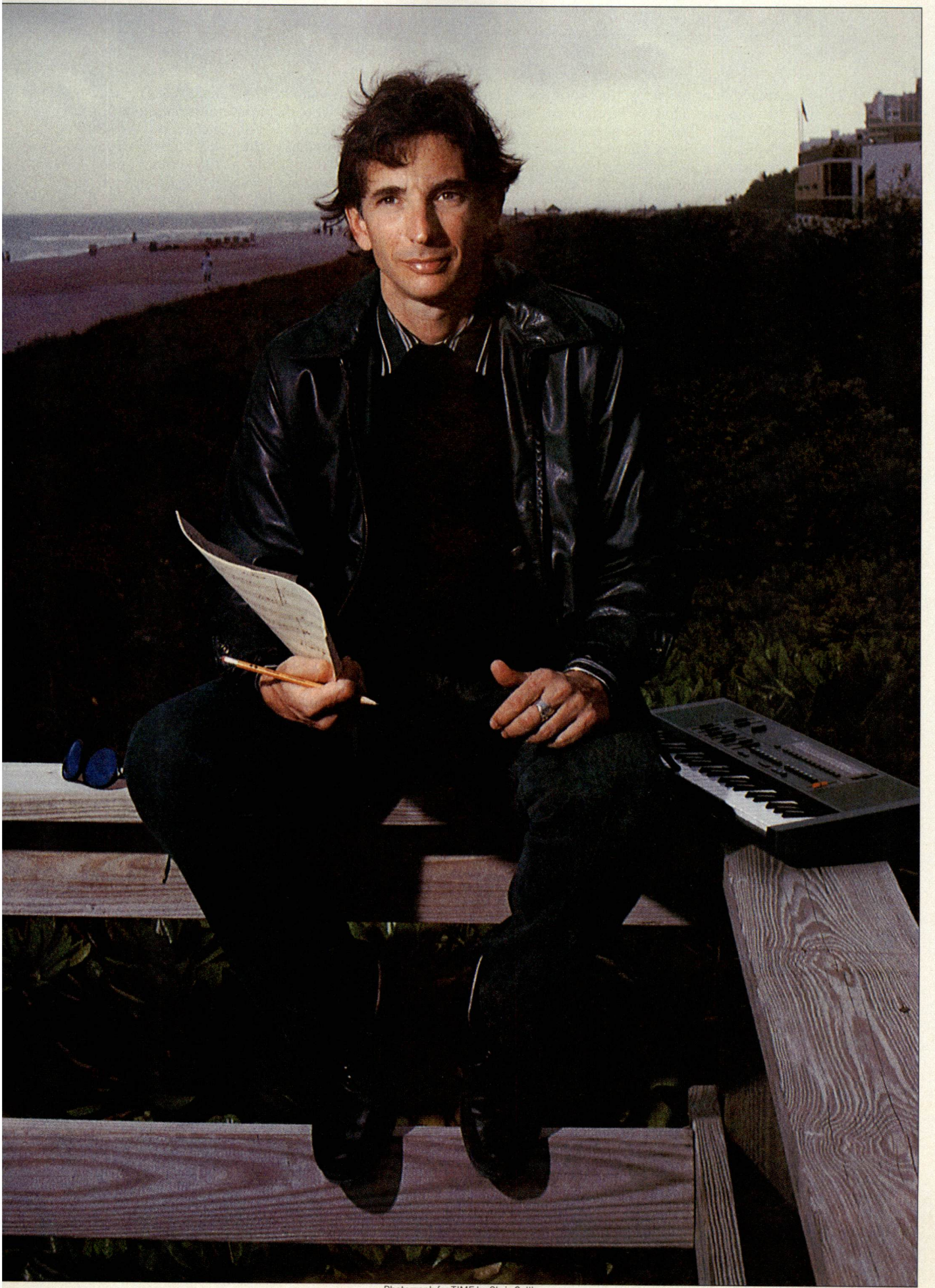
It also means consummate musicianship, and that is Thomas' unrivaled badge of excellence. Among American conductors, none is more talented or adventurous; among the world's best, he ranks in the top dozen. Almost unnoticed, he has established America's sole full-time training orchestra, the Florida-based New World Symphony, which prepares young musicians for professional jobs. The fine London Symphony Orchestra, a self-managed group, passed over several other ranking candidates (among them Lorin Maazel) when it unanimously elected Thomas as its maestro last year.

"He's a fantastic musician," says Lennie MacKenzie, chairman and the senior of the L.S.O.'s two concertmasters. "He's helped us a lot. He's a stickler on the box [podium], and he hears everything." On the box, Thomas, a reedy 6 ft., 158 lbs., looks like a sprightly, awkward Ichabod, arms flapping, legs skittering. His baton work is exceptional. His face reads like an animated directory of musical dynamics: he throws cues with his eyes; his expression darkens and brightens with such intensity that it seems riveted to the musicians' nerve endings. "He's got a good touch with the players," says L.S.O. managing director Clive Gillinson, "and an extraordinary imagination."

It is music that rules his imagination. Hiking and rock climbing in the Utah hills, he thinks he hears Palestrina; when the vast silences of the New Mexico desert engulf him, Gregorian chants ring in his head. He carries an electronic Yamaha keyboard on his travels and in taxis or during airport delays unleashes the instrument to noodle a few "stolen moments." He enjoys trivia. Learning that Schubert on his deathbed asked for James Fenimore Cooper's latest novel, Thomas sends his wit on irreverent flight. "Schubert," he says, "was fascinated by America! Can you imagine him on horseback in the American wilderness?" Breaking into a high, sweet tenor, Thomas croons his version of "Tex" Schubert:

From zis wallee zey say you are goink . . .
Oh, remember das Red Riwer Walleee . . .

Beverly Sills, who in her singing days performed under Thomas' baton, admires his good humor and energy. "He's got a nonstop mind," she says. "He's open to new ideas, and he's a delight to make music with." Leonard Bernstein, who



Photograph for TIME by Chris Callis

at 71 is America's dean of conductors, took the young man's measure years ago. Thomas, he declared, "reminds me of me at that age!" That's high praise indeed from a conductor with an ego the size of Carnegie Hall.

Almost from the beginning, comparisons with Bernstein were inevitable. Both were wunderkinder; both are excellent pianists; both made spectacular debuts in their 20s, when they were called upon to substitute for indisposed conductors; both have a strong affinity for the American musical idiom; both command a cunning show-biz flair on and off the podium.

Thomas' gift for shtick comes from his Russian-born grandfather, actor Boris Thomashefsky, who pioneered Yiddish theater in the U.S. Michael's father Ted, who shortened the family name, is a retired Hollywood writer and director. His mother Roberta adapted her own mother's nickname, Till, to invent the lilting Tilson that goes with Michael. (The British, impressed by double-barreled monikers, think his full surname is Tilson Thomas; he does not object.) Friends call him M.T.T., or Michael Tee Tee.

Michael, who was born in Los Angeles, believes his birthday, Dec. 21, has an almost mystical significance. "It's the longest night of the year and the shortest day," he explains. "So this is a very important balancing point for me—it's where I feel my maximum strength. As the days grow shorter, I get stronger and stronger. Somehow, maybe the moment in which the clock has first started ticking and the moment when you first make your entrance into this world are important in some way."

Hiking in the Utah hills, he thinks he hears *Palestrina;* in the New Mexico desert, Gregorian chants ring in his head.

He made his entrance into the music world at the age of three. "We had venetian blinds on the west windows," he remembers, "and in late afternoon, the light would come through at a very extreme angle. And in those bands of light were millions of little dust particles dancing. I used to stand at the piano and try to play music for the dancing dust."

By the time he reached his late teens, Michael had progressed from accompanying dancing dust to accompanying violin and cello students in the master classes of Jascha Heifetz and Gregor Piatigorsky. He was also getting solid piano instruction at the University of Southern California from John Crown, who was important not only for his teaching skills but also for his musical lineage. "Crown," says Thomas, "was a pupil of Moritz Rosenthal, and Rosenthal was a pupil of Liszt! Liszt was a pupil of Cherney, and Cherney was a pupil of Beethoven! It's really fun to think that some particular thing that I'm doing, the way I put my hands down on the keyboard, or some musical thought, some way or another comes through that line."

The line extended with further training under composer-conductor Pierre Boulez and at the Berkshire Music Festival at Tanglewood, where Thomas won the Koussevitzky Prize for conducting. By 1965 he was William Steinberg's assistant at the Boston Symphony. And then, like all understudies in show-biz song and saga, he prepared for the star to break a leg.

The break came on an October night in 1969 at New York's Philharmonic Hall. It was not a fracture that disabled the 72-year-old Steinberg but sudden fatigue. Thomas, not yet 25, was standing in the wings when the maestro walked offstage just before the intermission and told his assistant to get out there and finish the concert. Thomas proceeded to take the orchestra through a Starer concerto and *Till Eulenspiegel* without a slip, and the critics flipped. By 1972 he was the Boston's principal guest conductor and had his own orchestra, the Buffalo Philharmonic.

He was gifted, he was busy and he was ambitious, but he was still not ready for prime time. Veteran members of the Boston and other orchestras that he conducted found it hard to forgive an impudent kid his sudden celebrity. (When the frisky youngster appeared in New York City, recalls a former Philharmonic player, one of the musicians dubbed him Michael Tinsel Tushy.)

Inevitably, after Steinberg departed, the Boston's governing board balked at naming Thomas as full-time replacement. It was just as well. Thomas needed the maturing that eight years in the Buffalo boondocks would provide. He also needed to get his head straight. Now and then, some of his friends enjoyed sharing a little marijuana, a little cocaine. He was charged with carrying a little of both in his luggage after customs inspectors in New York City checked his gear one day in 1978. He paid a small fine, though the affair, Thomas recalls, was "scary and painful." Now, he says, he smokes nothing and drinks "interesting waters." The life of the ascetic, as well as of the aesthete, appeals to him. He gets his highs roaming in the wilderness. He likes poetry—Emerson, Whitman, Dickinson. He keeps a journal. He reads science fiction and the *Iliad.*

If Sills and other influential fans had votes, M.T.T. would take over the N.Y. Philharmonic when Zubin Mehta leaves at the end of the 1991 season. There are others, though, who doubt that Thomas is the right man. The orchestra needs a more distinguished leader, they argue, one who will electrify audiences and increase record sales. Thomas lacks sufficient public following; he has not yet demonstrated the infectious fervor of a Bernstein or the Olympian stature of a Karajan. Says Thomas prudently: "I don't think I'm going to be asked."

In any event, he has already assured himself of a special place in music with the successful development of the New World Symphony. Its 90 members, none older than 30, are avid music-school graduates who get a $300 weekly stipend the year round and free living quarters in a converted Miami Beach hotel. They are given three years in which to land a professional job elsewhere—or get out. In the two years since the group started, 30 players have moved on to steady positions. The orchestra, Thomas says, is "a very important expression of my idealism. We can give these kids a foundation at the very beginning, so they won't burn out and so they can keep their souls together. I've told them that whoever has his soul at the end of 50 years of music making will be the winner."

He may be right. The kids adore Thomas and under his tutelage are learning the meaning of happy and sad. If they can keep their souls intact, they, and generations of their successors, should one day occupy the majority of chairs in the nation's best orchestras. And that, for the sake of music making, is not just chicken soup. ■

Where Fantasy Teases Reality

A show explores the whimsical world of Jean-Michel Folon

By EDWARD M. GOMEZ

Stone. Bronze. Oil on canvas. This is the durable stuff that heavy-duty art history is made of. For more than three decades, however, Jean-Michel Folon has taken on serious, humanistic themes with no more than delicate whispers of watercolor on paper. His skill and inventiveness have made him one of the world's best-known commercial artists. Now, in a career-spanning survey on view at New York City's Metropolitan Museum of Art through June 3, Folon is coming in for the sort of institutional scrutiny rarely afforded an artist whose work is better known from posters and magazines than from trend-setting galleries. Mounted by William S. Lieberman, the Metropolitan's curator of 20th century art, "Folon's Folons" rounds up almost 70 watercolors and prints from the artist's own collection, as well as several objects—frames, a hand mirror, a ceramic plaque—that the artist has "transformed" into artworks.

Folon's watercolor-washed world features serpentine arrows, pedestrian-dwarfing buildings and blank-faced men, as well as rainbows, birds and boats. In *The Silence,* 1974, he makes the enigmatic figure of a sphinx his own. The mythical creature, at rest in a blazing desert landscape, raises one blue finger to its lips to demand tranquillity with an inaudible "Shhh!" The etching titled *New York Times,* 1974, shows square-headed city folk blown about by the wind as they clutch copies of their favorite paper. Other images add a message to the mirth. *The Feast,* 1983, packs a chilling political punch: a skull-headed figure sits at a table munching on a sardine-like snack that turns out to be a plateful of missiles.

Folon's career can be seen, the artist proposes ironically, as a testament to the nurturing power of boredom. The son of a Brussels paper wholesaler, Folon quickly came to regard Belgium as "a mental prison, the most boring place on earth." Art became his means of escape from stifling surroundings, as it was, he suggests, for such other Belgian-born painters as James Ensor and René Magritte. Like them, Folon took a strong turn for the fantastic, serving up the quotidian in images dreamy or irreal. But Folon's pictures, compact and whimsical, have always owed more to the purposefully childlike simplicity of Paul Klee than to hallucinatory or surrealistic styles.

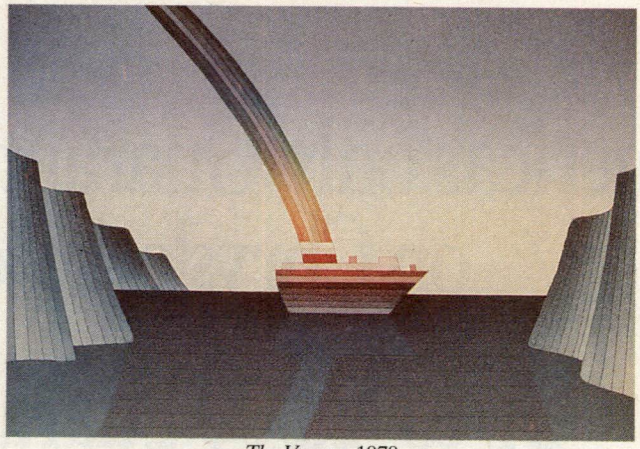
Folon was forced to study architecture by his parents; but upon turning 21 in 1955, he packed a small bag of art supplies and bolted for Paris, only six months before he could have received a college diploma. After several apprentice years, he met the artistic director of Olivetti, who gave him his big break commercially by commissioning him to create advertising posters for typewriters and illustrations for books that the firm produced as promotional gifts. (Folon's association with the company continues to this day.) During those early years, Folon, inspired by intrusive street signs, drew clusters of skyscrapers entangled in suffocating thickets of directional arrows. In the current show *Anaconda,* 1968, offers a vivid treatment of this motif. Folon admits that these frighteningly amusing glimpses of modern urbanism were "my revenge on what I had been taught in architecture school."

Such images amplify some of the artist's main themes. Among them: alienation of modern man in the face of technoculture, as in *The Crowd,* 1979; the small gestures of everyday life as a form of spectacle, such as a couple's romantic embrace in *The Shadows,* 1980; and the nourishing, magical power of the imagination itself. This is best represented by a 1987 *Self-Portrait*. It offers an X-ray view into Folon's head, a sky-blue chamber filled with birds in flight, a place as restless, perhaps, as it is calm. The picture also hints at the identity of the artist's most familiar figure, an anonymous, urban man in a hat and raincoat. Notes Lieberman: "Folon's man is Everyman and, of course, Folon himself."

Folon's work is rooted, quite obviously, in unabashed optimism about life and the sincere belief that being a good citizen should come naturally enough for anyone, anywhere, anytime. Says Milton Glaser, one of the deans of American graphic design and Folon's longtime friend: "The most significant thing an artist can do is change our way of seeing. After viewing Folon's work, you begin to see the world as he does." That vision is compassionate and curious, and more spiritual than sentimental. It is revealed here, where fantasy teases reality, in thoughtful billets-doux to humanity. ■



Self-Portrait, 1987



The Voyage, 1979

Folon is a humorous humanist whose delicate whispers of watercolor on paper celebrate the nourishing, magical power of the imagination, as in an emblematic image of an anonymous Everyman—who turns out to be the artist himself. His pictures, compact and whimsical, evoke the childlike simplicity of Klee as they serve up the quotidian in witty visual puns that transform it into fantasy.

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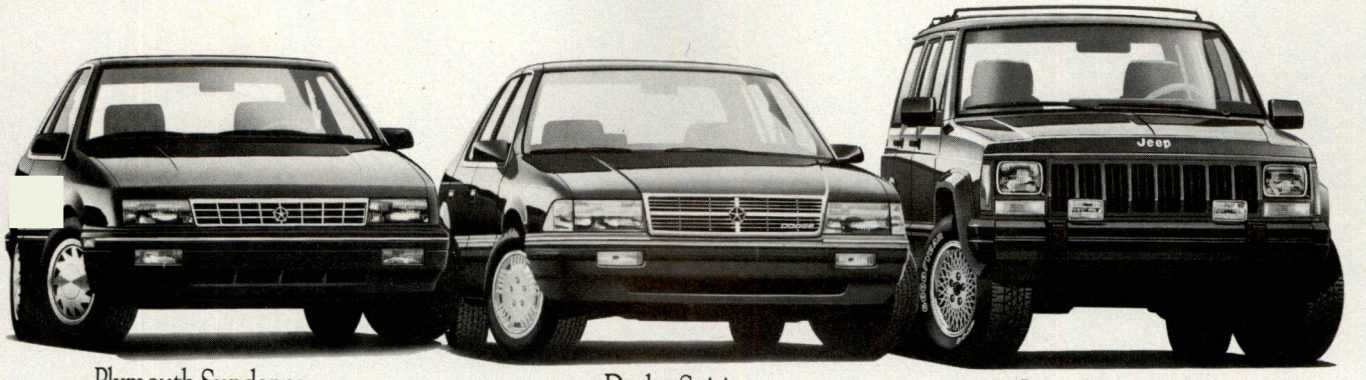
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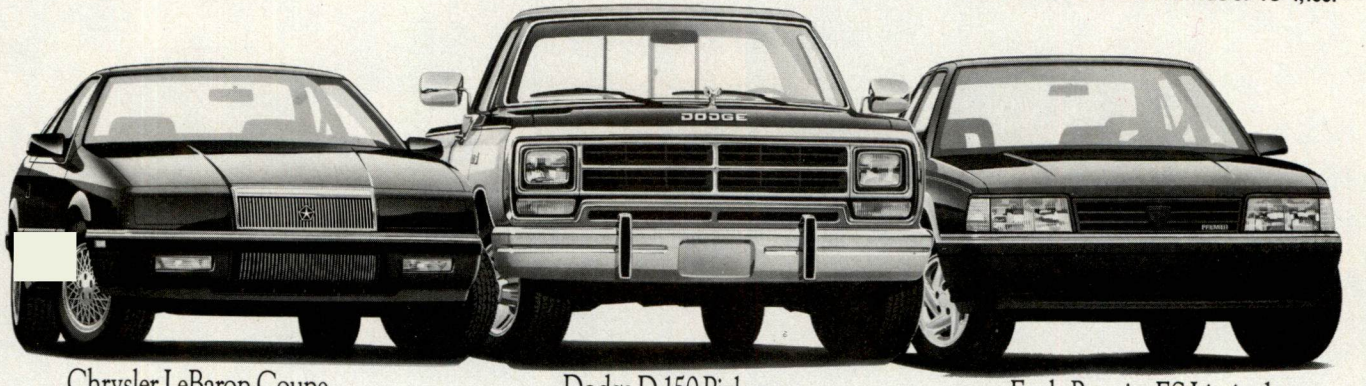
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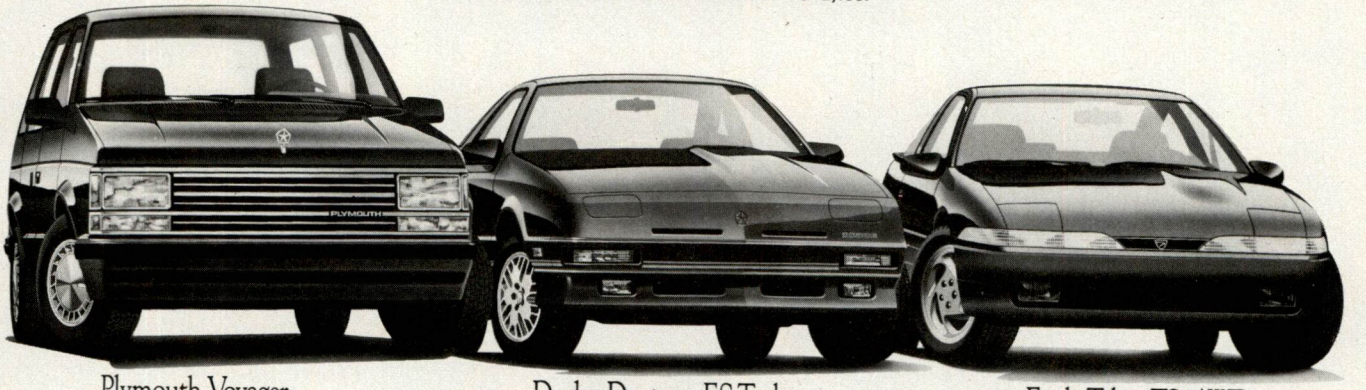
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Advantage: America.

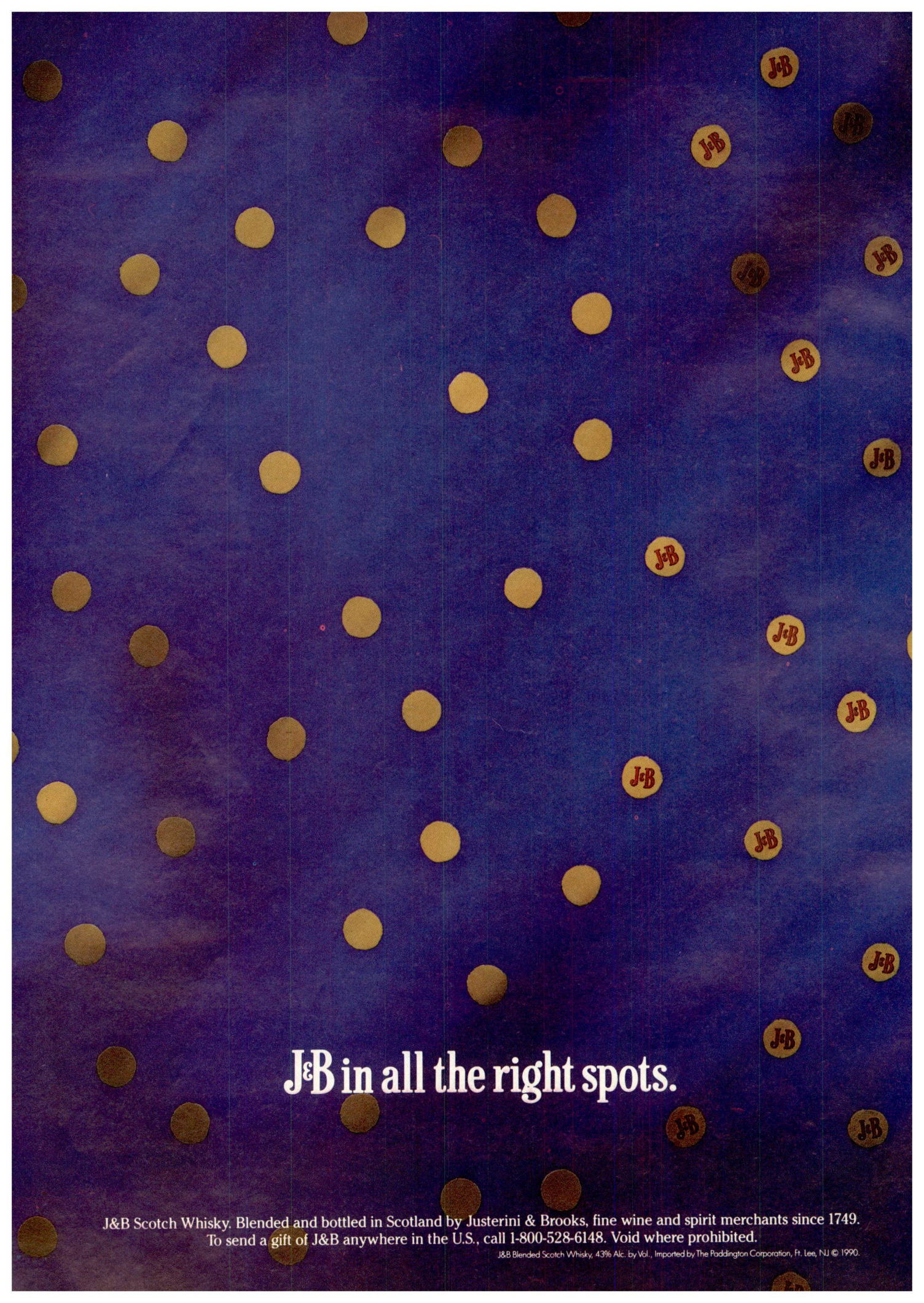
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Advantage: Chrysler.

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People

BY EMILY MITCHELL/Reported by Wendy Cole



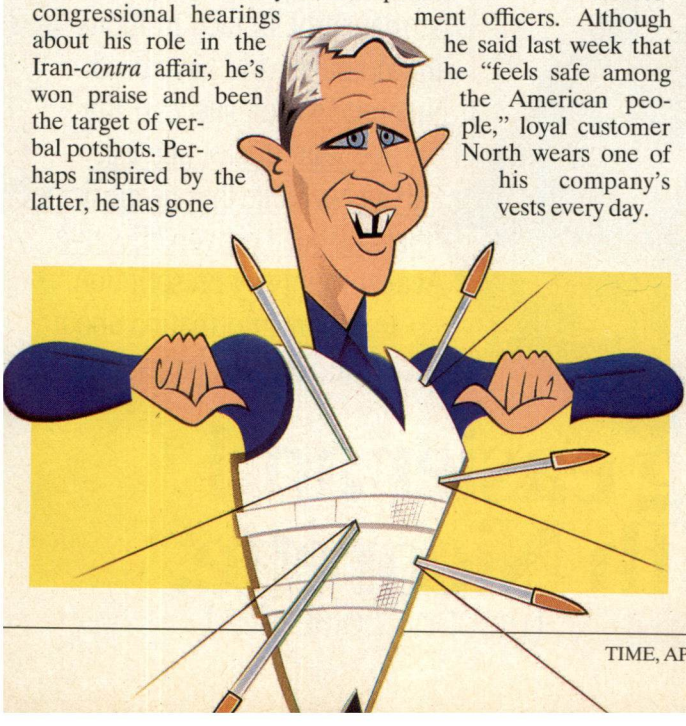
TIMOTHY WHITE—ONYX

Flying High and Mighty

Back when the B-52s were into thrift-shop clothes and beehive hairdos, they'd shimmy away in a funky club off the Atlanta highway. The joint is jumping again, re-created as *Love Shack* in their high-flying album *Cosmic Thing*, and this week it'll be joined by a new single, *Deadbeat Club*. CINDY WILSON, KATE PIERSON, FRED SCHNEIDER and KEITH STRICKLAND just wanted to write the way they always have, says Pierson, "and really have fun." Surprised by their stratospheric success, she says, "We'll be riding together in a car and hear our song on the radio and scream in disbelief."

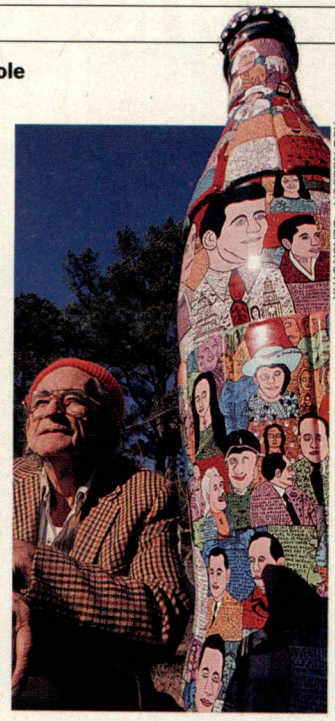
Vested Interest

The entrepreneurial spirit is one thing that **Oliver North** apparently didn't shred. Since North's testimony at congressional hearings about his role in the Iran-*contra* affair, he's won praise and been the target of verbal potshots. Perhaps inspired by the latter, he has gone into business as partner in a firm that sells body armor—more popularly called bulletproof vests—for law-enforcement officers. Although he said last week that he "feels safe among the American people," loyal customer North wears one of his company's vests every day.



Vision Art

Howard Finster paints what he sees, and what he sees comes straight from God. In 1976 he was told in a vision to "make sacred art," and the Baptist minister, now 73, has since turned out 14,288 works. "In church they used to love me as a preacher," says folk artist Finster, whose paintings are prized by museums and galleries, "but forgot my message. Now I'm preaching all over the world." In his Summerville, Ga., Paradise Garden, he's put 150 figures on a 14-ft. Coca-Cola bottle. "There's no ice water in hell," Finster warns. No Cokes either.



ROB NELSON—BLACK STAR

Pucker Up

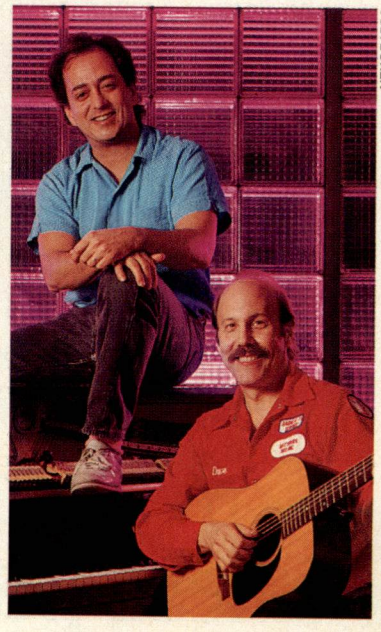
Starring in her own comedy series, **Dr. Ruth Westheimer** thought, was "crazy." But the dynamic Dr. Ruth, 61, known for dispensing sex advice on the airwaves, was won over by a script making her a college psychology professor. She imposed one condition: that she have a "romantic interest." For a scene in the first episode, to air on ABC this fall, she was ready to pretend to smooch. "I know how to fake," she admits, but when asked to pucker up for the real thing, "I was embarrassed. The whole world is going to watch me kiss. But I do like it."



ALAN LEVENSON

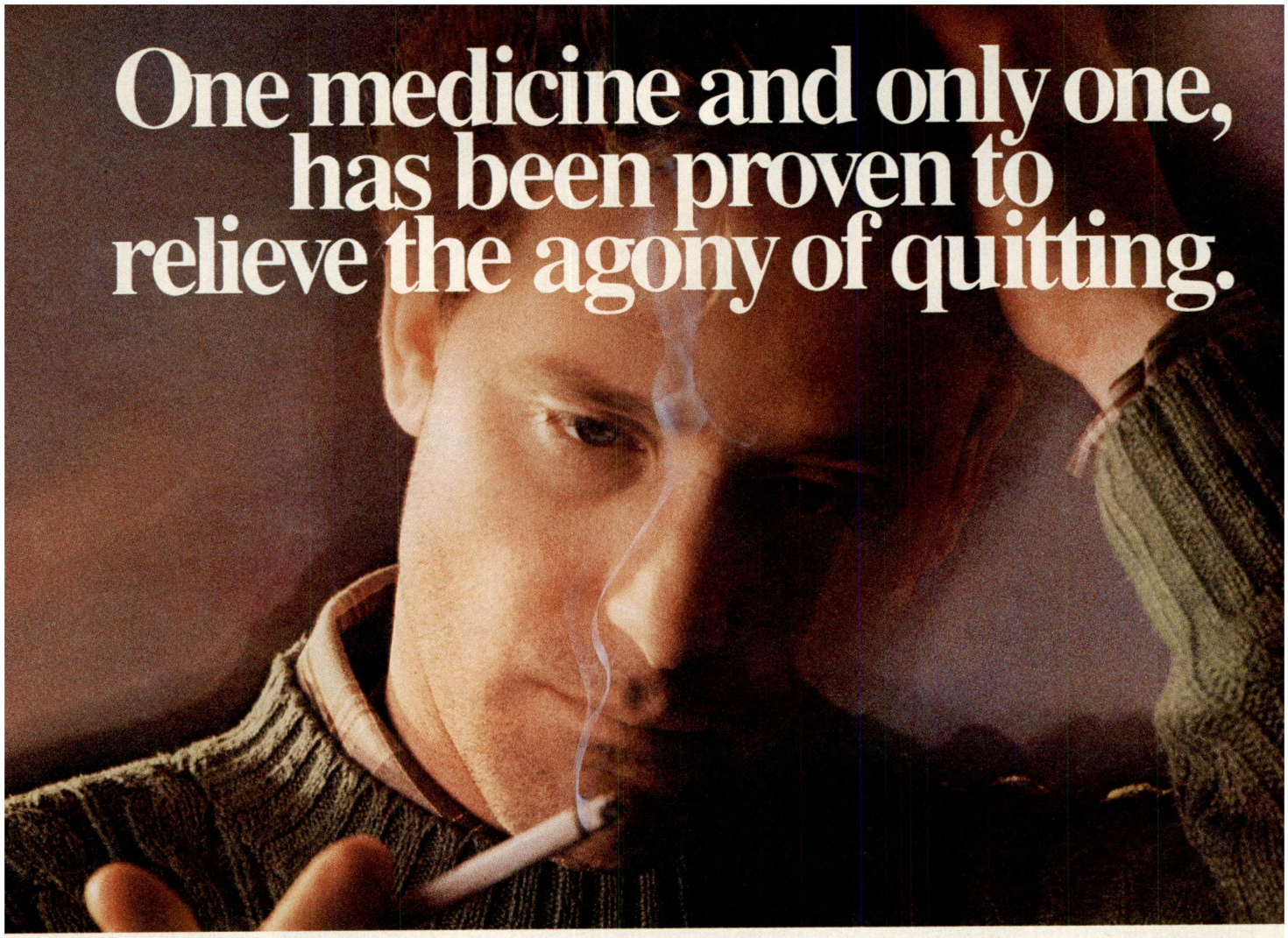
Songs to Buy For

Whistle a catchy commercial tune, and chances are it's by DAVID BUSKIN and ROBIN BATTEAU. The self-styled "Tarzans of the jingle" are TV's hottest composing team. Ditties like *Heartbeat of America* for Chevrolet and *Good Time, Great Taste* for McDonald's, among dozens of others, have transformed the mustachioed Buskin from "a good folk singer to a good folk singer with a swell co-op." Adds Batteau: "When I write a good song, it makes me cry. When I write a good jingle, it makes me want to buy real estate."



JODI BUREN

One medicine and only one, has been proven to relieve the agony of quitting.



It's not easy to quit cigarette smoking. But if you really want to stop, there is help. It's called Nicorette and it's available only with a doctor's prescription. Ask your doctor whether Nicorette is right for you. Nicorette is the only medicine proven to help make quitting less painful.

Why most attempts to quit smoking fail. Quitting may be one of the hardest things you'll ever do. The reason? Your body's addiction to nicotine. The irritability, jumpiness and anxiety you feel when you try to quit are common. Nicotine addiction can be a serious medical problem. It needs a medical solution.

Only one medicine has been proven to relieve the agony of quitting. Nicorette is the only nicotine gum. And only Nicorette has been clinically proven to help relieve the discomfort of quitting.



Properly used in a treatment program, Nicorette can double your chances of quitting permanently. In fact, millions around the world have used Nicorette to quit successfully.

See your doctor and ask about Nicorette, the one medicine that has been proven effective. Available only by prescription.

For more information about Nicorette, see next page.

Make quitting easier and less painful with Nicorette®.

(nicotine polacrilex)

Marion Merrell Dow U.S.A.

Nicorette®
(nicotine polacrilex)

PATIENT INFORMATION

Description
Nicorette is a sugar-free, flavored chewing gum that is used to help you stop smoking cigarettes. Each piece of gum contains 2 mg of nicotine which is released by chewing. The nicotine is absorbed through the lining of the mouth and enters the bloodstream.

Use
Nicorette is used as a temporary aid to help you stop smoking. Your use of Nicorette must be combined with a stop-smoking program that includes education, counseling, and psychologic support under the guidance of your doctor or dentist. This combined approach gives you a better chance of overcoming the social habits as well as the chemical (nicotine) dependency involved in smoking.

NICORETTE SHOULD BE USED ONLY WHEN YOU ARE SURE THAT YOU WISH TO STOP SMOKING CIGARETTES IMMEDIATELY AND COMPLETELY.
Nicorette, because it is a source of nicotine, may decrease the frequency and severity of nicotine withdrawal symptoms which some people experience when smoking is stopped. Some of these withdrawal symptoms are cravings for cigarettes, irritability, anxiety, difficulty in thinking, restlessness, headache, drowsiness, and stomach upset.

YOU SHOULD NOT USE NICORETTE:
1. If you are a child under age 18
2. If you are a nonsmoker
3. If you have problems (muscle or joint) with your jaw, such as TMJ
4. IF YOU ARE OR MAY BECOME PREGNANT.
5. If you are breast feeding.

Current medical opinion considers that nicotine in any form may be harmful to an unborn child. Your doctor may wish to give you a pregnancy test before prescribing Nicorette. If you decide to use Nicorette and are in the childbearing years, an effective form of birth control is advised. If you suspect that you are pregnant, you should stop using Nicorette and talk to your doctor at once. Nicotine in any form passes freely into breast milk and may be harmful to the breast-fed infant.

TO ASSESS THE BENEFIT OF USING NICORETTE AS A TEMPORARY AID TO HELP YOU STOP SMOKING COMPARED WITH THE RISK OF CONTINUING TO SMOKE CIGARETTES, YOU SHOULD CONSULT WITH YOUR DOCTOR OR DENTIST BEFORE USING THE DRUG IF YOU HAVE ANY OF THE FOLLOWING CONDITIONS:
1. Heart disease, a history of heart disease, or believe you are being treated for heart disease
2. High blood pressure, diabetes mellitus (sugar diabetes), thyroid disease, ulcers, or glandular (endocrine) conditions
3. Dental problems, dentures, or bridges (Nicorette, as with other gums, may stick to or damage dental work.)
4. Allergy or sensitivity to any of the ingredients in Nicorette.

Drug Interactions
Stopping smoking with or without the use of Nicorette may affect your response to other medications. If you are taking other drugs in addition to Nicorette, please discuss with your doctor the possible need for adjustment of those medications.

Side Effects
Side effects of Nicorette which may occur include light-headedness, nausea and vomiting, throat and mouth irritation, hiccups, and stomach upset. Most of these side effects are controlled by chewing more slowly. Other effects sometimes seen include mouth ulcers, jaw muscle ache, headaches, heart palpitations, and more than the usual amount of saliva in the mouth. If these effects occur, they usually do so during the first few days of therapy. In addition, the mechanical effects of gum chewing (any gum) may include injury to the mouth or teeth, jaw ache, and belching from swallowing air. These side effects may also be reduced by proper chewing technique. There are other less common side effects which have been reported with the use of Nicorette. Your doctor can answer questions you may have about possible side effects.

IMMEDIATELY REPORT ANY DISTURBING OR UNEXPECTED SYMPTOMS OR CONCERNS TO YOUR DOCTOR.

Drug Abuse and Dependence
You may transfer your dependence on the nicotine in cigarettes to a dependence on the nicotine in Nicorette. After you have used Nicorette for three months, the amount of gum used each day should be gradually reduced to decrease the risk of nicotine dependence, so that before the end of six months, you should have stopped using the gum. Prolonged use of Nicorette for longer than is recommended does not improve your chances of quitting the smoking habit.

THE USE OF NICORETTE BEYOND SIX MONTHS IS NOT RECOMMENDED.

Overdosage
Nicotine overdosage may occur if many pieces of Nicorette are chewed at the same time or one right after the other. Risk of poisoning from swallowing the gum is small because the nicotine in Nicorette is not well absorbed from the stomach and intestines. Signs and symptoms of overdose may include nausea, increased saliva, stomach pain, vomiting, diarrhea, cold sweats, headache, dizziness, changes in hearing and/or vision, confusion, and weakness.

IF AN OVERDOSAGE OCCURS OR A CHILD CHEWS OR SWALLOWS THE GUM, CONTACT YOUR DOCTOR OR LOCAL POISON CONTROL CENTER IMMEDIATELY.

Dosage
The amount of Nicorette gum needed will vary with each person. The gum should be chewed slowly on and off for about 30 minutes whenever you feel the urge to smoke. If the gum is chewed too quickly, nicotine is released too rapidly causing some people to feel lightheaded, dizzy, or nauseated, or to have belching, hiccups, or an irritation of the mouth and throat.
Most people require 10-12 pieces per day during their first month of treatment. More or less may be needed by the individual person.

YOU SHOULD NOT USE MORE THAN 30 PIECES OF NICORETTE PER DAY.

Manufactured by Aktiebolaget Leo, Helsingborg, Sweden for
MERRELL DOW PHARMACEUTICALS INC.
Cincinnati, Ohio 45215, U.S.A.

Merrell Dow

Nicorette® (nicotine polacrilex)

BRIEF SUMMARY OF PRESCRIBING INFORMATION

CAUTION
Federal law prohibits dispensing without prescription.

DESCRIPTION
Nicorette (nicotine polacrilex) contains nicotine bound to an ion exchange resin in a sugar-free flavored chewing gum base. Nicotine is absorbed through the buccal mucosa when Nicorette is chewed. Each piece of Nicorette contains nicotine polacrilex equivalent to 2 mg nicotine and also contains flavors, glycerin, gum base, sodium bicarbonate, sodium carbonate, and sorbitol. Nicorette is to be used as an adjunct to smoking cessation programs. The chemical name for nicotine is (S)-3-[1-methyl-2-pyrrolidinyl) pyridine.

INDICATION AND USAGE
Nicorette is indicated as a temporary aid to the cigarette smoker seeking to give up his or her smoking habit while participating in a behavioral modification program under medical or dental supervision.

The efficacy of Nicorette as an aid to smoking cessation was demonstrated in clinical studies which showed that Nicorette gum, in comparison to control chewing gums, increased the likelihood of smoking cessation among participants in behavioral modification programs. As used in the context of this labeling, behavioral modification refers to supervised programs of education, counselling and psychologic support. The efficacy of Nicorette use without concomitant participation in a behavioral modification program has not been established.

In general, smokers who have a high 'physical' type of nicotine dependence are most likely to benefit from the use of Nicorette. The following subject characteristics are correlated with a 'physical' type of nicotine-dependence: (1) smoke more than 15 cigarettes per day, (2) prefer brands of cigarettes with nicotine levels greater than 0.9 mg/cigarette, (3) usually inhale the smoke frequently and deeply, (4) smoke the first cigarette within 30 minutes of arising, (5) find the first cigarette in the morning the hardest to give up, (6) smoke more frequently during the morning than the rest of the day, (7) find it difficult to refrain from smoking in places where it is forbidden, or (8) smoke even when they are so ill they are confined to bed most of the day.

The benefits of Nicorette use beyond three months have not been demonstrated.

CONTRAINDICATIONS
Nicorette is contraindicated in non smokers.

Nicorette is contraindicated in patients during the immediate post myocardial infarction period, patients with life-threatening arrhythmias, and patients with severe or worsening angina pectoris. (See WARNINGS.)

Also, Nicorette is contraindicated in patients with active temporomandibular joint disease.

Current medical opinion indicates that nicotine in any form may be harmful to an unborn child. Nicorette and cigarettes both contain nicotine.

Nicorette may cause fetal harm when administered to a pregnant woman.

Use of cigarettes or Nicorette during the last trimester has been associated with a decrease in fetal breathing movements. These effects may be the result of decreased placental perfusion caused by nicotine. Rare reports of miscarriages have been received, and a relationship to drug therapy as a contributing factor cannot be excluded. Studies in pregnant rhesus monkeys have shown that maternal nicotine administration produced acidosis, hypoxia and hypercarbia in the fetus.

Nicotine has been shown to be teratogenic in mice treated subcutaneously with 25 mg/kg, which is approximately 300 times the human buccal dose. Studies in rats and monkeys have not demonstrated a teratogenic effect of nicotine in doses which would occur during cigarette smoking.

Nicorette is therefore contraindicated in women who are or may become pregnant, and female patients should be advised to take adequate precautions to avoid becoming pregnant. The physician may wish to consider a pregnancy test before instituting therapy with Nicorette. If this drug is used during pregnancy, or if the patient becomes pregnant while taking this drug, the patient should be apprised of the potential hazard to the fetus.

WARNINGS
The risks of nicotine in patients with certain cardiovascular and endocrine diseases should be carefully weighed against the benefits of including Nicorette in a smoking cessation program in these patients. Specifically, patients with coronary heart disease (history of myocardial infarction and/or angina pectoris), serious cardiac arrhythmias, or vasospastic diseases (Buerger's disease, Prinzmetal-variant angina) should be carefully screened and evaluated before Nicorette is prescribed. Occasional reports of tachyarrhythmias occurring in association with the use of Nicorette have been reported; therefore, if an increase in cardiovascular symptoms occurs with the use of Nicorette, it should be discontinued.

As the action of nicotine on the adrenal medulla (release of catecholamines) does not appear to be affected by tolerance, Nicorette should be used with caution in patients with hyperthyroidism, pheochromocytoma or insulin-dependent diabetes. Cigarette smoking is felt to play a perpetuating role in hypertension and peptic ulcer disease. Therefore, Nicorette should be used in patients with systemic hypertension or peptic ulcer (active or inactive) only when the benefits of including Nicorette in a smoking cessation program outweigh the risks.

PRECAUTIONS
Nicorette should be used with caution in patients with oral or pharyngeal inflammation and in patients with a history of esophagitis or peptic ulcer.

The dosage form of Nicorette dictates that it be used with caution in patients whose dental problems might be exacerbated by chewing gum. In such patients prior dental evaluation may be advisable.

Nicorette is sugar-free and has been formulated to minimize stickiness. As with other gums, however, the degree to which Nicorette may stick to dentures, dental caps or partial bridges may depend on the materials from which they are made and other factors such as amount of saliva produced, possible interaction with denture adhesives, denture cleaning compounds, dryness of mouth due to other causes and salivary constituents. Should an excessive degree of stickiness to dental work occur, there is the possibility that as with other gums, Nicorette may damage dental work; if this should occur, the patient should discontinue its use and consult a physician or dentist.

The sustained use of Nicorette by ex-smokers is not to be encouraged because the chronic consumption of nicotine is toxic and addicting. The physician must, however, weigh the relative risks of a possible return to smoking versus continued, long-term use of the gum.

Information for Patients: The patient instruction sheet is attached at the end of the professional labeling text. It is intended for detachment by the pharmacist and inclusion in the package of Nicorette dispensed to the patients. It contains important selected information on patient selection, risks and adverse effects and instructions on how to use Nicorette properly.

Drug Interactions: Smoking cessation, with or without nicotine substitutes, may alter response to concomitant medication in ex-smokers. Smoking is considered to increase metabolism and thus lower blood levels of drugs such as phenacetin, caffeine, theophylline, imipramine and pentazocine, through enzyme induction. Cessation of smoking may result in increased levels of these drugs. Absorption of glutethimide may be decreased, and the "first pass" metabolism of propoxyphene may be decreased by smoking cessation. Other reported effects of smoking, which do not involve enzyme induction, include reduced diuretic effects of furosemide and decreased cardiac output, and increased blood pressure with propranolol, which may also relate to the hormonal effects of nicotine. Smoking cessation may reverse these actions.

Both smoking and nicotine can increase circulating cortisol and catecholamines. Therapy with adrenergic agonists or with adrenergic blockers may need to be adjusted according to changes in nicotine therapy or smoking status.

Carcinogenesis, Mutagenesis, Impairment of Fertility: Nicotine was not mutagenic in the Ames *Salmonella* test.

Literature reports indicate that nicotine is neither an initiator nor a tumor-promoter in mice. There is inconclusive evidence to suggest that continine, an oxidized metabolite of nicotine, may be carcinogenic in rats. Cotinine was not mutagenic in the Ames *Salmonella* test.

Studies have shown a decrease of litter size in rats treated with nicotine during the time of fertilization.

Pregnancy: Pregnancy Category X. (See CONTRAINDICATIONS.)

Nursing Mothers: Nicotine passes freely into the breast milk. Because of the potential for serious adverse reactions in nursing infants from nicotine, a decision should be made whether to discontinue nursing or to discontinue the drug, taking into account the importance of the drug to the mother.

Pediatric Use: Safety and effectiveness in children and adolescents who smoke have not been evaluated.

ADVERSE REACTIONS
Adverse reactions reported in association with the use of Nicorette include both local effects and systemic effects representing the pharmacologic action of nicotine. Rare reports of an apparent severe allergic reaction have been received.

Local side effects: Mechanical effects of gum chewing include traumatic injury to oral mucosa or teeth, jaw ache, and eructation secondary to air swallowing. These side effects may be minimized by modifying chewing technique. Oral mucosal changes such as stomatitis, glossitis, gingivitis, pharyngitis, and aphthous ulcers, in addition to changes in taste perception, can occur during smoking cessation efforts with or without the use of Nicorette.

Systemic side effects: Although the systemic effects seen in trials were generally similar, the reported frequency of adverse drug effects was highly variable, as illustrated by the variation observed in adverse event incidences estimated from the results of two well controlled studies (one performed in the United States, and the other in England) designed to evaluate the safety and efficacy of Nicorette. (See table, below.) Given this variability, the table can be used only as an indication of the relative frequency of adverse events reported in representative clinical trials. It can not predict expected incidences of these effects during the course of usual medical practice.

Treatment Emergent
Symptom Incidence for the 2 mg Gum

	U.S.		British	
	Drug	Placebo	Drug	Placebo
Number of Subjects Reporting	94	95	58	58
Percent of Subjects Reporting				
Autonomic				
Excess Salivation	2.1	0.0		
CNS				
Insomnia	1.1	1.1		
Dizziness/Light-headedness	2.1	2.1	19.0	13.8
Irritable/Fussy	1.1	1.1		
Headache	1.1	5.3	24.1	29.3
Gastrointestinal				
Nonspecific GI Distress	9.6	6.3		
Eructation	6.4	1.1		
Indigestion			41.4	20.7
Nausea/Vomiting	18.1	4.2	31.0	15.5
Reactions Referable to Mouth, Throat, Jaw, or Teeth				
Mouth or Throat Soreness	37.2	31.6	56.9	53.4
Jaw Muscle Ache	18.1	9.5	44.8	44.8
Others				
Anorexia	1.1	1.1		
Hiccups	14.9	0.0	22.4	3.4

The only potentially serious systemic adverse effect observed among the 152 patients evaluated in the controlled clinical trials used to support the efficacy of Nicorette was cardiac irritability: a patient displayed what may have been nicotine-induced, but reversible, atrial fibrillation. Cardiac irritability is a well known consequence of cigarette smoking.

A 46-year old male patient participating in a clinical trial of Nicorette was reported to have developed nicotine intoxication requiring his hospitalization. After 4 days, he was discharged, fully recovered. He died suddenly one month later. Nicorette was not used during this one-month interval. The relationship of the patient's death to his prior treatment is undetermined.

Since the marketing of Nicorette in the U.S., reports of several other deaths and reports including myocardial infarction, congestive heart failure, cerebrovascular accident and cardiac arrest have been received. A cause and effect relationship between these reports and the use of Nicorette has not been established.

In addition to the reported effects listed above, the following events have been reported: *CARDIOVASCULAR*–edema, flushing, hypertension, palpitations, tachyarrhythmias, tachycardia; *CNS*–confusion, convulsions, depression, euphoria, numbness, paresthesia, syncope, tinnitus, weakness; *DERMATOLOGIC*–erythema, itching, rash, urticaria; *GASTROINTESTINAL*–alteration of liver function tests, constipation, diarrhea; *RESPIRATORY*–breathing difficulty, cough, hoarseness, sneezing, wheezing; *OTHER*–dry mouth, systemic nicotine intoxication.

Rare reports of miscarriages have been received, and a relationship to drug therapy as a contributing factor cannot be excluded.

DRUG ABUSE AND DEPENDENCE
Dependence on the use of Nicorette gum has been reported. Such dependence may result from transference to Nicorette of tobacco-based nicotine dependence. The use of Nicorette beyond three months has not been demonstrated to increase the smoking cessation rate. Use beyond 3 months should be discouraged. To minimize the risk of dependence, after 3 months' usage, patients should be encouraged to gradually withdraw the next 3 months or stop gum usage altogether. (See DOSAGE AND ADMINISTRATION.) In patients who have used the gum for longer periods, gradual withdrawal should be instituted. (See PRECAUTIONS).

OVERDOSAGE
Overdosage could occur if many pieces were chewed simultaneously or in rapid succession. Risk of poisoning by swallowing the gum is small because absorption in the absence of chewing is slow and incomplete. The consequences of overdose will most likely be minimized by the early nausea and vomiting known to occur with excessive nicotine intake. However, toxic systemic effect may occur. Should an overdose occur, the symptoms would be those of acute nicotine poisoning. Symptoms and signs include nausea, salivation, abdominal pain, vomiting, diarrhea, cold sweat, headache, dizziness, disturbed hearing and vision, mental confusion and marked weakness. Faintness and prostration will likely ensue and hypotension may occur; breathing is difficult; the pulse may be rapid, weak and irregular; circulatory collapse may be followed by terminal convulsions. Death may result within a few minutes from respiratory failure caused by paralysis of the muscles of respiration.

The oral LD_{50} for nicotine in rodents varies with species but is in excess of 24 mg/kg. Death in rodents was due to respiratory paralysis. The oral minimum lethal dose of nicotine in dogs is greater than 5 mg/kg. The oral minimum lethal dose for nicotine in human adults is 40-60 mg.

Under no circumstances should Nicorette be used in children.

TREATMENT OF OVERDOSAGE
In view of the lack of actual experience in the treatment of Nicorette overdose, the procedures recommended are those that have been suggested for the treatment of acute nicotine poisoning.

If emesis has not occurred, it should be induced with ipecac syrup in conscious patients. A saline cathartic will speed gastrointestinal passage of the gum. In unconscious patients with a secure airway, gastric lavage with a wide-bore tube followed by suspension of activated charcoal will aid in nicotine removal. Mechanical ventilation for respiratory paralysis may be necessary in severe nicotine poisoning. Hypotension and/or cardiovascular collapse may occur and should be treated vigorously.

HOW SUPPLIED
Nicorette is available in 2 mg (beige) square chewing pieces, packaged in child-resistant blister strips of 12 chewing pieces per strip with 8 strips per box. Each chewing piece contains nicotine polacrilex equivalent to 2 mg nicotine. Boxes of 96 chewing pieces, 2 mg (NDC 0068-0045-55). Store at room temperature, below 86°F (30°C). Protect from light.

Product Information as of September, 1988

Manufactured by Aktiebolaget Leo, Helsingborg, Sweden for
MERRELL DOW PHARMACEUTICALS INC.
Cincinnati, Ohio 45215, U.S.A.

Merrell Dow

Newsroom Homophobia

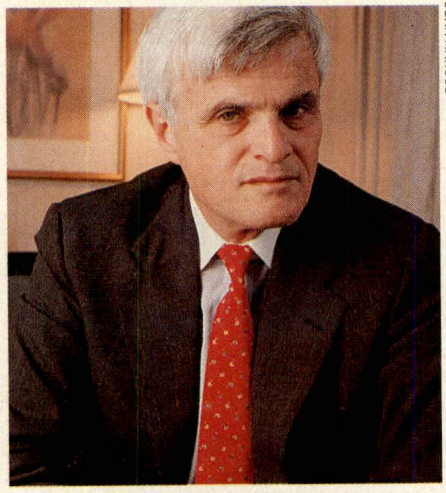
A survey and book examine coverage of gay issues

By ELLIS COSE

Some editors were outraged when the American Society of Newspaper Editors asked members to post information about a survey of gay and lesbian journalists. "Will the next item on the bulletin board be for 'prostitute journalists' or 'cocaine journalists'?" mocked one. Last week, as several hundred ASNE members arrived in Washington for their four-day annual meeting, the organization released the results of its survey. While most of the more than 200 respondents felt their employers were tolerant of gays, they reported widespread homophobia in the newsroom. They also judged their newspapers' coverage of gay-related issues to be mediocre and found management uninterested in hearing their ideas about improving it.

Such indifference does not necessarily imply conscious hostility to homosexuals. Some editors, for example, simply assume that gay and lesbian journalists are too scarce to be important. "In this newsroom there're so few of them, they're not a factor," said Norman Bell, managing editor of the Tacoma *Morning News Tribune.* Others decline to acknowledge gay staffers or solicit their views for fear of seeming discriminatory or of violating their privacy.

Yet many editors do not shrink from covering issues that involve racial minorities or seeking input on those questions from their black, Hispanic or Asian staffers. One difference between the roles of racial minorities and homosexuals in the news business, of course, is that the ethnic groups are highly visible, while many gays remain closeted. Another difference concerns editorial attitudes: though most news organizations have accepted the importance of racial coverage, issues of concern to gays still engender widespread discomfort.



JOAN MARCUS

Editor Aarons seeks sensitive coverage

Lifting the curtain on taboo areas.

After the *Contra Costa Times* in Walnut Creek, Calif., gave front-page display to San Francisco's 1989 gay freedom-day parade, copy editor Bill Walter declared in a memo, "Bad things, disgusting things, inhuman things happen ... But we don't have to describe every naked person, or show a photo of every dead body." The message was clear: "disgusting" things are better left off the front page. That is a dangerous mind-set for a journalist. Yet that spirit has permeated coverage of gay issues in general—and of AIDS in particular.

James Kinsella, author of *Covering the Plague: AIDS & the American Media* (Rutgers University Press; $22.95) aptly catalogs journalism's sins in this area. He faults newspapers for serving up vague gibberish about the exchange of "bodily fluids" instead of explaining AIDS transmission in easily understood terms. He criticizes the gay press for tiptoeing around the story initially and—in at least one case—for focusing on a featherbrained medical-conspiracy angle. He condemns the TV networks for using fuzzy, ambiguous language. He raps the minority press for largely ignoring the story, and the newsmagazines for coming to it late.

Eventually AIDS affected so many people, including journalists, that the story became unavoidable. Even then, a certain amount of distortion has remained: much recent coverage gives the impression that the disease is rampant among children (who actually make up only 2% of those afflicted), that it has become a "minority" disease (white gay males remain the largest single affected group), or that it is "on the wane" (a highly dubious proposition).

Interestingly, ASNE's respondents thought their papers were now doing a good job on AIDS coverage. Says Leroy Aarons, an acknowledged gay who is senior vice president for news of the Oakland *Tribune* and director of ASNE's survey: "AIDS served to lift the curtain on a previously taboo area of our society." It also underlines the problem of intelligently covering other taboos or invisible subjects—ranging from domestic violence to inner-city addiction—particularly when they are veiled because journalists and readers would rather not see them. ■

Milestones

BORN. Marissa Eve Ayala, conceived by her parents **Mary** and **Abe Ayala** to serve as a bone-marrow donor for their daughter **Anissa,** 18, who has leukemia; in West Covina, Calif. Weight: 6 lbs. 4 oz. Ethicists have questioned the morality of deliberately creating one child to save another. Tests show that the baby's bone marrow is compatible with her sister's, and a transplant could be performed in six months.

DIED. Sarah Vaughan, 66, legendary jazz singer whose operatic flair earned her the title the Divine One; of cancer; in Los Angeles. Vaughan's bebop and scat singing complemented her remarkable range and smooth phrasing. Working with such arrangers as Quincy Jones, Vaughan had hit songs including *It's Magic, Send In the Clowns* and *If You Could See Me Now.* Her style influenced Anita Baker and Rickie Lee Jones, among others.

DIED. Edward Carlson, 78, former bellhop who became CEO of the hotel and airline chain UAL, Inc. and chairman of the successful 1962 Seattle World's Fair; in Seattle. As head of Western International Hotels when it merged with United Airlines in 1970, he reorganized the failing airline and temporarily restored its profitability. He is credited with the inspiration for building Seattle's landmark Space Needle as the centerpiece for the World's Fair.

DIED. Arthur Houghton Jr., 83, former president of Steuben Glass; in Venice, Fla. From 1933 to 1973, Houghton's imaginative creations for tableware, cocktail sets and ornamental pieces made Steuben one of the world's most highly regarded names in crystal design.

DIED. Louis Nelson, 87, veteran New Orleans trombonist; following a car accident; in New Orleans. He played with many of the Crescent City's greats, including Sidney Desvigne, George Lewis and Kid Thomas Valentine. Equally adept at the brash tailgate style and silky-smooth ballads, Nelson was an original member of the Preservation Hall band.

DIED. Cyrus Rowlett (C.R.) **Smith,** 90 rough-and-ready pioneer of air travel; in Annapolis. In 1934 he helped found American Airlines, and headed it for some 3(years. He once described his peers in avia tion as "people whose vision doesn't stop at the horizon."

Grab Your Goggles, 3-D Is Back!

Eye-popping realism gives new life to an old craze

By PHILIP ELMER-DEWITT

The first three-dimensional-movie craze earned the technology a bad reputation that has lasted for decades. The hundred or so 3-D feature films and short subjects produced between late 1952 and early 1954 rarely rose above the spear-chucking *Bwana Devil* or the gore-splattered *Creature from the Black Lagoon.* But what really killed 3-D in the '50s—and in subsequent revivals in the '60s, '70s and '80s—was not so much bad movies as bad 3-D. Even classics like *Kiss Me Kate* and Hitchcock's *Dial M for Murder* have effects that when seen in 3-D, tend to pull the eyeballs in directions that nature never intended. Successful 3-D movies require that two stereoscopic images be kept scrupulously aligned and in focus, and this technological challenge has virtually overwhelmed a generation of filmmakers.

Until now. Exploiting advances in computer graphics, liquid-crystal technology and extra-wide-format films, a Canadian company has developed a new technique that makes objects pop out of the screen with unprecedented clarity and brilliance and causes no eyestrain. The new technology, called Imax Solido, was created by Imax Systems, the Toronto-based company that makes movies to be shown on screens the size of six-story buildings. The first Solido film, a largely computer-generated extravaganza called *Echoes of the Sun* that was co-produced by the Japanese firm Fujitsu, opened last week at the Fujitsu Pavilion at Expo '90, an international fair in Osaka. Showgoers queued up for a chance to park themselves in front of a huge wraparound screen, strap on a pair of battery-powered goggles and enter a startlingly realistic 3-D world.



SHIGEO KOGURE

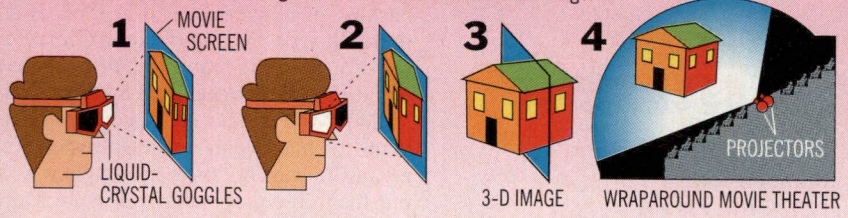
Osaka viewers see spectacular effects on a wraparound screen

But it probably won't be coming soon to a theater near you.

The goggles are the key to the Solido system. Taking the place of the funny cardboard-frame glasses used to watch old-style 3-D movies, the eyewear creates a stereoscopic effect by using lenses filled with liquid-crystal diodes, the same material that forms the numerals on the face of a digital wristwatch. When jolted by an electrical current, an LCD lens can instantly switch from being essentially transparent to being totally opaque—like an efficient electronic shutter. Controlled by an infrared signal broadcast from the projection

HOW IT WORKS

When a person looks at an object, each eye sees a flat image at a slightly different angle from the other. The brain combines these two images into one three-dimensional image.



Imax Solido uses a double-projector system and a pair of goggles equipped with LCD lenses to create a 3-D effect. **1** First, the right-eye lens is blacked out while one projector displays the left-eye image. **2** Next, with the left-eye blacked out, the other projector shows the right-eye image. **3** As this process is rapidly repeated over and over again, the brain puts the two images together to create the illusion of three dimensions. **4** The wraparound theater enhances the illusion by putting the edges of the screen beyond the the viewer's field of view.

TIME Diagram by Joe Lertola

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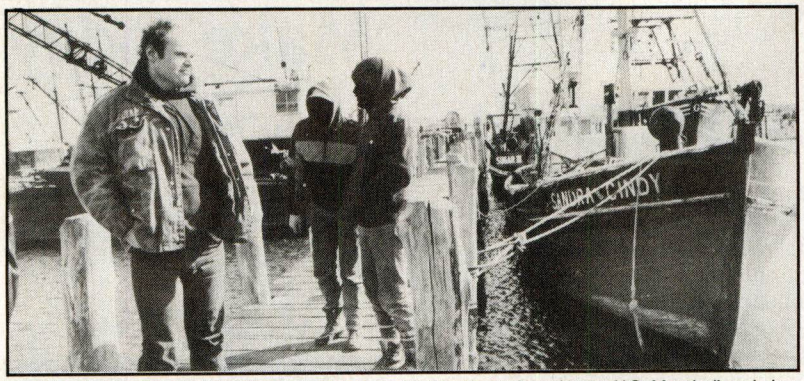
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Mark Lewis proudly displays his newly purchased fishing boat, bought at a U.S. Marshal's sale in February for only $10.

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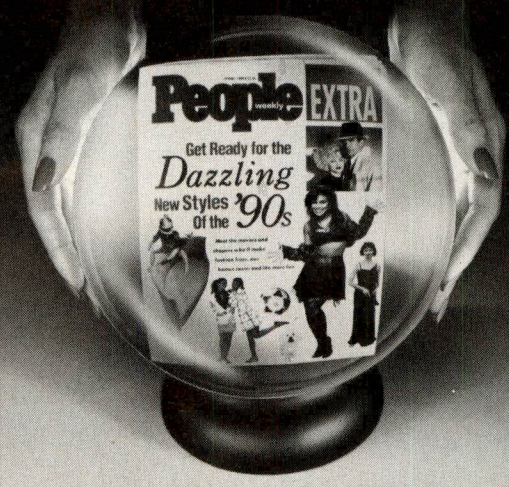
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Technology

booth, the goggles' left and right lenses open and close 24 times a second, in synchronization with a pair of Imax projectors showing first the left-eye view and then the right-eye view of any scene. The 3-D effect is unusually crisp because the projectors are extremely stable, the separation of right- and left-eye views is precise, and the movie frames are ten times as large as those of a typical 35-mm film.

But it is the wide, umbrella-shape screen that provides the real breakthrough in Solido. When the brain combines the left- and right-eye images in a conventional 3-D movie, it creates by a process known as stereopsis an artificial three-dimensional space that seems to jut out from the screen. As an object in that space approaches the viewer, it becomes larger and larger. If it gets big enough to reach the outer edges of the picture, however, it will appear to snap back to the plane of the screen, sending conflicting depth cues to the brain and destroying the 3-D illusion. The advantage of the wraparound Solido theater is that the edges of the screen are beyond the audience's field of view. "The screen seems to disappear in the peripheral vision," says Imax producer Roman Kroitor. "The picture stays right there; you can reach out and touch it."

The Solido system is just the latest in a series of advances in 3-D technologies, from laser-generated holographic images to experimental helmets equipped with tiny TV screens for each eye. There are 3-D video games, 3-D still cameras and double-lens camcorders for people who want to make their own 3-D home videos. One enterprising California firm, 3-D TV of San Raphael, markets a $189.95 "video lunch box" that includes stereoscopic goggles, a 3-D videocassette and a plug-in adapter that permits 3-D movies from the past to be shown on today's VCRs. "Interest in 3-D has never been greater," says 3-D TV founder Michael Starks, whose offerings include *Cat Women of the Moon* (1953), *Outlaw Territory* (1953) and *The Stewardesses* (1969), a lame R-rated adult film that is reputed to be the biggest-grossing 3-D movie of all time.

Are these the makings of another '50s-style 3-D movie boom? Probably not. The backlist of conventional 3-D films is still pretty limited, and titles like *It Came from Outer Space* and *Friday the 13th Part 3* have not improved with age. Imax Systems has installed a 3-D theater in Vancouver and has plans to build two more, in Galveston, Texas, and Taiwan, but there are no plans yet to put them in typical suburban malls. Moreover, as glorious as the new technology may seem today, it is likely to be perceived by an increasingly jaded public as just another gimmick. "People get used to things so fast," says Imax's Kroitor. "After a while they ask, 'Where's 4-D?' " —***With reporting by Seiichi Kanise/Osaka***

Cries of the Beloved Country

THE MIND OF SOUTH AFRICA *by Allister Sparks; Knopf; 448 pages; $24.95*

JANUARY SUN *by Richard Stengel; Simon & Schuster; 202 pages; $19.95*

MY TRAITOR'S HEART *by Rian Malan; Atlantic Monthly; 349 pages; $19.95*

By STEFAN KANFER

Three million years ago, humanity was born in East Africa. Last February it was reborn in South Africa. More than one man was liberated when Nelson Mandela stepped into the sunlight; an entire nation appealed for release from the prison of apartheid.

Allister Sparks, a white journalist, was born and raised in that prison, and his authoritative work—one of three investigations into South Africa being published just as that nation has assumed a new mor-



PETER MAGUBANE

Sparks at a Soweto march: appealing for release from the prison of apartheid

A nation that possesses many minds, most of them in conflict.

al significance—reduces previous histories to the status of antiques. His title, *The Mind of South Africa,* is a misnomer: the nation has many minds, most of them in conflict. The sharpest divisions, Sparks observes, originated in the 19th century, when immigrant Boers—the Dutch word for farmers—feuded with their English overlords in the Cape Colony. When Britain forbade slavery, the Boers' Great Trek began. Kipling caught their spirit: "His neighbours' smoke shall vex his eyes, their voices break his rest./ He shall go forth till south is north, sullen and dispossessed."

En route the trekkers were outnumbered by hostile Zulu warriors, but spears were no match for cannons. Any hope for reconciliation vanished when diamonds and gold were found in the interior. The discovery, says Sparks, produced "the watershed event in South African history. Overnight it turned a pastoral country into an industrial one, sucking country folk into the city and changing their lives." By-products of the mines included pass laws; "native" compounds that separated workers from their families; escalating categories of black, colored and European; ruthless cartels; and the world's first concentration camps, built by Britain during the Boer War of 1899-1902.

By the 1920s de facto apartheid was a feature of South African life. The poorest whites possessed something that the most prosperous blacks could never have: the vote. Subsequent governments flirted with Nazi Germany, then embraced liberal policies, but the racism endured. With all the warm pronunciations of President F.W. de Klerk, it prevails even amid the current talk of reforms.

Sparks is familiar with life in the townships and cities, but the ethos of contemporary South Africa is conveyed with even greater intensity in Richard Stengel's *January Sun.* Stengel, a TIME contributor, has the eye of a Leica and the sensitivity of a light meter. He focuses on a single day in the Transvaal town of Brits, where three men spend their separate, unequal lives. Ronald de la Rey, a white veterinarian, parrots the Boer tradition: "I think the idea of apartheid makes you more aware of the differences between people than the similarities. It's in our subconscious. But we like it that way. Everyone keeps their own identity."

For a placid taxi driver called Life, that identity means confinement to a segregated township. There, boredom and despair are as palpable as the omnipresent automobile carcasses and piles of beer cans. Jaiprakash Bhula is an educated Indian haberdasher, contemptuous of racial decrees. His question gnaws at South African policy: If whites really believed they were better, "would it be necessary to create laws guaranteeing social, monetary, and political superiority?"

Throughout, Stengel maintains a tone of cool detachment, but his epilogue contains a mordant irony: De la Rey and Bhula carry on, but on the morning of May 21, 1989, Life is stabbed to death, presumably by black men who believe the driver was "too conciliatory to the authorities." The burial occurs on a work day. "Under the state's emergency regulations, funerals like Life's cannot be held on weekends. Only a handful of people made it to the burial."

In *My Traitor's Heart,* Rian Malan, a young white South African journalist, has one major subject: Rian Malan. His intense and angry memoir offers a series of South African impressions: the author as exiled hippie in America; the author as pariah in his native land; blacks under fire, with a prominent figure of the author.

As the most personal of the books, it is in some ways the most powerful. But Malan's self-absorption obscures his extraordinary credentials. He is a relative of Daniel F. Malan, one of the architects of apartheid. Rian becomes the righteous recorder of black rage in the "charnel house" of Soweto, the largest black township created by that apartheid. Alas, the conflict of genealogy and emotion tends to produce more heat than light. In a typical episode, Malan recalls a psychopath who murdered whites with a hammer; Simon Mpungose's story "seemed to unfold like the story of a saint, deeply disturbing in its biblical parallels." This romantic notion of violence feels like a hangover from the '60s, and it has no place in a South Africa that aspires to a place in the community of civilized nations.

Yet for all of his apocalyptic outrage, Malan succeeds by making the same leap of faith as his colleagues: he too believes that South Africa is capable of change. Thus far the evidence supports them. Only a few years ago, the government in Pretoria vowed to hold the racial line forever. Today it has come to recognize the inarguable truth that underlies all three books. George Bernard Shaw uttered it long ago, when apartheid was young: "Whilst we have prisons it matters little which of us occupies the cells." ■

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Funny Girl

BACHELOR GIRLS
by Wendy Wasserstein
Knopf; 209 pages; $18.95

Wendy Wasserstein is funny. She must be funny. She won the Pulitzer Prize in 1989 for writing funny in *The Heidi Chronicles.* And in this collection of pieces, she says she's funny. She first realized this, she claims, in the second grade when she "brought down the classroom with my comedic routines on our prospects for lunch (vegetable chop suey was a highlight)." More recent evidence is that she likes *I Love Lucy.*

Humor is often in short supply in books by writers who assert they are funny. This is not second grade, and the territory Wasserstein covers has been strip-mined by those who preceded her—Nora Ephron, Ellen Goodman and Anna Quindlen. A piece about the split between women who shave their legs and those who don't would have to come up with some dazzling insights to merit another look. Ditto painted nails, being fat or single.

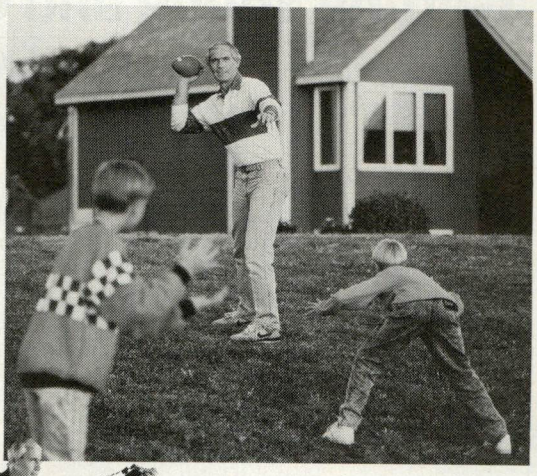
The pressure Wasserstein feels to come up with material is frequently evident. Disappointment that a weekend in Maine was not a chintz-covered, Ralph Lauren–infested affair but rather one where the couch was acrylic and the drink Diet Coke is stretched to five pages. A lunch interview with Philippe de Montebello is a struggle to win his admiration. When she drops a name he recognizes, she writes, "Once again we are on equal ground." Equal ground with the director of the Metropolitan Museum of Art? So eager for approval, she becomes the journalistic equivalent of Sally Field at the Academy Awards trilling "You like me. You *really* like me."

Wasserstein sometimes elicits pity when she is reaching for empathy. In "Jean Harlow's Wedding Night," she describes arranging a trip to Paris to be there at the same time as a banker she has been dating, then his trying to sneak off in the morning without saying goodbye. He tells her he is involved with someone else. She slips into near hysteria, making jokes (she says they are funny) about the waiter, the croissants, the plates, the Ayatullah. They part, but she calls him later in the day to have dinner at a "hilariously hip restaurant." Of course, he says no. Any greater rebuke to her fatal attraction and she might be tempted to boil the rabbit.

Wasserstein's real talent comes through in the last piece of the book, *Boy Meets Girl,* a one-act play between Dan and Molly, two New York City "professionalites." When Wasserstein is being the playwright, she is just as funny as she says. And her audience is broken up, the way they were back in second grade.

—**By Margaret Carlson**

Bob Johnson is living proof that NordicTrack can do wonders for a man's stamina.
(Not to mention his blocking and passing.)



Bob Johnson is surprised at how much energy he has. Even as a "grandfather."

He attributes his energy to sensible meals three times a day. And NordicTrack three times a week.

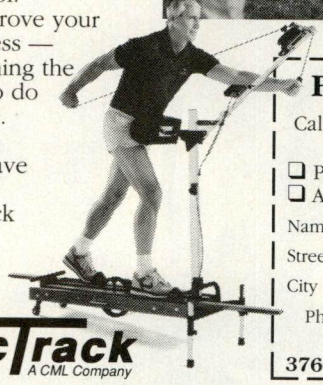
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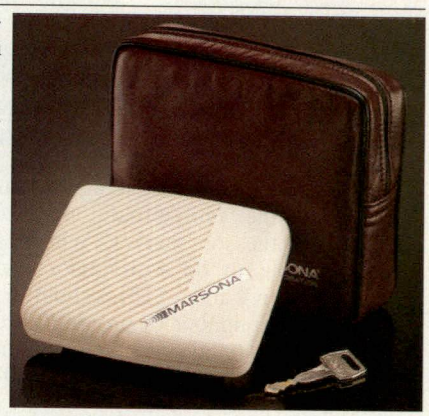


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Getting Young and Old Together

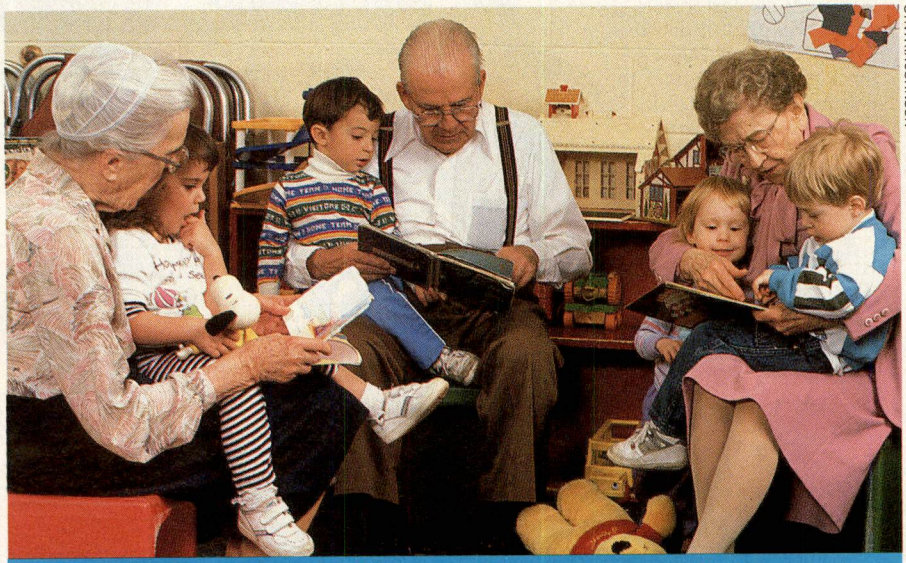
A growing number of U.S. programs forge links between the ages at a time when social patterns tend to separate them

By MELISSA LUDTKE BOSTON

Some call them the sandwich generation, that bulging demographic cohort of thirtysomethings and fortysomethings who face an onerous triple duty: caring for young children and elderly parents while holding down full-time jobs. More than one-third of the U.S. work force confronts this problem, a number that is sure to rise as the population continues to age and as more women, the family's traditional care givers, enter the job market. What's a working couple to do with junior and Granny between 9 and 5? Throughout the U.S., a growing number of programs are now aimed at stimulating contact between young and old at a time when social patterns tend to separate them.

One such effort is a day-care center for young and old alike set up by Stride Rite Corp. of Cambridge, Mass., the first private company to establish this type of facility. The $700,000 pilot program, which opened last month after three years of planning, consists of adjoining centers that allow easy mingling and interaction between 55 children, from 18 months to five years old, and 24 elders over 60. Separated only by windows and hallways, the old and the young have plenty of opportunities to visit one another. Shared activities such as cooking and birthday parties are planned by the staff, but informal get-togethers happen spontaneously. "I tell my friends what they are missing," says Eva DaRosa, a 79-year-old great-grandmother whose smile brightens whenever children are nearby.

The program was initiated by Stride Rite Chairman Arnold Hiatt, who pioneered on-site child care in the early 1970s. The center attracts half its participants from families who live near the company's corporate headquarters; the others are related to employees who contribute on a sliding, income-based scale to the annual $7,000 cost. Hiatt recruited faculty members from Boston's Wheelock College to develop a curriculum of shared activities such as storytelling and puppet plays.



CYNTHIA JOHNSON

Mutual benefits: at Messiah Village, a retirement community in Mechanicsburg, Pa., toddlers from a local day-care center are paired with residents, visiting once a week with their "special friends." The program to stimulate intergenerational contacts was launched eleven years ago

"It is a modern paradox that children are far more likely to have living grandparents but much less likely to know them well," says Fran Pratt, who directs the Center for Understanding Aging at Framingham State College in Massachusetts. Psychologists point out that old people and youngsters, whether related or not, have much to offer each other. An older person can fill a void for a child who does not have a grandparent living nearby. And companionship with a young child bolsters an elder against the isolation and loneliness that often accompany old age.

Such links also fulfill an important social function. Psychoanalyst Erik Erikson invented the term "generativity" to describe the necessary transmission of life experiences from elder to younger generations. In the 1970s, anthropologist Margaret Mead prophetically wrote that an increasing lack of contact between old and young relatives would create a need for surrogate grandparents.

Efforts to connect generations are producing a host of new programs across the U.S. Linking Lifetimes, a mentor program that brings retirees together with at-risk teenagers, is being launched in nine cities. In Omaha and seven other cities, elderly volunteers visit regularly with chronically ill children in a program called Family Friends. Generations Together, a research group based at the University of Pittsburgh, organizes phone links between older people and so-called latchkey kids, who return to empty homes after school. At the Point Park College Children's School in Pittsburgh, some preschoolers are being taught about aging by staff members, who are all over 55. The teachers use activities like planting seeds to illustrate the stages of the life cycle. The aim is to "foster a child's development of positive attitudes toward the elderly," says Cheryl Mack, program coordinator at Generations Together.

Without such personal contacts, experts say, stereotypical images emerge. A child can become afraid of older people because he thinks they are going to die. But by spending time with the elderly, kids learn to accept the frailty of the aging while discovering their strengths. In one Pennsylvania program toddlers from a local day-care center spend time with Alzheimer's patients after being read such books as *Grandpa Doesn't Know It's Me.* Youngsters also learn that death is a natural component of life. Generations Together, for example, is developing a curriculum dealing with separation and loss. It will help children cope not only with an elder companion's demise but also with other issues, like their parents' divorce or the loss of a favorite pet.

Such approaches do more than weave a few strangers' lives together or provide a convenient way to occupy idle hours. They can begin to change the way distant generations feel about one another, which has important practical implications for an aging society. Some public-policy groups are already starting to think "intergenerationally" in seeking solutions to community problems. Generations United, for example, a Washington-based coalition of national organizations representing old and young constituents, works to push goals of mutual interest to the two age groups. The real test of these efforts will come during the next few decades, as the baby boomers turn geriatric and the rest of society has to bear the enormous burden of caring for them in what is likely to be an era of dwindling resources. At that point, the mutual understanding gained from present-day initiatives may provide a crucial buffer to bitter generational conflicts. ■



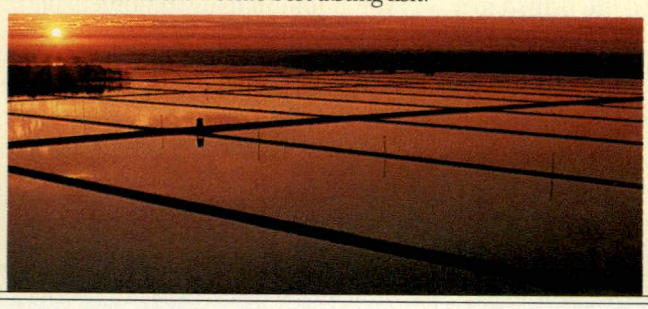
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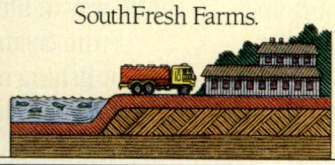


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Home Is Where The Venom Is

Domestic life takes a drubbing in TV's anti-family sitcoms

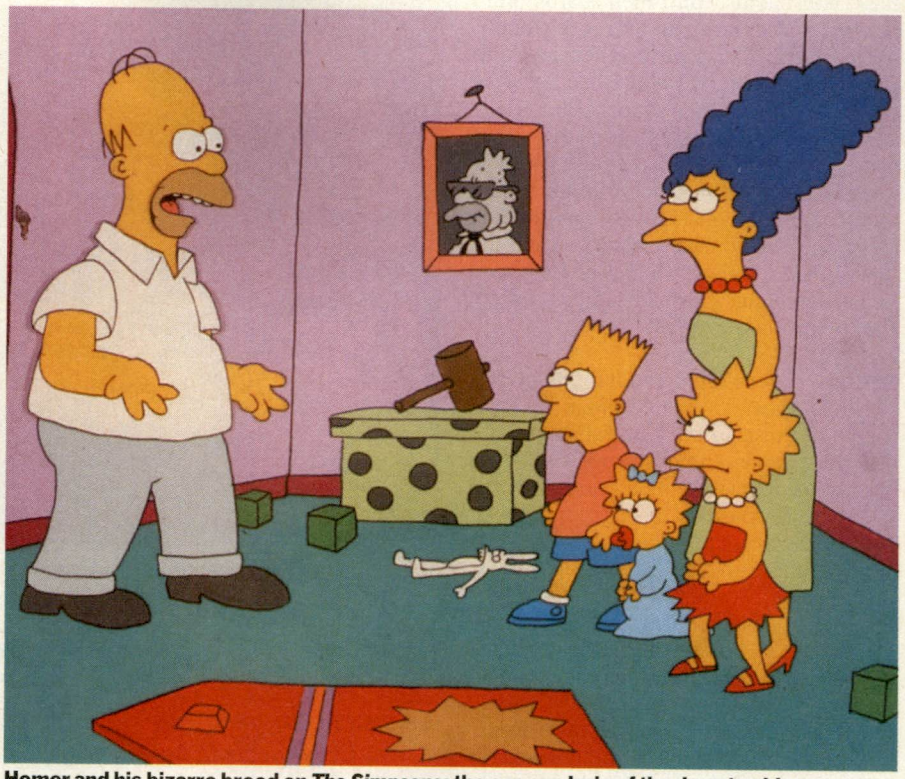
By RICHARD ZOGLIN

"Ah, home sweet hell." It's Al Bundy of *Married . . . With Children* arriving at his doorstep, which in fact does resemble the gates to Dante's Inferno. Conversation in the Bundy family is a torrent of verbal abuse. "This is a home, not a restaurant," insists Al's wife Peg, after he demands his supper. "I know," he snaps. "If it was a restaurant, we'd have a clean bathroom."

The Conner household on *Roseanne* is hardly an abode of peace and contentment either. Mom has a constant chip on her shoulder—about her job, her housework, her nagging kids. "They're all mine," she says in a moment of reflection after a Thanksgiving get-together. "Of course, I'd trade any one of them for a dishwasher."

Now comes TV's latest hit family, *The Simpsons.* Here the characters are animated but still a grungy, bickering lot. "Sometimes I think we're the worst family in town," says Dad gloomily. His solution is to drag his brood to a therapist, who hooks them up to electrodes as part of behavior-modification treatment. Result: they start giving one another electric shocks.

After nearly four decades of sweet, wholesome TV clans, from *Father Knows Best* to *The Cosby Show,* a new clutch of anti-family sitcoms is exploring the squalid underbelly of domestic life. And making a killing. ABC's *Roseanne* is the No. 1–rated show on TV. *The Simpsons,* on the Fox network, is a smash mid-season success; it and Fox's *Married . . . With Children,* airing back-to-back on Sunday nights, have jumped into the Nielsen Top 20, an unprecedented triumph for TV's fourth network.



HOWARD FRANK ARCHIVES

Homer and his bizarre brood on *The Simpsons:* the camaraderie of the downtrodden

"Sometimes I think we're the worst family in town."

The anti-family shows aren't against the family, exactly, just scornful of the romantic picture TV has often painted of it. Was Dad once a pillar of wisdom and understanding? In the new shows he is either a slob or an oaf. Did Mom used to be the nurturing guardian of home and hearth? Now if she even knows how to put a roast in the oven, she could sear it with her sarcasm. TV kids have always been mischievous, but now they are bratty and disrespectful as well. Standards of decorum have gone out the window too: Dad burps out loud at the dinner table; a kid snaps photos of his mom shaving her underarms.

Why is America tuning in? One reason may be the refreshing dose of real-world grit these shows provide. "With Ozzie and Harriet, everyone felt guilty," says Barbara Cadow, a psychologist at U.S.C. School of Medicine. "With these new programs, we see that we're doing all right by comparison." Alvin Poussaint, associate professor of psychiatry at Harvard Medical School and an adviser to *The Cosby Show,* suggests that these shows, with their exaggerated nastiness, are an "outlet for people who feel, yeah, they really would like to knock the kid in the head, but they know it's wrong."

TV family comedies, of course, have always depended on domestic discord and jokey put-downs for humor. A few of them,

TV families have grumbled and fought before. But the Bundys on *Married . . . With Children* take nastiness to new heights. While the Conners of *Roseanne* are less gruesome, Mom's whiny wisecracks are a cry of rebellion against the role assigned to women.



JOE VILES



DANIEL WATSON

like *The Honeymooners* and *All in the Family,* have focused on grumbling working-class households. But their barbs were rarely aimed at the institution of the family. Archie Bunker may have railed at Edith and argued politics with Meathead, but the domestic bonds remained rock solid. Roseanne's whiny wisecracks, on the other hand, protest a setup that forces Mom to work during the day to help win the bread, then come home at night to cook it. The message, writes Barbara Ehrenreich in the *New Republic,* is that "Mom is no longer interested in being a human sacrifice on the altar of 'pro-family values.' "

Those values are shredded completely in *Married . . . With Children*. The matriarch of this clan is a slothful shrew who never does a lick of housework. Dad is an insensitive lout who picks his toes and spends his happiest hours on the toilet seat. The oldest daughter is a floozy who can barely count to ten. Their repartee is drenched with venom. (Al wants to take Peg bowling for her birthday. "Come on," he says, "this'll be the first birthday you *begin* in an alley.") Gross and funny in roughly equal measure, *Married . . . With Children* turns the TV family into a vicious cartoon.

The Simpsons, a real cartoon, is actually much closer to recognizable human life. Family members are not depraved or offensive, just a little dim. Homer, the father, works at the local nuclear power plant and gets no respect at home. His wife Marge, her blue hair piled into an otherworldly beehive, is a scratchy-voiced simp. The only real live wire is Bart, a bratty fourth-grader whose vocabulary includes such bons mots as "Eat my shorts." Created by cartoonist Matt Groening, *The Simpsons* has a good deal of savvy wit. One episode, in which Bart is mistakenly labeled a genius, sharply parodies a class for gifted children, where a "learning coordinator" leads the grade schoolers in discussions about free will and paradox. *The Simpsons,* however, is strangely off-putting much of the time. The drawings are grotesque without redeeming style or charm (characters have big beady eyes, beaklike noses and spiky hair), and the animation is crude even by TV's low-grade standards.

Still, ratings keep going up, and *Simpsons* merchandise, from T shirts to key chains, is flying off the shelves. Obviously, these raffish losers have struck a chord. Maybe it is because, for all their grumbling, this misfit family sticks together in the end: the camaraderie of the downtrodden. There's something oddly touching about the sight of five Simpsons lurking in the bushes, spying on neighbors in their living room. "They actually enjoy talking to each other!" marvels Marge. Or of Homer encouraging his son before sending him off to class: "One day, you may achieve something that we Simpsons have dreamed about for generations. You may outsmart someone." In the world of the anti-family show, parents learn to think small. ■



JOAN MARCUS

Happy but fleeting moments of tenderness: Colson, Ball, Deanna Du Clos and Crumb

Romance, Mostly Misguided

ASPECTS OF LOVE *Music by Andrew Lloyd Webber*
Lyrics by Don Black and Charles Hart

By WILLIAM A. HENRY III

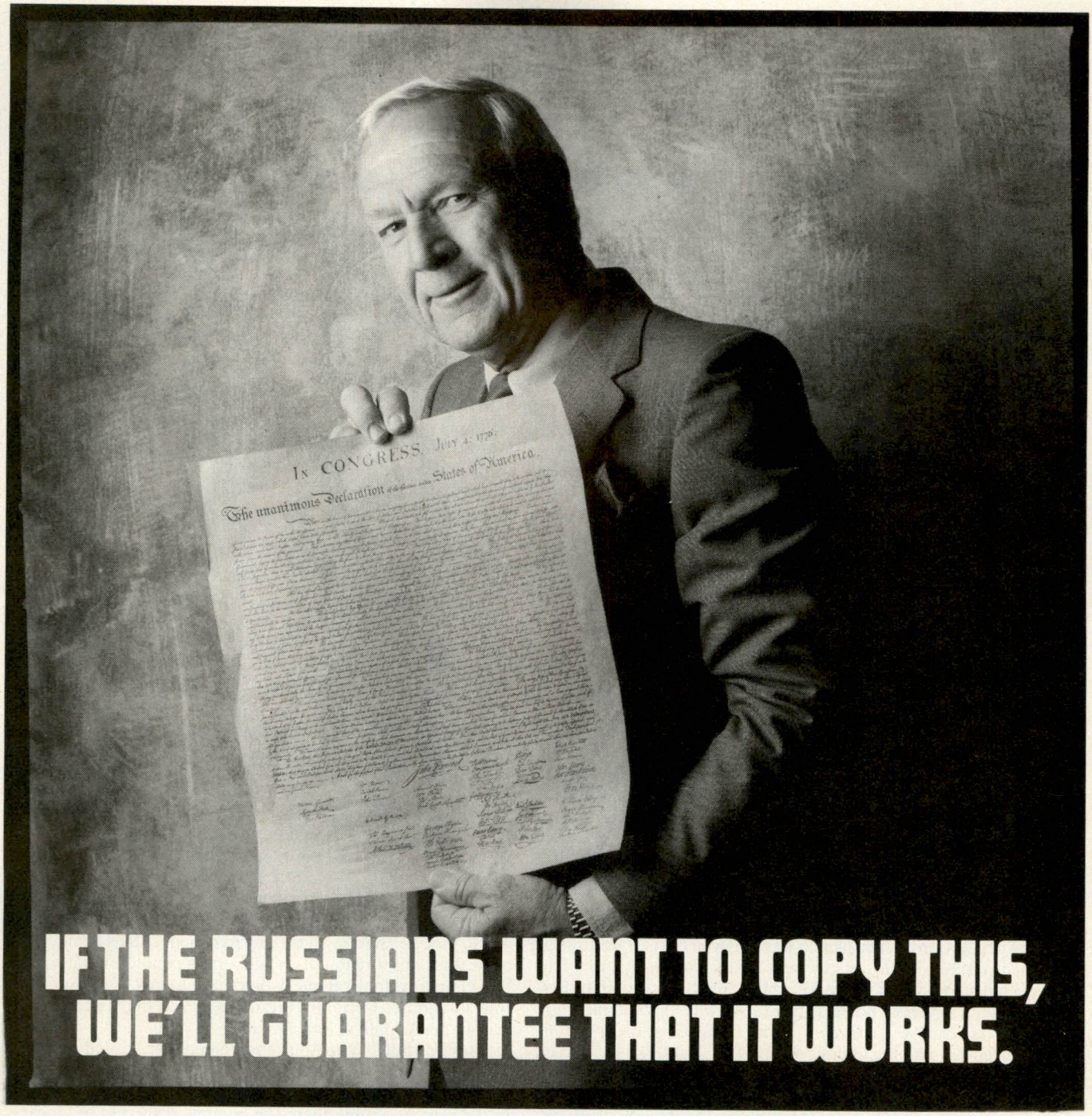
Not every musical is gutsy enough to make its big ballad the first words an audience hears, or to introduce both its other showstopper tunes within the next 20 or so minutes. But then few composers have the confidence in the spectator—or maybe it's just the chutzpah—to recycle the same few melodies over and over, in endless allusive variations, for nearly three hours.

That nervy economy of means is the trademark of Andrew Lloyd Webber, who assumes—correctly, to judge from box-office receipts—that theatergoing adults take delight in hearing a catchy tune repeated as often as Top 40 songs on teenybopper radio stations. In lesser hands (for that matter, in his own earlier shows), this repetition can suggest paucity of imagination or a kind of melodic stinginess. But in *Aspects of Love,* the London hit that opens on Broadway this week, the technique works: the tunes bear repeating, and the repetition binds a diffuse story of mostly misguided romance. The impact is haunting.

Past Lloyd Webber extravaganzas concerned animals *(Cats),* machines *(Starlight Express),* wraiths *(The Phantom of the Opera),* icons *(Evita)* and divinities *(Jesus Christ Superstar).* His delicate and intimate new work, adapted from a 1955 novel by Britain's David Garnett, is about ordinary human beings learning life's painful lessons. The affections on display include the parental, filial and fraternal; but the emphasis is on the romantic, which takes place mostly between partners of unlike ages and is presented as primarily a process of teaching. Events are often melodramatic, but the tone is rueful and autumnal. From the opening moment, a tearstained flashback, love is treated, to use phrases from the score, as a "happy moment" rather than the "journey of a lifetime."

The central characters are Alex (Michael Ball), first seen as a boy of 17; Rose (Ann Crumb), the much older workaday actress with whom he is smitten; and his silver-haired uncle George (Kevin Colson), whom Rose marries for love and money. Over the years, all three have flings with Giulietta (Kathleen Rowe McAllen), an Italian sculptor, and Alex and George display more than familial interest in George's daughter Jenny (played by Deanna Du Clos at age 12, and by her sister Danielle at a nubile 14). In addition, each of these worldly figures, save Jenny, has countless other liaisons. Infidelity is treated as a commonplace of sophisticated marriage, jealousy as an adolescent joke.

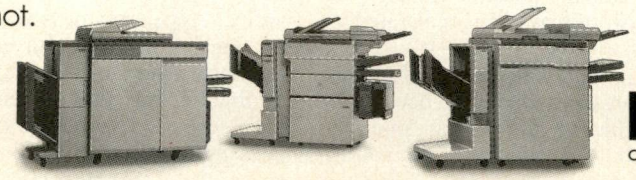
The composer, director Trevor Nunn and designer Maria Björnson have tinkered in various ways since London, but the main change is in the acting: the people have been made less brittle and more likable. That is in keeping with the cunning naiveté of the score. The musical highlights are *Love Changes Everything,* a ditty as simple and optimistic as a nursery rhyme; *Seeing Is Believing,* a surge of passion as relentless as teenage infatuation; and a melody almost Viennese in its air of casual resignation, introduced to the lyric "Life goes on, love goes free." *Aspects of Love* may go on for years. It is, however, far from free: the top price is $55, and worth every cent. ■



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Essay

Charles Krauthammer

Why Lithuania Is Not Like South Carolina

As Lithuania is slowly strangled, it appeals to the world for help. The world turns away ashamedly. Shame, because we know that the Lithuanian cause is just.

Why? Is it not true, as Columbia University historian Eric Foner asserts, that "there really is a genuine parallel between Lincoln and Gorbachev"? That "Lincoln's position, like Gorbachev's, was that a union, no matter how it was formed, cannot be abandoned." Why do we praise Lincoln for launching a war to save the Union but denounce Gorbachev for much milder actions?

The usual answer—the Lithuanian answer—is an appeal to history. The American South voluntarily joined the American Union. Lithuania was conquered and involuntarily absorbed into the Soviet Union. Its original incorporation being illegitimate, it is not really seceding, it is merely reasserting a pre-existing independence of which it was robbed 50 years ago when jointly raped by Hitler and Stalin.

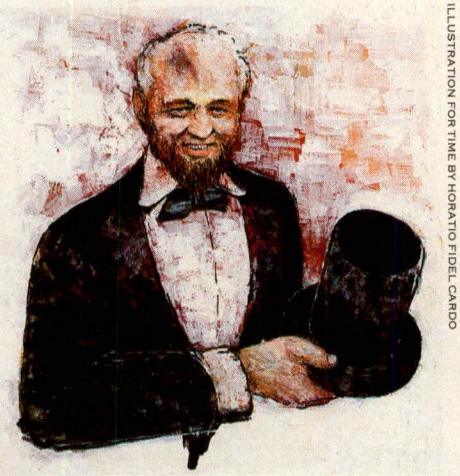


ILLUSTRATION FOR TIME BY HORATIO FIDEL CARDO

But history can be tricky. On the one hand, where exactly does history stop? Lithuania was independent for 20 years between 1920 and 1940, but for more than a hundred years before that it was part of the Russian empire. Which historical period is the norm? The Russian imperium? The brief interregnum of Lithuanian independence? Or the Soviet reality of the past 50 years?

And on the other hand, why was, say, South Carolina's accession to the American Union in 1788 binding on the generation of 1860, which was not even born at the time of incorporation? Why exactly were South Carolinians who had nothing to do with joining the American Union prohibited, by democratic theory no less, from asserting their democratic right to choose their own form of association, or nonassociation, with the Union?

We need firmer ground on which to base the justice of Lithuania's declaration of independence. And it exists. It has nothing to do with history. It has instead to do with democracy, with a new principle of international relations or, rather, an old one that has been revived: the principle of democratic legitimacy. The Lithuanians are right to do what they did because it was an elected government, created by consent of the governed, that decided in the name of the people to secede. It is the democratic origin of that decision, not its historical antecedents, that makes it right.

But didn't South Carolina also democratically decide to leave the American Union? By what right did Lincoln make war on it?

The answer is, first, that South Carolina, unlike Lithuania, was not fully democratic. In 1860, 58% of its population was enslaved, denied, among other human rights, the vote. It was a white minority government, we would say today, that voted for secession.

And, second, Lincoln's Union, unlike Gorbachev's, was a democracy. Lincoln fought to preserve the Union because he believed that secession meant the end of the great American experiment in self-government. If a minority (the South), upon losing an argument (the election of 1860), can just pick up and quit the Union, then the whole idea of republican government becomes a farce. If every disgruntled minority can take up its marbles and secede, then the monarchist and other reactionary critics of the (then) unique American experiment in republican government would be vindicated: man is not fit for self-government. As in classical Rome and Greece, self-government inevitably breaks down into either anarchy or tyranny.

None of this applies to Gorbachev. He is protecting a dictatorial empire, not a democracy. The union he is defending is dedicated to no proposition. Gorbachev has introduced elements of democracy into the U.S.S.R. But ironically, the only part of the U.S.S.R. that can be said to be fully democratic is Lithuania, which has held the U.S.S.R.'s first free multiparty elections. For Lithuania freely to secede from a nondemocratic union is not to undermine the idea of democratic government but, in fact, to affirm it.

Moreover, today even Lincoln's action would be looked on with far more skepticism. Even if the union is democratic, it hardly seems to us today that it has the right forcibly to suppress the democratically expressed will of a minority for independence. If, for example, Quebec decided tomorrow to secede from Canada, the world would hardly countenance a Lincolnesque invasion of Quebec in the name of the Canadian federal union. Nor would Canada.

So long as a nation, in making its own decisions democratically, does not threaten its neighbors (a condition that a unified Germany, for example, would have to meet), it should be free to choose. Certainly Lithuania meets that test. That is why we are all pulling for Lithuania.

But not fully. When our governments are called upon to support Lithuania's independence, they are mute. Why? Because while the Lithuanian cause is just, there are other causes in the world—among them the continued success of Gorbachev's attempt to democratize, demilitarize, and decolonize the empire that he inherited. This too counts for something.

This tug between the justice of the Lithuanian cause and the need to preserve these other values embodied by Gorbachev is the source of Western paralysis over Lithuania. It is no use trying to justify that paralysis by denying, by appeal to Lincoln, the Lithuanian case. It won't wash. Our paralysis is justified only by admitting that the Lithuanian cause conflicts irreconcilably with other important values.

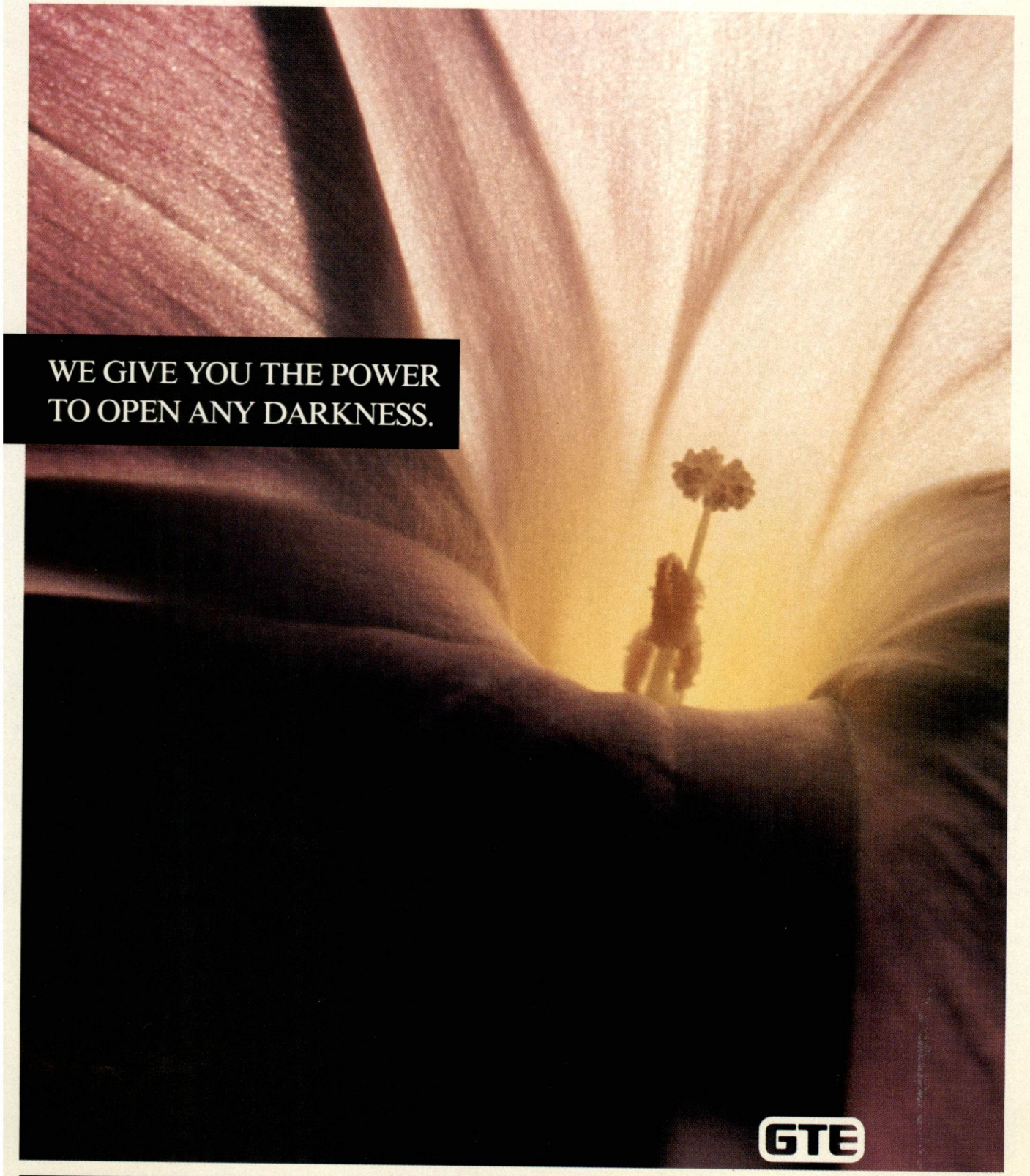
Some international dilemmas are insoluble. Lithuania presents us with such a dilemma. To try to escape our anguish by denying the just cause of the Lithuanians is to add insult to injury. But we need not condemn ourselves for cowardice. Appeasement is the abandonment of friends simply for one's own safety. Our inaction on Lithuania is grounded in concern not just for our safety but for the reform and eventual liberation of the entire Soviet empire. What Lithuania is experiencing, therefore, is not betrayal, nor is it appeasement. It is tragedy. ■

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