

Issues of the 1980's

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Senior Consultant,
Louis Harris and Associates

In the article beginning here Kermit Lansner names the coming decade the "Enigmatic Eighties"—knowing full well (having lived through nearly six decades himself) that the 1980's are no more an enigma than any other period of time glimpsed in a crystal ball. It's only through hindsight that we can freeze a time frame and put a label on it.

When even tomorrow is beyond our ken, trying to look years ahead may seem absurd. Yet there are clues today, trends which point at least in the general direction of the road we'll all be traveling. And clearly, some of the issues we're thinking and worrying about today will still be gnawing us well into the 1980's, and perhaps beyond.

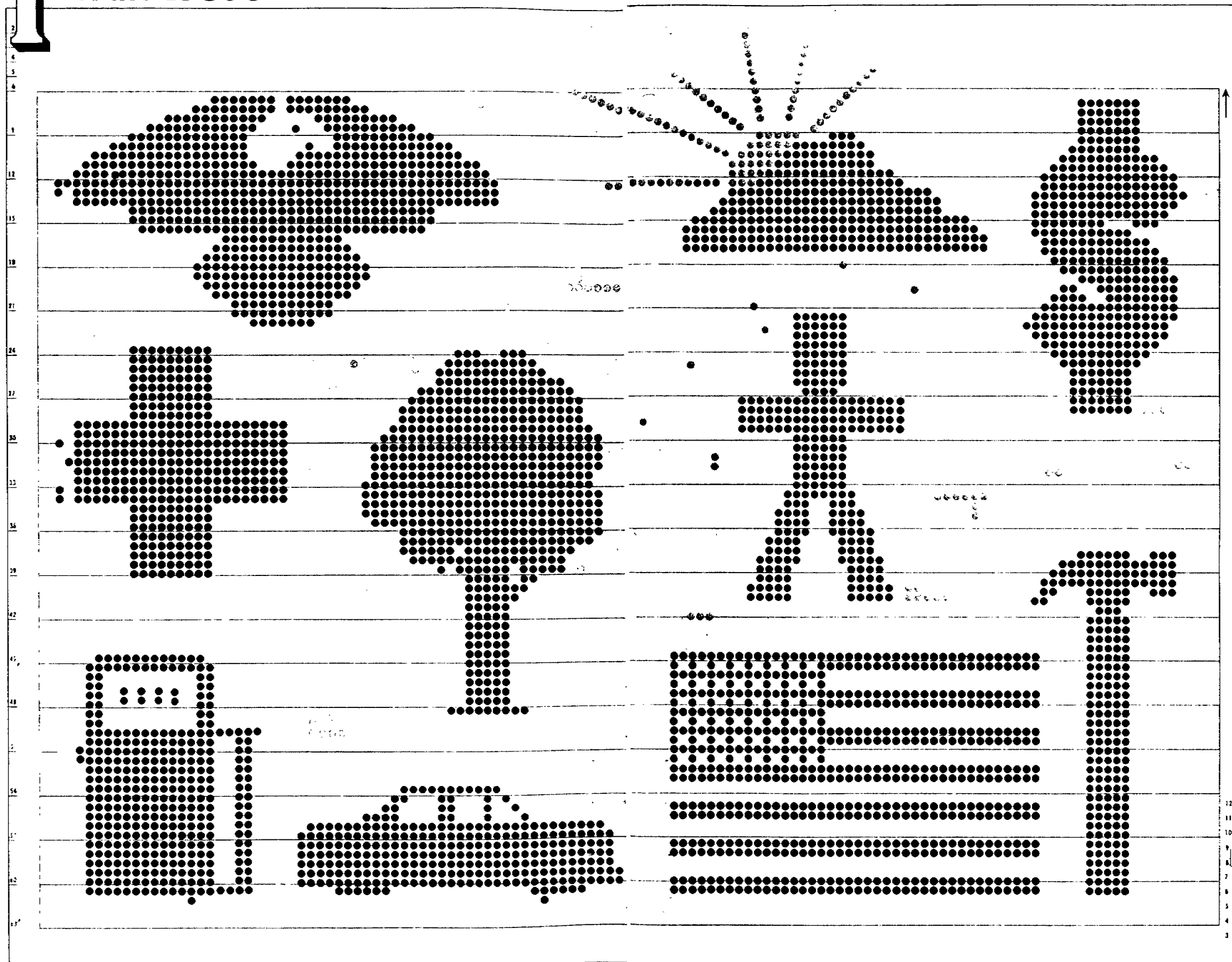
This issue of *Du Pont Context* is about these issues.

There are few surprises. What we have are educated guesses of some important issues on the 1980's horizon. Then, starting on page 12, we look a little more closely at four of the major issues: occupational health, inflation, research and energy.

Finally, on the inside back cover, we invite you to tell us what issue will be most important to you in the 80's.

Maybe together we can make the next decade a little less enigmatic.

—Editor



"A trend, to use the language of Gertrude Stein, is a trend is a trend.

But the question is: will it bend? Will it alter its course, Through some unforeseen force, And come to a premature end?"

This was the eminent British economist Sir Alec Cairncross, musing on the difficulties of economic forecasting. But these are small compared to the problems of predicting what might be on the collective mind of the American people several years down the road.

Still, economic forecasting is an unforgiving business compared to the rather informal futurism being practiced in this article. To be sure, there will be some stunning surprises ahead. But for the most part, the public's preoccupations over the next decade will grow from what people are thinking now.

What follows, then, is a brief tour of the horizon, a look at the Enigmatic Eighties, with only as many statistics as are needed to show that these comments have their roots in the data of survey research.

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To seven out of 10 Americans, the most urgent national priority is to control inflation.

Inflation

At the moment, the American people are obsessed with the problem of inflation. Seven out of 10 feel that "getting inflation under control" is the most urgent national priority.

It is clear that people are bewildered and frustrated by the persistence of inflation. They doubt the ability of those in power to deal with the problem effectively, and they are beginning to feel the corrosive effects of inflation on their freedom of choice, their lifestyles and their expectations for the future.

One of the consequences can be seen in the following finding from a recent Harris survey. The public was asked to choose between two economic scenarios —

The first: "An expanding economy which would give you a chance for a higher income and a higher standard of living, but would be accompanied by rising inflation and periodic recessions."

The other: "An economy with little growth which would allow for only a slow but steady increase in your standard of living and your income, but would also mean little inflation and few recessions."

By an overwhelming 81 percent, the public chose the latter scenario.

Of course, a change in the economic situation can mean a change in the way people feel about inflation. This sort of fluctuation has marked the fever chart of economic attitudes for a decade now. But the long, wearing experience with inflation will be difficult to forget. It is part of the emotional and intellectual baggage that Americans will carry into the 1980's.

The country will have to make another very special effort to help minorities.

Jobs

This is also true with people's experience with unemployment. Long after the statistics of the professional economists show that joblessness is a dwindling problem, the public continues to project an anxiety about jobs. This is bound to continue, however buoyant the formal indicators are.

The public senses that the demand for jobs is growing at a rate that may outstrip the ability of society to provide them. New groups continue to enter the labor force (or hover impatiently around the edges) and those who have jobs are reluctant to

give them up. Seventy-five percent of the people favor the law that ended mandatory retirement at 65, and only about half of those now employed say they would retire at 65, even if they had enough money to live on comfortably. With our aging population, the jobs problem is serious.

Work

It is reassuring to note that 67 percent of the public say they get a "great deal" of satisfaction out of the work they do. But this feeling of work satisfaction has a very special mix, and it is constantly changing. As the work force matures and grows during the 1980's, both business and labor will have to be continually sensitive to this change.

For the average American, the economic aspects of a job (salary, benefits, security) are still the most important, but very close behind is a constellation of intangibles. People want to find meaning in their jobs. They want a chance to use their minds and abilities, appreciation from their superiors and respect from their co-workers, and a feeling of personal growth. The better educated they are, the more they want these things, and the work force of the 1980's will be a highly educated group.

One of the great challenges before American business will be to foster the conditions that will satisfy these wants without sacrificing the vigor and discipline of the workplace that have made the U.S. the industrial giant it is.

Energy

It is well over a year since President Carter called the nation to a "moral equivalent of war" on the energy front. The opening battles have not gone well. Moreover, there hasn't been much of an apparent energy shortage, which leads the public to assign a rather low priority to "legislating a national energy program."

But this year of the "phony war" has not been a wasted one for the American people. They may seem confused and apathetic about the energy crisis but, in fact, they have received an extensive education on the subject and have some definite views about it. One indication is that a 59 percent majority does believe there will be a shortage of oil 10 years from now.

There can be no doubt that the energy situation is a potentially dangerous one for the 1980's. The public is greatly disturbed by the rising cost of energy, and the cost continues to rise. People also show a deep concern about America's dependence on

other countries for so much of its energy. Nine out of 10 worry about oil-producing countries having too much influence over the U.S. economy or American foreign policy. Polls indicate that the public also harbors hostilities toward the oil companies, their own government and the foreign oil producers. Under pressure, these hostilities could be politically explosive.

But the public is also convinced that scientific research will find a solution to the energy problem and lead the country to energy self-sufficiency and independence. It is clearly receptive to any effort that will achieve this goal. People expect their government, working together with industry, to solve the nation's energy problem.

Environment

Critics of the environmental movement (or of its excesses, as they would put it) are pleased to note a certain slackening of intensity, a willingness to consider the relationship between cost and cleanup. However, this should not obscure the fact that the public has a deep commitment to cleaning up the environment. People's views are more pragmatic than they were, but the basic thrust has not changed.

It should be remembered that the environmental movement is relatively new. Just as with energy, the public has been educated on the subject in a very short time. As people learn more, their views will continue to change. They may be prepared to accept a slightly greater degree of risk if the promised benefit is sufficiently great. But on the whole there will be no turning back from the goal of a clean environment.

Scientific Research

It is important to know what the American people think of scientific and technological research, if only because the public finally pays the bill for it.

People have doubts about science; they've seen its dark side. But they show a deep faith that scientific research will come up with the answers to the most pressing problems, particularly in the fields of energy and health. When asked what factors made America great, they group scientific research, rich natural resources and a hard-working people at the head of the list. When asked what factors will continue to make America great, they still put scientific research at the very top, but the other factors have dropped far behind.

As a corollary, people tend to criticize both business and government for putting

too little money into research. They also believe that too much of the research effort is concerned with trivial developments, rather than with the basic breakthroughs they want.

Health Care

Americans are shocked by the soaring costs of health care. They may be relatively satisfied with the quality and availability of care, but they are appalled by the price, even if the bills usually are paid by someone else.

It seems certain that a massive churning of attitudes about the health care system will be a major characteristic of the 1980's. This is suggested by the way the subject has been politicized. Indeed, the insistence with which Senator Edward Kennedy pushes his national health insurance plan — in the face of evidence that his position is more extreme than the public favors — suggests the powerful potential of the health care issue.

By five to one, people believe the health system should give more emphasis to preventive than to curative medicine.

As people get caught up in the give-and-take of the health care debate, their views about doctors, hospitals, drug companies and disease itself will undergo subtle changes. Already, there has been a shift in perception about the nature of health and illness. By five to one, people believe that the health system should give more emphasis to preventive than to curative medicine.

It is also clear that increasing numbers of Americans are taking the responsibility for maintaining their health into their own hands. What often seems like a series of fads — jogging, natural foods, yoga — may really signal a fundamental shift in how the public thinks about health. The effect of this on public policy will be profound.

Race Relations

One hesitates to say anything about the prospects for blacks and other minorities in the 1980's for fear of sounding either provocative or complacent. It can be argued that the forces which have been put into play are strong and steady enough to move minorities into the mainstream of American life and to satisfy their passion for equality and progress within a reasonable span of time.

Perhaps. The statistics on housing, jobs, income and education point every which

The experience of Vietnam has left the country with an acute sense of the limits of its power.

way, depending on one's point of view. Yet there are good reasons to believe that the country will have to make another very special effort to help minorities during the next decade. This may be triggered by another surge of black protest, or by a political judgment about the importance of minority votes, or by the simple understanding that it is just not tolerable to have a situation in which so many Americans feel so profoundly alienated from the society about them.

In a recent study, people were asked if they tend to have the feeling that "You're left out of things going on around you." Sixty-nine percent of whites say no; 59 percent of blacks say yes.

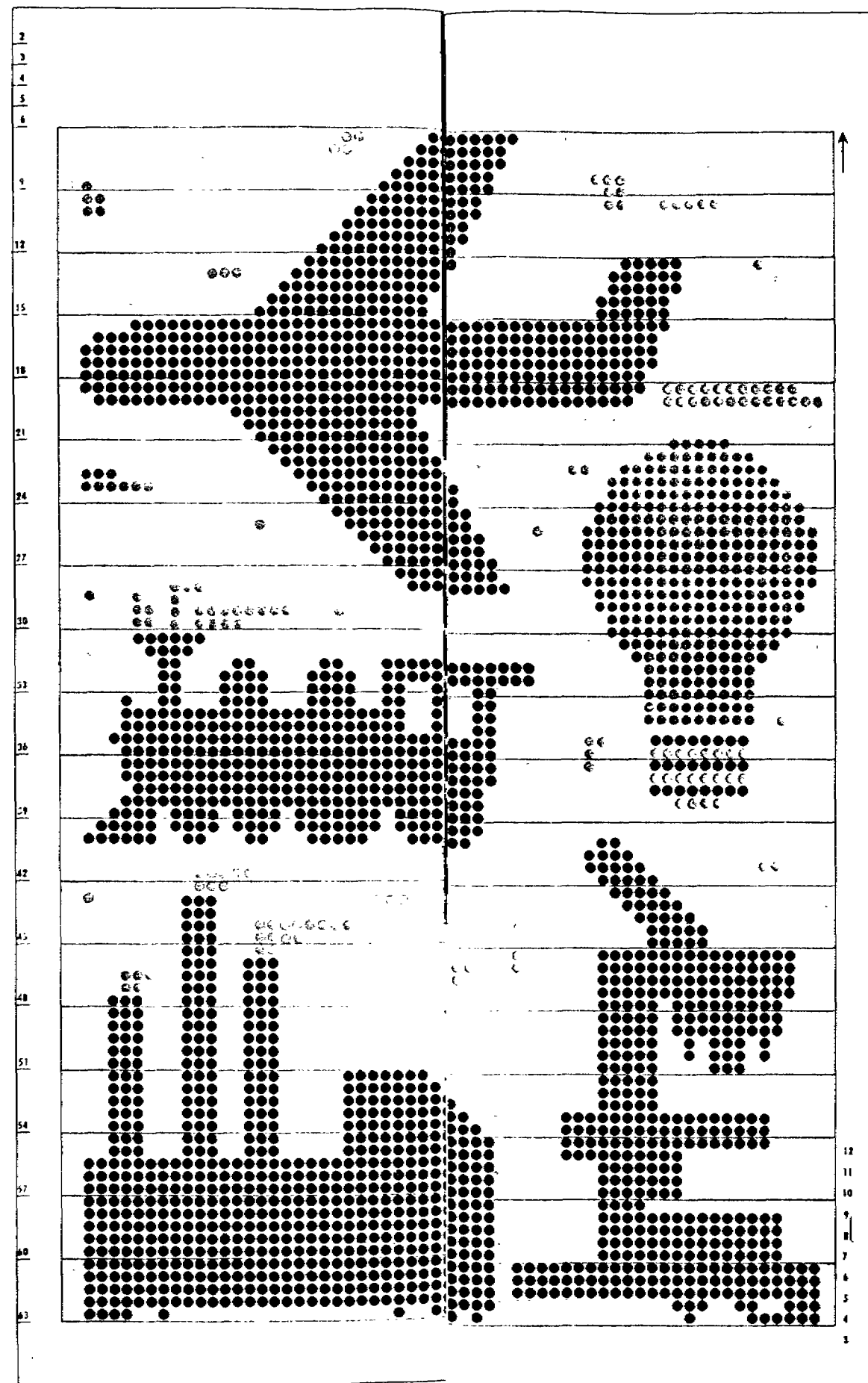
Business and the Public

The 1970's saw a precipitous drop in the public's confidence in major American corporations. It also saw a comparable decline in public confidence in almost every other institution—the White House, Congress and labor included.

The target of the public spleen was not business in general, and certainly not the American economic system. It was big business and many of its characteristics. People were disturbed by what they conceive as the bigness, secrecy, power and self-interest of some major companies, and they saw much of this as a kind of corporate arrogance. More particularly, they were dismayed by the revelations about bribes and payoffs abroad and shocked by illegal political contributions by business at home. To this day, the public remains categorically moral in its disapproval of so-called dubious corporate practices.

There is reason to believe that the phase of acute public displeasure with big business has run its course, although an improvement in the confidence rating of major corporations probably will have to wait for an improvement in the confidence rating of government. The two tend to move together.

What the 1980's will see is a period of chronic disapproval of big business—but this, after all, may be the normal state of affairs in this society. In any event, business must maintain a civil dialogue with the public, without any great hope that this will change any views. What the public



wants from business is some sense that it is accountable for the great power it wields. That, plus products and services that are good value for the money.

This notion of value may turn out to be a major theme in the 1980's. It is at the heart of the consumer movement, which is anti-business, anti-government and anti-labor all together. It is at the heart of people's distrust of the vast government bureaucracies which they see mushrooming around them and which seem to deliver insufficient value for the tax dollars that support them. It was at the heart of Proposition 13, which was a brutal message to big government to make its services more effective.

America's Role in the World

The experience of Vietnam has left the country with an acute sense of the limits of its power. In the few years since the end of the war this feeling has been reinforced in many different ways: by a growing awareness that Russia may have achieved strategic military parity with the U.S.; by the decline in the value of the dollar and a chronically unfavorable balance of trade; by the complexity of the Middle East situation which, despite the breakthrough in the Camp David summit, is far from being resolved. Domestically, the problem has been compounded by the increasing strength of Congress as a factor in making foreign policy.

In many ways, the thinking of the American people reflects the contradictions that have been generated by this new phase in America's foreign relations. For example, though highly critical of Russia's treatment of its dissidents and of its involvement in Africa, the public is still deeply committed to the idea of detente and the continuation of SALT.

Comparable contradictions can be found in almost every sphere. Some may argue that this shows the confusion of the public on these matters. But a more encouraging view is that it is the sign of a new realism, of an awareness of how knotty and complex is the texture of foreign relations.

Whether this will remain a pertinent strain in the public's thinking remains to be seen. Attitudes toward the world, as toward most of the other issues discussed here, can be changed abruptly by domestic politics, and the next presidential election is only two years off.

But here the signs are really cloudy, and I don't think even Sir Alec would hazard a prediction.

Leaders View Issues Down the Road

Du Pont Context asked,
"What one public issue or
problem area do you see
as having the greatest
impact on your field in the
1980's?" Some of the
answers may surprise you.

W. Michael Blumenthal
Secretary of the Treasury

I am always reluctant to single out one economic problem or issue as "most important." The problems of inflation, unemployment, growth, energy, the balance of payments and others are interrelated. The fact that our policies must address all of our diverse economic objectives together is our biggest challenge.

Even so, I place special emphasis on increasing capital formation and productivity. These are areas in which we have lagged in recent years. Yet, increased investment and the higher productivity that flows from it are the sources of rising standards of living and a key to our economic performance in the 1980's.

Thomas A. Murphy
Chairman, General Motors Corp.

Gaining customer acceptance of products tailored to meet government regulations. Customer satisfaction, as always, remains our primary concern. We will have to satisfy the traditional demands of individual customers in the marketplace, and also meet the broader demands of society, as such demands are expressed by government. It will take all of our engineering and design ingenuity to achieve both goals.

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Malcolm S. Forbes

President and Editor-in-Chief, *Forbes* magazine

Soaring postal rates—up 500 percent since 1970 and no ceiling in sight.

Cecil D. Andrus

Secretary of the Interior

The key issue for the Department of the Interior will be much the same as it has been during the 1970's: how much of the wild and scenic resources of America are to be preserved, and how best to accomplish this.

As economic and population pressures grow, there will be additional pressures to exploit all areas, including those which could be destroyed by exploration or development. At the same time, people are becoming aware of the vital need to protect wild and scenic areas.

The helter-skelter exploration and development of the past is something that we cannot afford, and the big problem of the 1980's will continue to be how we can insure needed conservation and preservation of natural resources while continuing to have economic progress.

Harvey L. Price

Chief Scout Executive, Boy Scouts of America

The extreme importance of a high moral code based on belief and respect for God and country. Trite though it may sound, this is a very basic issue. The future of this nation depends on today's youth—tomorrow's citizens. The moral fiber of those oncoming generations is vital to solving the issues and problems that will beset us.

Daniel Bell

Professor of Sociology, Harvard University

The emerging new international division of labor. The traditional and routinized manufacturing activities which were the basis of the old Western industrial societies will be pulled out of the West by market and political forces, and the issue will be one of industrial dislocation and readjustment.

The Third World countries have adopted a target of gaining 25 percent of the world's manufacturing output by the year 2000. It is an almost impossible task, yet a substantial reallocation is taking place: in textiles, shoes, shipbuilding, even steel. We can seek to combat this by protectionist measures or we can try to play our comparative advantage by emphasizing high technology. Which course the Western nations follow, in concert or indi-

vidually, will affect our lives for the rest of the century.

Frederic W. Ness

President, Association of American Colleges

The major problem for higher education, both public and independent, will stem from socio-economic forces. As in every other aspect of our society, there will be much talk about standards and quality, but in the compulsion to provide an educational something for everybody, quality, which inevitably carries a high price tag, will be extremely difficult to maintain.

The problem will be particularly acute with the independent college and university in a higher education system which has been considerably overbuilt. The additional problem in this sector will be that of sheer survival.

Kenneth A. Randall

President, The Conference Board

The accelerated dimensions of government regulation. Government has become all-pervasive in the regulatory processes in the last few years, and this trend seems to be geometrically increasing despite certain forces attempting to deregulate elements of industry.

Despite President Carter's campaign promises to deregulate, his Administration has clearly been marked with an increase of activity in the regulatory processes.

David Cohen

President, Common Cause

The need to restore citizen confidence in our public and private institutions by making our political system healthy.

Citizens believe government, more than any other institution, is the problem. They see it as a grasping tax collector, as a funnel of subsidy favors to insiders, as a protector of waste.

As citizens, we all have a stake in a government that can perform for us, not one weakened by the constant assaults of parochial interests. We must focus national attention on attaining accountability in our government while substantially improving the quality of its performance.

A healthy political system responds to individual citizens acting together with shared commitments. That's the way we will solve our fundamental national problems.

Elvis J. Stahr

President, National Audubon Society

That whole complex of problems and issues centering on energy. These are all

interconnected and ultimately impact heavily on the preservation of resources needed to maintain an acceptable quality of life on the planet.

Investment in energy conservation is desperately needed as simply a first step. Concurrently, and at increasing rates, there must be development of safe, renewable or inexhaustible energy resources, such as solar.

Richard L. Leshner

President, Chamber of Commerce of the U.S.A.

Inflation is unquestionably the problem which will have the greatest impact on business, just as it does today. Closely related are the two major causes of inflation—the irresponsible growth of the Federal budget deficit and the geometric increase in Federal regulation of the private sector, which adversely affects productivity.

Michael McCloskey

Executive Director, Sierra Club

In the 1980's this nation will have to come to grips with the fact that it has exhausted many of its highest grade resources. In pursuing resources of lower and lower grades, we will increasingly face the bleak fact that there are no free lunches—lower and lower grade resources can only be developed at higher and higher economic and environmental costs.

This grim fact will teach us to be more careful in deciding how much we can afford to consume. The costs of living off resources of declining quality may well be the most significant force in pushing us toward becoming a conserver society.

Robert A. Roland

President, Manufacturing Chemists Assn.

An understanding, acceptance and application of risk/benefit assessment by government. Success or failure will determine whether industry can work effectively in the public's best interests as well as profitably.

Failure will result in yet more unnecessarily restrictive legislation and additional excessive regulations. It will only worsen present problems which are affecting the production, distribution and use of vital chemicals and chemical products. Already, innovation has been stifled, productivity curtailed, inflation fueled, our ability to compete in foreign markets hampered and our domestic markets opened to cheaper foreign imports.

The chemical industry, however, does

not shy from reasonable legislation and regulation, and will continue to work with government to develop them.

Cyril F. Brickfield

Executive Director, American Association of Retired Persons and National Retired Teachers Assn.

Inflation! For millions of today's retirees, dreams of secure and independent living have become nightmares of survival. Inflation has eroded their savings, robbed many of them of their homes, driven needed health care out of their reach—and forced thousands into poverty and dependency for the first time in their lives.

Unless our nation's leaders in government, business and labor are willing to attack the root causes of inflation—rather than merely treating its symptoms—the same broken dreams will await the millions of Americans who retire in the next decade.

W. H. Tankersley

President, Council of Better Business Bureaus

The business community will be faced with a basic decision about its relationship with its customers. As marketplace transactions become increasingly complex and impersonal, the degree of public confidence in business will be significantly affected by the affirmative, rather than reactive, approach which business takes toward business/consumer problems.

With the growing maturity of consumers and their increased questioning of the rhetoric of government and consumer groups, business will face the challenge of demonstrating the effectiveness of self-regulation in the public interest through specific, visible programs with which consumers can identify.

Allen H. Neuharth

Chairman, American Newspaper Publishers Assn., and President, Gannett Co., Inc.

Restrictive actions or attempts by government and the courts almost certainly will afford the most troublesome and challenging impacts on the newspaper publishing business and the entire free press of our free society in the 1980's.

William K. Reilly

President, The Conservation Foundation

I wonder when in history people the world over have faced penumbras so profoundly perplexing and unavoidable as we must confront in the 1980's: demands that force us to seriously consider living with

Government Regulation
Confidence in Government
Energy
Inflation
Dwindling Resources
Risk/Benefit Assessment
Free Press

**Dangerous Technology
Political Unrest
Cost of Medical Care
Unity for Safety
A Framework for Youth
Meaningful Work
A Strong Dollar**

the most dangerous energy technology yet invented; a continuing population explosion, producing billions of new mouths to feed, that almost guarantees that the basic needs of people in much of the world will go unmet and that permanent political unrest will characterize many nations; the depletion of fundamental natural resources upon which trade, civilization and life itself depend; and the inability of advanced societies to understand and anticipate the consequences of their new technology, resulting in a game of Russian roulette with the earth's ecosystem.

James H. Sammons, M.D.

Executive Vice President, American Medical Assn.

The cost of medical care. The upward pressures on cost include the effects of inflation on therapy, the creation of costly new technology and a constantly increasing consumer demand.

The provision of quality care was once the prime consideration of a physician. Now, the impact of the costs of tests or therapy must also be considered.

For example, we can prolong life in people afflicted with end-stage kidney failure. Congress determined in 1972 that this therapy should be offered to all victims and estimated the cost by 1978 at \$252 million. In fact, the cost will be \$900 million in 1978, and an estimated \$1.3 billion in 1980—for the treatment of 36,000 patients.

Treatments will undoubtedly be developed for other dread diseases, which in all likelihood will also be expensive. The problem will be how to extend these new, expensive treatments to everyone at the least possible cost and with the best use of our resources.

Vincent L. Tofany

President, National Safety Council

The large-scale entry of the Federal government into safety activities in the 1970's led to divisions of opinion on a number of issues within the constituency of the safety movement. I believe the reestablishment of unity is the most important single task we face.

Unity is essential if we are to maintain in the 1980's the pace of safety progress which has marked the first 65 years of organized safety activity in the U.S.

We have made a significant beginning through the recent NSC-sponsored symposium on occupational injury information. Leading executives in labor, business and government found themselves able to

work past institutional interest to a larger view of the general welfare.

Mrs. Frances Hesselbein

Executive Director, Girl Scouts of the U.S.A.

Young people must have a framework out of which they can develop. That framework and its values used to be clear, strong and well defined—the home, religious institutions, schools and youth organizations.

With alterations in the family structure and the emergence of competing social values, new social and psychological problems have been created for youth, particularly in terms of authority, decision making and the development of a good self-concept. Meaningful work which will enable them to feel worthwhile and to contribute to this society is of great importance.

Carter L. Burgess

Chairman, Foreign Policy Assn.

The strength of the American economy. If we are to act on the world scene in support of our interests, we have to have the economic means and standing to back up our policies. That is why the Foreign Policy Association is sponsoring a nationwide debate on "Trade and the Dollar" in our Great Decisions program during 1979.

Only when an informed public understands and reaches a consensus on major issues can our government deal internationally from a position of strength, and we are going to need a strong dollar to meet the challenges of our friendly competitors and opponents in the 1980's.

Frank C. Momsen

National Adjutant, The American Legion

The major concern of veterans will be to maintain some measure of interest by the American people in the problems of veterans. There are now 27.5 million war veterans in the U.S., including 13.5 million from World War II and 8.5 million from the Vietnam era. Both generations have special problems deserving of attention and concern, but in a time of peace, veterans must compete with all other special interest groups for attention.

William Aramony

National Executive, United Way of America

Will the 1980's see a continued strengthening of the voluntary sector or an erosion of it because of the government's increasing role as a provider of human services?

Government has continually expanded

its services into areas that traditionally were served by voluntary agencies and volunteer funds. At the same time, government has sponsored tax law changes that discourage giving. If these trends continue, an efficient, responsive, innovative and self-renewing portion of our democracy could vanish.

Heath Larry

President, National Association of Manufacturers

Inflation infects and disturbs our entire economic, political and social fabric. It does not originate within the manufacturing sector, but it contributes greatly to the efforts of the so-called New Class to attack the credibility and legitimacy of business leadership.

Encroachment by government and others claiming to act in the public interest is now assuming new dimensions. Not only does business leadership have to defend the system; it must defend as well its stewardship—not to stockholders and employees alone, but to the government and the public at large. Public control imposed on private responsibility is no path to progress.

Frank L. Goffio

Executive Director, CARE

In the 32 years I have served with CARE, the voluntary overseas aid and development agency, I have been continually heartened by the compassion and generosity of millions of Americans who have contributed to help needy families in less developed countries around the world. Now, however, there is a tendency in some quarters to urge that philanthropy should be the responsibility solely of government.

Already we've had reports that private charity is "going out of style" in some West European countries, where no tax deductions are allowed for donations. Total giving to all charities in the U.S. for 1977, allowing for inflation, was less than in 1960.

If this trend intensifies, if the tax deduction for charitable contributions is cut, support for charities will drastically diminish and something vital and precious in the American tradition will be lost.

Patricia Roberts Harris

Secretary of Housing and Urban Development

The revitalization of America's cities. The vitality of our cities is crucial to maintaining the nation's economic strength and quality of life.

Our cities represent more than just

centers of jobs, communications and commerce. They are centers for learning, culture, social services. Our cities are an important national resource, representing a massive amount of economic, social and physical investment.

The challenge of the 1980's is whether the American people will accept the premise that the revitalization of our urban areas is essential to the country's well-being.

Livingston L. Biddle Jr.

Chairman, National Endowment for the Arts

The major issue which will dominate the arts world in the 1980's is how can the very best of the arts become accessible to, and a part of the lives of, all Americans.

The quality of art in the U.S. is of the highest order, and all segments of the population want to experience it directly. If we as a nation are to satisfy this need, we must adopt policies which will insure that all of the arts can flourish in all parts of the country and among all of the people.

H. N. Hunsicker

National Advisor, Future Farmers of America

Certainly, a major issue for agriculture will involve the improvement and enlargement of markets and marketing. Obviously, this will include not only the improvement of markets internationally, but the use of agricultural products for other purposes, such as energy.

A druggist told me recently that he could not understand why the U.S. was not turning to alcohol as a source of fuel for machinery, since it can be made on a large scale at a price comparable to present and potential prices of gasoline and will utilize agricultural production, lessening our dependency on foreign imports of oil.

Terry Herndon

Executive Director, National Education Association

Enrollment declines resulting from the reduced birth rates of the 1960's and 1970's certainly will contribute to problems in education in the 1980's. The lower grades will be relatively stable following the heavy declines experienced in the 1970's, but the numbers in secondary schools and higher education will decrease severely almost every year.

The problem will be the need for society to continue to provide the positive interest and concern which led to improvements in public education during its era of positive enrollment growth so that the momentum for continuing these improvements will not be lost.

**Attention to Veterans
Private vs. Public Control
Support for Charities
Help for the Cities
Art for All
Agricultural Markets**

Occupational Health: Wanted: 5,000 Industrial Hygienists

The emergence of worker health and safety as a significant public issue has put a premium on a little-known occupation.



Du Pont industrial hygienist Stephen Dixon checks storage tank for organic vapor leaks, using a photoionization vapor detector.

Industrial hygienists, spotlighted these days because of their scarcity, are not a new kind of professional creature; they've been around many years. But it is the legislation of the 1970's that will make them a sought-after breed for certainly the next decade.

W. E. McCormick, managing director of the American Industrial Hygiene Association (AIHA), likens them to professional policemen whose prime interest is in preventing the outbreak of occupational disease.

"There are many companies, such as General Motors, Du Pont, B. F. Goodrich and others, that recognized the value of health in the workplace long before the coming of OSHA" (Occupational Safety and Health Administration), McCormick says. "There's been a little too much emphasis given to government initiatives. There were people back in 1939, when this association was founded, who saw the need."

Du Pont Context interviewed McCormick at AIHA's headquarters in Akron. He joined the organization in 1973, after 28 years with the B. F. Goodrich Company as manager of industrial hygiene and toxicology and later of environmental control.

There are approximately 5,000 industrial hygienists in the nation, and McCormick says their numbers must grow at least twofold in the next 10 years to meet the anticipated wants of industry, government and academia. The AIHA projects the country will also need up to 30,000 industrial hygiene technicians in that time span.

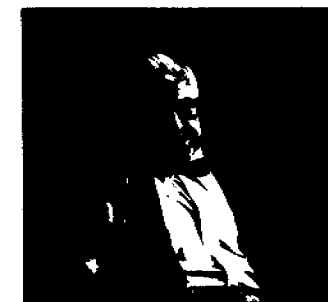
Why?

Landmark Federal legislation such as the Occupational Safety and Health Act and the Toxic Substances Control Act, plus the resulting bureaucracy and the never-ending regulations that it spews out, have put an overload on industry.

There has also been a heightened awareness among employees about the safety of the workplace, and management is more aware of the need to control the potential hazards of the working environment, McCormick points out.

What does an industrial hygienist do?

"He or she has to know the manufacturing processes and operations of the employer," explains McCormick. "The hygienist has to get into the plant, observe



W. E. McCormick

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Industrial hygienists: professional policemen whose prime interest is in preventing the outbreak of occupational disease.

what problems are related to specific materials, make certain judgments and carry out certain tests. And then, with all that information, is there a hazard or not? Does something need to be done about it? Ways and means have to be found whereby people can work safely and still use this phenomenal compound XYZ."

McCormick describes a typical practitioner as someone who has a strong interest in people, who thinks objectively rather than emotionally, who has intellectual honesty and who loves to investigate. "I sometimes look upon a hygienist as a professional policeman who has to ferret out the problems."

At Goodrich, McCormick's group saw copies of every purchasing requisition. "We had to know what was in the plant... what a specific department was using."

The wellspring for new industrial hygienists is, of course, the colleges and universities. McCormick broadcasts to all who are interested in the field that they should anchor themselves first with a baccalaureate degree in one of the physical sciences (including engineering) or biological sciences, coupled with graduate training in industrial hygiene on the master's or doctorate level. McCormick himself has a master's in physical chemistry from Pennsylvania State University.

"I tend to favor a background in chemical engineering because the hygienist has to be able to judge chemical processes," he says. "He must know what goes into the manufacturing of just about anything."

There are about 15 universities that give graduate training in industrial hygiene and they turn out 75 to 100 graduates a year. "But that is not enough to accommodate the attrition rate of professionals through death or retirement. The number of new people barely equals the number going out," McCormick says.

The National Institute for Occupational Safety and Health is financing nine occupational health training centers at universities, and these will bolster the manpower supply somewhat, McCormick says. More universities are expected to set up degree programs, he adds, but some institutions that already offer bachelor's degrees have such a mixed bag of hygiene and safety courses that they produce "high class

technicians at best, not professionals."

What is industry doing to meet the shortage?

"Training their own, to some degree, which you can do within limitations," replies McCormick. "Take on a good chemist or chemical engineer, give him some courses, assign him to a group of professionals for apprenticeship, and maybe you've made an industrial hygienist. OSHA is training some of its own people, too, following the same pattern. You could have a qualified hygienist after three to four years."

The industries that need industrial hygienists the most are chemicals, petrochemicals, heavy manufacturing and mining, because generally speaking, they have the greatest variety and severity of potential health problems, explains McCormick. "I would suspect the chemical and chemical-allied industries have more hygienists than the others."

About 3,800 of the approximately 5,000 hygienists in the country are AIHA members and 46 percent of the membership work in industry. Another 16 percent work for the Federal government, 7 percent for state government and 1 percent for local government. Other sizable numbers are in consulting (9 percent), education (7 percent) and insurance (5 percent). Half of the members are between the ages of 30 and 50, 30 percent are over 50.

To be certified by the American Board of Industrial Hygiene, a hygienist must pass a two-part examination and must have five years' work experience, which can include credit for education (for example, one year's credit for a master's degree, two years for a doctorate). Hygienists do not have to be certified to belong to AIHA.

The rush to train and hire more hygienists mirrors itself in the buildup of the American Industrial Hygiene Association. When McCormick joined the group five years ago, he had a staff of four, a budget of \$250,000 and a membership of 1,600. Now he has a staff of 21, a budget of \$1.2 million and a membership of 3,800.

McCormick sees a lasting shortfall of industrial hygienists. No one can pinpoint when and where the needed numbers will come from, and the flood of government regulations isn't likely to roll back.

An Industrial Hygienist on the Job

In the Du Pont Company, protecting employees from health hazards is the responsibility of each site and department, backed by the resources of the company's Haskell Laboratory for Toxicology and Industrial Medicine, the corporate medical division, the safety and fire protection division and the Legal and Engineering Departments.

Du Pont has 16 certified industrial hygienists—nine at Haskell Laboratory and seven at other locations. More than 200 other employees have some industrial hygiene responsibilities and are receiving further training in the field.

Stephen W. Dixon, industrial hygienist at Du Pont's Louisville, Ky., plant, expects to complete the American Board of Industrial Hygiene's certification requirements next spring. At 27, he has three years' experience as a consultant in industrial hygiene at Haskell Laboratory in Newark, Del., and has worked at the Louisville plant a year. He has a B.S. in chemistry and a master's in industrial hygiene from the University of North Carolina.

Dixon's work day starts at 8, with a review of two continuing programs in air monitoring and personnel air sampling, to determine whether there are any unusual readings which could translate to problems. If there are, he reports them to his supervisor in the plant's environmental health and safety division, who in turn reports them to area supervision at a daily meeting.

Data from the daily personnel samplings are analyzed by computer and reported to plant and departmental management. If a hazard is indicated, a meeting is held to determine how to correct it. Dixon may be asked to write the details for corrective action and supervise the work.

Dixon conducts surveys of operations to assess the adequacy of engineering controls, work practices and personal protective equipment. He recommends indicated changes to area supervision and conducts necessary follow-up of these recommendations. This may involve meetings, field testing of new air monitoring equipment, investigating potential sources of exposure, or evaluating new

protective equipment

Dixon's other duties may involve—on a given day—filing periodic reports on air monitoring programs and measures taken to solve problems; consulting with engineers on measures to reduce exposures; updating chemical safety sheets; consulting with the administrator of the respirator program, or a variety of other activities—all aimed at protecting the health of employees. He also has to keep abreast of new legislation, regulations and policies, which are plentiful.

By Labat R. Yancey

Stephen Dixon, industrial hygienist at Du Pont's Louisville, Ky., plant, equips operator Donald Slaughter with a personal sampling pump for monitoring dust exposure



Left, Dixon and clerk Lola Basham review air sampling analyses from computer

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Inflation: How to Live With It How to Solve It

An interview with
Du Pont's chief economist,
Dr. Charles B. Reeder

What's the outlook for inflation into the 1980's?

No one can be certain, but I can't see the inflation rate falling much below 6 percent a year about as far ahead as you can reasonably forecast. There are a lot of built-in cost and price raising forces at work, and there's also reluctance in Washington to deal with the fundamental cause of inflation, large Federal deficits. So it appears we're going to have to live with a lot more inflation than we used to think was normal or acceptable.

Because of the pressures at work, the underlying inflation rate could gradually escalate in the 80's, but I don't anticipate double-digit or runaway inflation.

Can we live with a 6 percent rate of inflation?

We may have no choice, at least for a while. But there's a terrible cost associated with inflation. It creates inequities and antagonisms in society—some groups are squeezed severely while others enjoy windfall gains. Inflation discourages saving and encourages borrowing; speculation increases while investment lags; economic growth slows down; unemployment is higher; the role and size of government expand and so on.

Still, other countries manage to live with even higher inflation rates. Institutions can adjust. Economic activity doesn't stop altogether because of inflation.

How do we adjust to inflation? Are you referring to some form of indexing?

Yes, this is one way to adjust, although not a very satisfactory way. There is no system of indexing that could be fair to all groups, and complete indexing probably would tend to perpetuate inflation—if everyone felt protected from inflation, no one would be concerned about the basic causes.

However, one area where indexing could help is the relationship between taxpayers and the government. As it is now, with inflation, the Federal income tax structure shifts income from the private sector to the public sector because of the higher tax rates that apply to inflated incomes. In effect, this is an unlegislated tax increase. Indexing personal tax rates, capital gains and depreciation would maintain a better balance between the private and public sectors—would leave more income in the private sector for spending or saving.

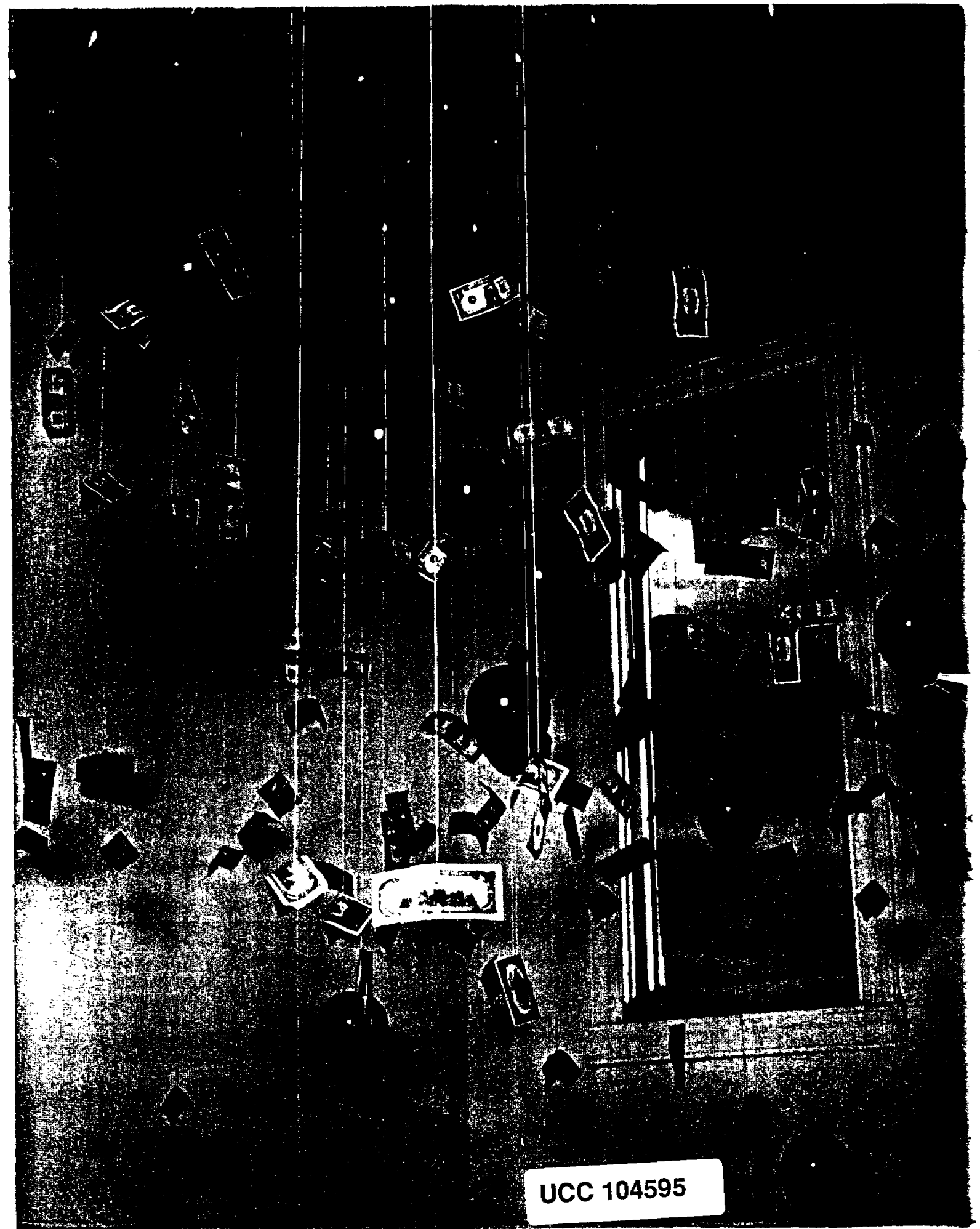
To what extent have energy prices been a factor in inflation, and what's the outlook now?

The quantum price jump in 1974 certainly was a major factor in the speedup of inflation that followed, but that price rise had to be accommodated by domestic monetary policies or it could not have persisted. Now there's a glut in the world oil supply which is likely to be around for a long time. This suggests to me that worldwide oil prices will not be going up as much as many have expected—if they rise at all.

U.S. oil prices are below world prices because of controls, so they are likely to rise further, under either existing or new legislation. This will add a little something to our inflation rate over the next several years, but I don't see it as a major factor.

What hope, if any, do you see for the value of the dollar abroad?

One reason the external value of the dollar is down is that we have been running large trade deficits, partly due to oil imports but also because we have been growing faster than other countries. As a result, other countries have accumulated more dollars than they need, and as they have shifted some of these dollars into other currencies, the value of the dollar has dropped.



Research: Can the U.S. Stay Ahead?

When the dollar falls, it adds to our internal inflation rate by boosting the price of imported goods and also prices of competing U.S. goods. However, a cheaper dollar also means lower prices for U.S. goods in other markets. These price shifts could lead to a smaller trade deficit next year, which could cause the dollar to strengthen.

But these are short-term swings. We need to follow sound domestic economic policies to keep the dollar strong over the longer term.

You said the fundamental cause of our inflation is Federal deficits. It's not really that simple, is it?

The process is not simple, but the facts are true. Inflation results from having too much money in the system in relation to the amount of goods. This reduces the value of money, which is another way of saying that prices must rise.

The "excess" money comes into existence primarily when the government spends more than it is taking in. The government doesn't literally print the new money, but the equivalent takes place as credit is expanded by the banking system, under the control of the Federal Reserve Board. When money is created to finance government deficits, it usually is not matched by increased production of goods or services. This is the key to inflation. We are trying to take more out of the economy than is being put in.

There are other factors that can push up prices—wage rates that outstrip productivity growth, government regulations that add to manufacturing costs, crop failures, etc. Whenever cost and price raising factors such as these are "validated" by the creation of more money, they keep the inflation spiral going.

Can the Federal deficits be reduced?

If we ever expect to control inflation, they must be reduced. There's really no alternative. There are several ways to accomplish this: cut spending, raise taxes, or hold down the growth of spending and let the faster growth of revenues reduce the deficit.

For far too many years Congress and the Administration have been reluctant to hold down spending or to increase taxes, other than by fostering inflation. Inflation cannot be licked without somebody giving up something. The present sentiment for tax cuts without a cut in spending doesn't involve a sacrifice for anyone. It will simply add to inflation.

What about wage and price controls as a solution to inflation?

There is no way they can be effective because they only deal with the superficial evidence of inflation. They don't touch the basic cause. Inflationary pressures continue to build up even with controls, and have to be accommodated eventually. It's incredible that controls should even be considered after the disastrous experience of only a few years ago—two freezes, Phases 1, 2, 3 and 4, a Price Commission, a Pay Board, a Committee on Interest and Dividends, rollbacks, ceilings and in the end, shortages and double-digit inflation.

What's the solution?

There obviously is no quick or easy answer to such a deep-seated problem. A major part of the answer has just got to be to trim the growth of government spending. As long as the Federal government incurs annual deficits of \$40 billion to \$50 billion, there's little chance of bringing the inflation rate down. In this case, we know what to do but have not yet demonstrated the will to do it.

Some might argue that reduced deficits would mean slower economic growth, but this may not be a serious problem. Our basic rate of economic growth reflects underlying labor force and productivity trends, and these will yield annual growth in real terms of only around 3 percent in the 1980's. There simply is no way we can achieve a permanently higher growth rate, regardless of what people may want.

Will the public accept slower growth?

If, over the longer term, the system can produce only 3 percent real growth, that is what we will have to accept. The question is, how can we best adjust to a 3 percent rate of growth? It would be far better, in my judgment, to grow steadily at a more moderate rate than to have periodic bursts of rapid growth followed by inflation and recessions.

A goal of slower growth may not seem to be politically popular, but there's lots of wisdom and common sense among the American people. I think they recognize that maybe we can't grow indefinitely at faster and faster rates, that maybe we don't have unlimited resources, and that maybe we should live within our income and have less inflation.

I think the American people understand these realities better than some politicians. I would like to see such an appeal made.

U.S. science is enduring a quiet but definite crisis that threatens the nation's long-standing position as technological leader of the world.

The symptoms are nowhere near as obvious as they were in the scientific debacle of 1957, when the launch of Sputnik I so appalled U.S. administrators that they instituted what proved to be a decade of unstinting support for research and development. Rather, the present crisis shows itself subtly, as a slow decline in the real value of funds for academic research and growing conservatism by industry in its own R&D programs.

The situation has developed so slowly and quietly that few remedies have been suggested, let alone put into practice. Only now are research administrators in government and industry and key Congressmen realizing the full extent of the danger to the nation's technical capacity. The search is on for new methods of combating the research decline, but few experts are willing to bet that the situation will improve appreciably within the next few years.

Indications of the decline are varied but consistent:

□ The proportion of the U.S. gross national product devoted to R&D fell from about 3 percent in the middle 60's to 2.25 percent in 1976.

□ Between 1971 and 1976 the number of patents granted to American citizens plummeted by 21 percent.

□ The proportion of scientists and engineers in the U.S. dropped from 25.4 per 10,000 population in 1965 to 24.8 per 10,000 a decade later. During those same 10 years, the proportion roughly doubled in the Soviet Union and West Germany, while the absolute number of Japanese scientists and engineers engaged in non-defense R&D almost crept up to the U.S. total, even though Japan's population is

less than half that of the U.S.

"The figures make it abundantly clear that our nation's position of R&D leadership is slipping," cautions Arthur Bueche, research chief of General Electric Company.

Of special concern is that the decline seems to be spreading from the academic world to industrial research. University scientists have complained long and bitterly about what they perceive to be their low level of government grants ever since 1968, when then-President Lyndon Johnson issued his famous call to the research establishment to produce concrete results for the good of society and less head-in-the-clouds study with less than obvious applications. Now the signs are growing that industry is also looking more for the quick, certain, profit-making R&D, at the expense of risky and intricate long-term basic research.

Industrial funding for fundamental research dropped precipitously between 1967 and 1972, and has remained roughly constant, in 1972 dollars, since then. The total amount spent on R&D by industry has increased markedly in the past decade, however, indicating that an ever-larger proportion of the industrial R&D pot is going into applied research and product development.

Concern about this aspect of research funding has reached such a height that President Carter set up a special inter-agency panel in May of this year to brainstorm new approaches to bringing industrial research out of the rut.

The first goal of the panel, which is chaired by Jordan Baruch, Assistant Secretary of Commerce for Science and Technology, is to identify the exact links between basic research and industrial innovation. Success in that task should indicate some of the specific causes of the

The current economic climate makes research managers and other industrial personnel leery of committing money to long-term goals.



Dr. Charles B. Reeder

dark clouds looming over U.S. science—and perhaps suggest why American products are moving so sluggishly in world markets. For the moment, even the experts can only speculate on the root causes.

The most obvious reason for the decline is public disenchantment with science and technology (though they still have faith in the problem-solving capabilities of research; see page 3). Associated with the attitude, as Rep. George Brown Jr. (D., Calif.) of the House Science and Technology Committee points out, is a notion that basic research should be utilitarian and should yield fast results.

The same notion is not unknown among Congressmen.

"There is an irresistible urge for my political colleagues to seize headlines by attacking the National Science Foundation," laments Rep. James G. Martin (R., N.C.), a Ph.D. chemist. "Never mind that a study of the endocrine hormonal imbalance in certain Pacific waterfowl having unorthodox sexual orientation may or may not lead to useful therapy for humans who wish to overcome similar tendencies; no, the public must be told how our money is being wasted on 'queer ducks'."

The emphasis on quick results is, unfortunately, inseparable from a system that elects its politicians every two, four and six years. As Henry Kissinger ruefully noted about his government service, "The urgent stole all the time from the important."

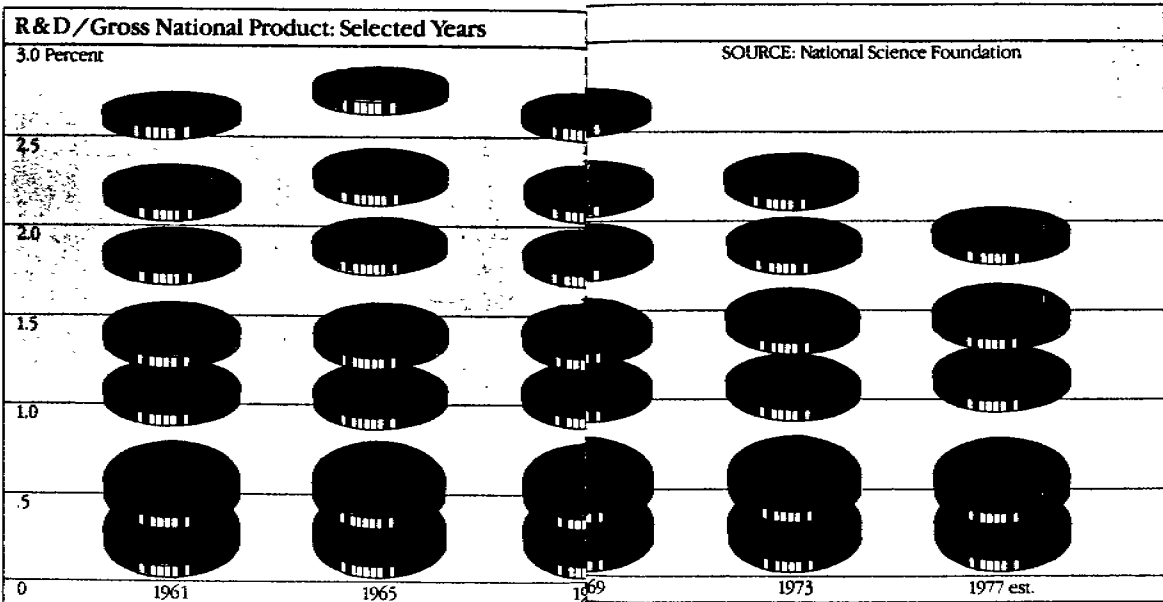
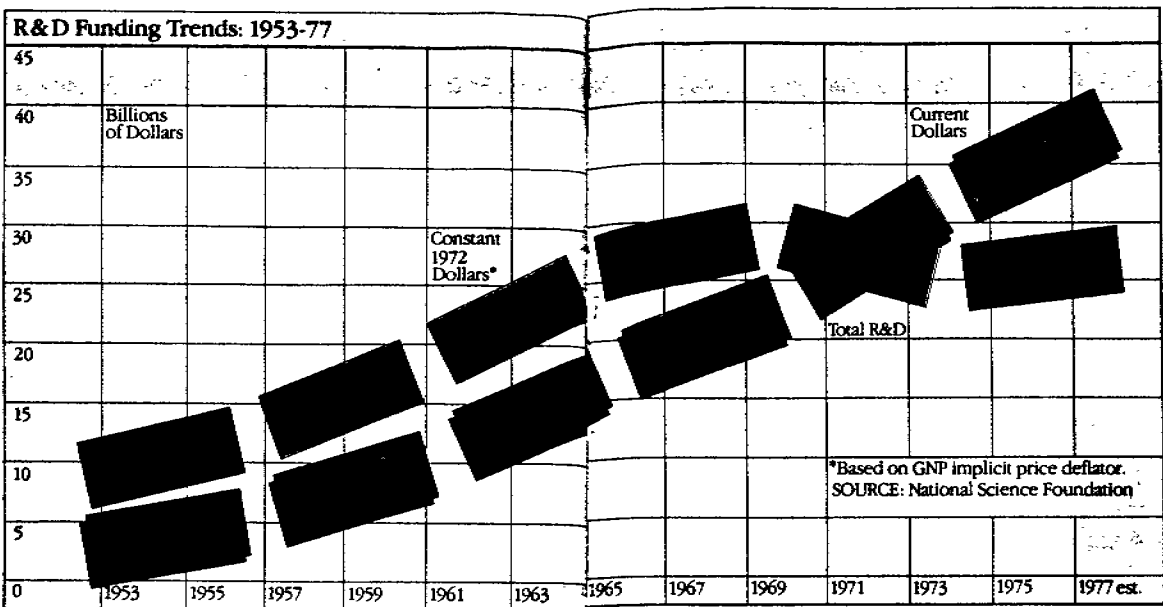
In industry, the preference for near-term applied research over long-distance basic studies has become more pronounced than ever, for two specific reasons:

First, the current economic climate makes research managers and other industrial personnel leery of committing money to long-term goals. Ironically, that unsettled climate has resulted in part from lack of U.S. scientific initiative. Presidential science adviser Frank Press points out that the poor U.S. balance of trade stems more from imports of machinery than it does from foreign oil.

The second major reason for the slow-down is equally ironic. Government regulations designed to protect the general public are forcing some industries to alter their research priorities. Funds that would normally be devoted to long-range studies are being spent instead to reduce environmental pollution and other public hazards.

Of course, most industrial managers would concede the necessity of ensuring that their products and operations don't

Funds that would normally be devoted to long-range studies are being spent instead to reduce environmental pollution and other public hazards.



harm the public. But they complain that government administration of regulations intended to do just that is clumsy at best and downright obstructionist at worst.

George S. Lockwood is an entrepreneur with plenty of experience in coping with this manifestation of bureaucracy. He is a general partner of Monterey Abalone Farms, a small California company that hopes to develop fish farming on a commercial basis. Within a few years of its founding in 1972, the company found that it had to answer to 42 separate Federal and state agencies, on issues that ranged from wildlife protection to land use and worker safety.

"When I have to spend 50 to 70 percent of my time dealing directly with the government, I'm not able to take part in the

creative process," lamented Lockwood at a meeting of the American Association for the Advancement of Science earlier this year.

Some observers place responsibility for such bureaucratic antics, and for much of the overall difficulty facing research, on the environmental movement, which blossomed in the late 1960's. Certainly environmentalists have attacked the dark side of technology, frequently with a scatter-gun approach. But Russell W. Peterson, formerly head of R&D in Du Pont's Development Department and now director of the Congressional Office of Technology Assessment, discounts the popular view of environmentalists as latter-day Luddites. "Understanding ecological relationships needs more technology, not less," he claims, "and the move to alternative technologies has brought into the sci-

entific process many people who wouldn't have been involved otherwise."

The interagency panel's list will undoubtedly be bolstered by a host of other reasons for the worsening research climate. Laboratory equipment is becoming increasingly sophisticated and expensive. Government patent policies and antitrust legislation often seem to discourage industrial initiative. And new tremors are rumbling through the research community as a result of Proposition 13, the tax-saving measure approved by California voters in June.

The National Science Foundation, the government's arm for funding basic research, was the first to feel the cold breeze from the west; in August, Congress cut \$17 million from the \$934 million requested by the Administration for the agency's fiscal 1979 budget. That loss is unlikely to be recouped soon; the Office of Management and Budget has warned that the 1980 budget will be one of the tightest in the last two decades—for scientists as well as everybody else.

Gloomy as the immediate prospect appears, there is some reason for hope over the longer term. President Carter has strongly indicated his belief that science is important enough to be shielded from the budgetary axes, and there are some signs that his message is getting through to Congress.

"I do believe that the case for basic research is well understood by those Congressmen who have cared to examine it," says NSF Director Richard Atkinson. "People who really know what's going on don't feel that NSF money is being squandered."

Science adviser Frank Press expresses the hope that the interagency panel will come up with novel means of stimulating innovation, such as tax incentives and cooperative links between government and industry. And the National Science Foundation has already started up a new program to encourage industry and universities to join hands in research programs.

Certainly no one is yet ready to throw in the towel for research, although few observers are cheering its current progress. John Sawhill, the former energy czar who is now president of New York University, expresses the hopes and fears of the scientific community: "Right now the prospects don't look very good," he says, "but we're working hard to change that. I'm mildly optimistic."

The 1980 budget will be one of the tightest in the last two decades—for scientists as well as everybody else.

Energy: Coal to the Rescue?

The nation's most abundant energy resource may become industry's chief fuel in coming years, but it won't be easy.

With oil and gas reserves going down and prices up, nuclear power stalled by problems and protests, and solar and other alternate energy forms not ready for prime time, it appears that coal is elected No. 1 fuel of the foreseeable future.

Not by acclamation, however.

Coal is dirty and bulky, hazardous to mine and much more difficult than oil or gas to transport, burn and clean up after. But in these waning years of the petroleum age, coal has two things going for it: it can cost less, and there's plenty of it.

These facts alone would be enough in coal's favor. Nudged also by laws and regulations on the books or in the making, utilities and industries will be turning more and more to coal to meet their energy needs.

The shift has already started, but opinions differ on how far it will go, and how fast. The Administration's energy plan calls for industry to quadruple its use of coal by 1985, while the National Coal Association, usually bullish on its favorite fuel, predicts only a doubling. The pace will depend on the lawmakers, future prices of oil, gas and coal, and whether there are breakthroughs in technology, such as coal gasification.

At any rate, the 1980's will see new plants burning coal unless there's a persuasive reason why they can't. Existing plants that once burned coal will burn it again, and some plants that have never burned coal will be converted to it.

Some. Not many.

Converting an oil- or gas-fired industrial boiler to coal isn't as simple as shutting off a valve and finding a place to put the ashes. In fact, in most cases, conversion is impossible because of the design of the boiler itself.

Another reason it can be impossible is that coal takes space. Not all plants have room enough for coal storage, coal han-

dling equipment and the baghouses or precipitators needed to meet environmental regulations.

And then there's cost. A coal-burning boiler and its supporting facilities can be up to five times as expensive to build as an oil-fired boiler with the same capacity.

Still, converting to coal can make economic sense at some plants—those which previously burned coal or were designed to be convertible. The Du Pont Company, for example, is burning coal as the major boiler fuel at 13 of its 81 U.S. manufacturing sites, compared to 11 in 1973. Two other plants are going back to coal, and a new plant under construction at DeLisle, Miss., is designed for coal. Coal will provide more than one-third of Du Pont's total boiler fuel this year, up from a low of 25 percent in 1973.

All the Du Pont plants burning coal, or planning to, were originally designed for coal, but some were switched to oil or gas to save money or to meet environmental requirements. Going back to coal has required installation of additional pollution control equipment.

Studies of other Du Pont plants show some conversion potential, but 150 boilers at 52 sites can't be converted and would have to be replaced.

What's involved in coal conversion? Here are some specifics on a current project: Du Pont's nylon plant at Seaford, Del.

Seaford was Du Pont's first nylon plant, built in 1939. The power house has three boilers, two of which can burn either oil or coal and one which burns oil only. The conversion project will enable the third boiler to burn coal, upgrade coal-handling facilities and add a device to each boiler to capture ash. Cost: \$12,400,000.

Converting a Boiler

Originally, the plant had two boilers, designed to burn oil but capable of being

converted to coal. They have been converted, and are burning some coal now. When the third boiler was added, it also was designed for future coal-burning capability. The conversion will require:

- ☐ A concrete silo, 77 feet high and 20 feet in diameter, to hold the coal for the boiler;
- ☐ An ash hopper;
- ☐ A crossover coal conveyor from the other two silos;
- ☐ Mills to pulverize the coal and scales to weigh and feed measured amounts for firing, with necessary downspouts and gates;
- ☐ Conversion of the boiler's four burners to coal firing and installation of an igniter for each burner;
- ☐ A new control room;
- ☐ Various changes in equipment, instruments and controls.

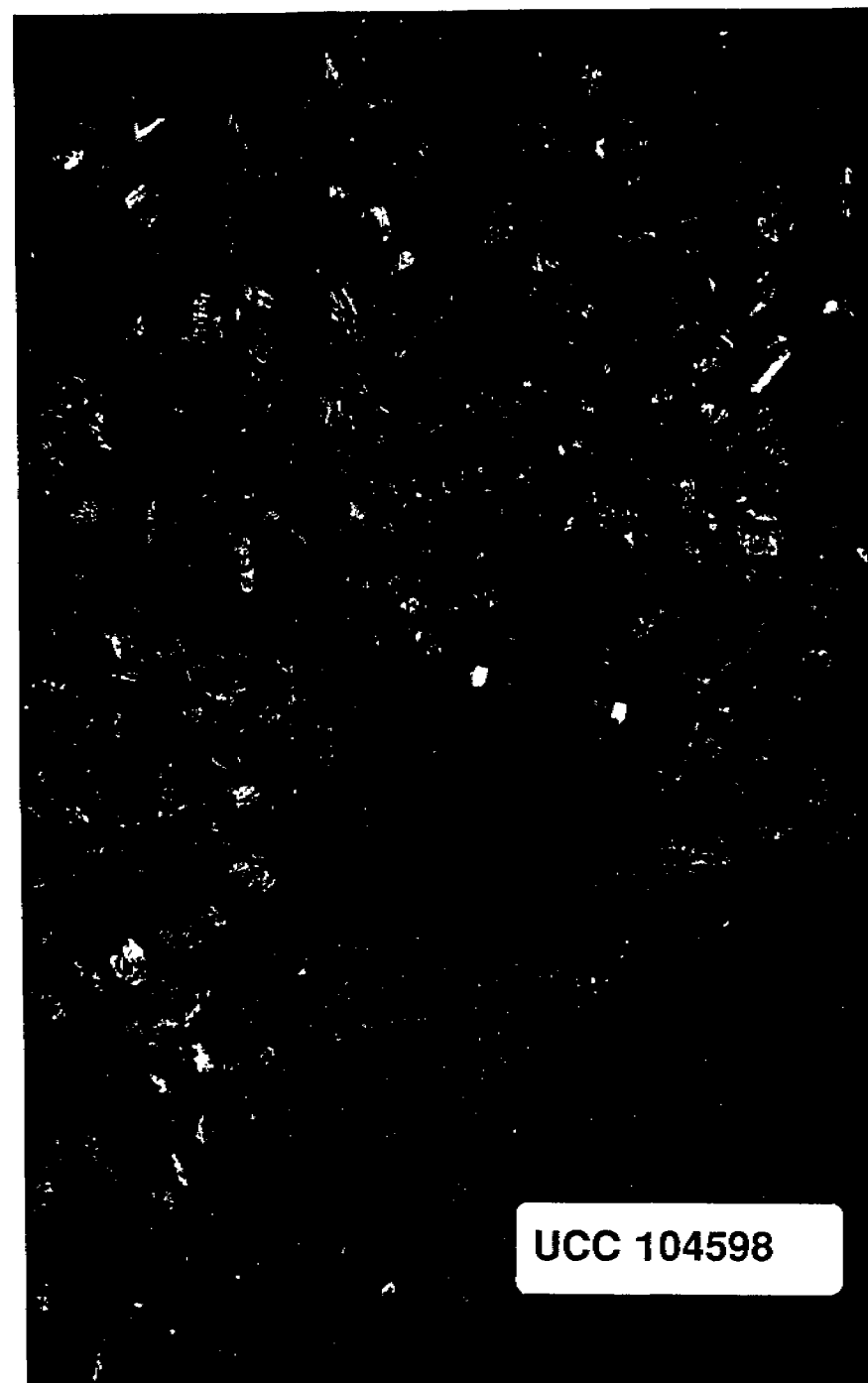
Upgrading Coal Handling

To increase coal storage capacity, the coal yard has been enlarged and a second rail spur will double the number of coal cars the plant can accommodate (30, from 15). Also necessary:

- ☐ An enlarged hopper and feeder for unloading the cars;
- ☐ A heated shed, 70 feet by 30 feet, for use in thawing coal cars in winter;
- ☐ A dust suppression system;
- ☐ A control shed for the coal handling equipment;
- ☐ Replacing the bottoms of the two existing silos with stainless steel cones, and enlarging downspouts and slide gates to improve coal flow to the boilers.

Pollution Control

To trap ash particles in the boiler flue gases, an electrostatic precipitator will be installed on two of the three boilers. Precipitators catch charged particles on



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metal plates and the particles then drop into hoppers for removal. Each precipitator is 42 feet long, 18-1/2 feet wide and 46 feet high, operates at 99 percent efficiency and costs about \$2 million.

An automated ash-handling system will be installed, and ashes will be pumped to ponds on the plant for disposal.

Noise Control

Coal cars have to be shaken to dislodge the coal. The standard way has been to fasten an immense device to the top of a car, turn it on and hope the neighbors aren't trying to sleep.

The Seaford plant will install a modern, quieter system, using hydraulic vibrators that will be mounted on the sides of a car. There will also be a large mechanical hoe to scrape out the coal, operated from a tower above the car.

Miscellaneous

A new maintenance building will be required, in a new location. The old building has to be torn down because it's in the way of the new facilities. In addition:

□ Two fuel oil tanks will be relocated and a third removed.

□ Mechanical dust collectors will be removed from two boilers. The new electrostatic precipitators make them unnecessary.

When the project is completed, in December 1979, all three boilers will burn coal—up to 500 tons a day—and the national effort to cut down on oil consumption will be ahead by more than 800,000 barrels a year. The facilities will, of course, comply with environmental regulations—Federal, state and local.

Meeting environmental requirements is harder to do with coal than with oil. In fact, the burning of coal requires a great deal more care all along the line, to avoid congestion and interruptions that can cause uneven burning or other problems. Special training or experience is needed, and this is a factor in coal conversion that has received little attention: people with coal burning experience are few.

The Seaford plant, for example, hadn't burned coal since 1970. In February, 1977, the Nanticoke River froze and oil supplies couldn't reach the plant. Permission was obtained from the state to burn coal temporarily, and a retired power supervisor was brought back to help teach new people how to do it. The training program is continuing, and no further problems are expected.

LETTERS

Sex Attractants Updated

I am a chemical ecologist working on pheromones and other secretions of animals, and I was concerned by two errors in "A Bow to the Bloodhound" (No. 2/1978) which have frequently crept into the literature.

One concerns the structure of the pheromone of the male gypsy moth, which the article gives as acetoxyl hexadecanol. This is indeed the structure initially given for this sex attractant, but it has subsequently been shown to be inactive, and the true attractant is now known to be cis-7, 8-epoxy-2-methyloctadecane.

The second error concerns the sex attractant of the male cockroach (*Periplaneta*), which is given as dimethyl isopropylidene cyclopropyl propionate. That particular structure was also reported in the literature, but has also been shown to be inactive upon synthesis. Although the sex attractant of this cockroach appears now to have been identified, full details of the chemistry have not been published as yet.

A third minor error concerns the spelling of pheromone, which is incorrectly given as pheremone.

Thomas Eisner
Jacob Gould Schurman
Professor of Biology
Cornell University,
Ithaca, N. Y.

P. J. Wingate replies:

Many thanks to Prof. Eisner for his comments on the bloodhound story. I'm pleased and flattered that the story attracted the attention of such an alert and distinguished scientist. I'm sure he is correct on the chemistry of the pheromones, even though the scientific journals I quoted have excellent reputations for accuracy. I have noticed before that early workers in the field of natural products often mistake some inert material as the active ingredient only to have later workers, using advanced techniques, prove them wrong.

As for the spelling of pheromones, Prof. Eisner is, of course, correct. The pheromone spelling was just another typo. These things hide in the underbrush until publication is complete, then they rise up like 10,000 geese, but it is too late to shoot them down then.

Rail Safety

I have just received and briefly examined a copy of Vol. 7, No. 2 of *Du Pont Context* dealing with safer rail transportation of hazardous materials. Your articles seem to be concise statements of the problem.

I would greatly appreciate 12 additional copies to distribute to members of my special task force on transportation safety. The articles will provide a good introduction to the problem and help us focus on specific aspects of the rail safety issue in this state.

Your effort to communicate the magnitude of the problem is to be commended.

William G. Milliken
Governor
State of Michigan

"Nighlon"?

I enjoyed reading about the history of the development of nylon, (No. 2/1978), but the sidelight (on the name) disappointed me. I had just about decided that the name had been made up around "lon," from *lano* for wool, and "nigh," for almost or near. Now I find that my retroactive etymology was false. Too bad, but I'll continue to suspect that there was a subconscious connection.

Newton A. Teixeira
West Newton, Mass.

The New Look

Congratulations! *Du Pont Context* now looks like the house magazine of one of the world's largest corporations. The text is easier to follow, the illustrations are superb and used dramatically, the whole package is exciting.

David Lampe
Leander, Tex.

I remember the title, but the content is totally new. The photography is great, and so is your layout design—what a change! After leafing through excitedly to absorb your total effect, I actually spent time reading your magazine. This is a first!

Lise Swenson
Executive Director
Fine Arts Center of
Kershaw County, Inc
Camden, S.C.

SIDELIGHTS

New Grants in an Old Field

With the help of a grant from Du Pont, the College of Medicine and Dentistry of New Jersey is starting a program of courses, workshops and seminars in occupational medicine, a field neglected by most medical schools. The program will be for practicing physicians as well as students.

The grant is one of 10 Du Pont grants totaling \$140,000 in the general field of occupational health, a new category in the company's \$3.8 million educational aid program.

Other institutions receiving the grants are the University of Cincinnati, for training in occupational medicine; New York University, the University of Michigan and the University of California at San Francisco, for toxicology; Thomas Jefferson University, for teratology; Johns Hopkins University, for training in epidemiology; Duke University and the University of Texas, for cancer research; and the University of Connecticut, for training in veterinary pathology.

The grant program represents only a small part of Du Pont's interest and work in occupational health. The company's Haskell Laboratory for Toxicology and Industrial Medicine, established in 1935 and one of the first such laboratories in industry, has a staff of more than 200 and a budget of \$10 million a year. It tests chemicals to make sure Du Pont products can be made, used and disposed of safely. In addition, Du Pont is a founding member of the Chemical Industry Institute of Toxicology, which tests large-volume chemicals for possible toxicity.

25 Years on the Road

If the Guinness Book of World Records ever gets around to longest-running three-person car pools, here's a candidate: the Bert Kiesel-Herbert Pase-George Van Cleave car pool of Victoria, Tex.

Starting in 1953, the three employees of Du Pont's Victoria plant rode together 25 years, until last summer when all three retired.

In all those years, the pool had just three requirements: each car had to have four doors and air conditioning, and nobody could smoke.

A Tale of Two Shirts

Everybody knows it takes more energy to make synthetic products than natural products, so to save energy, people should use natural products. Right?

Well, yes and no.

Yes, some synthetic products require more energy to manufacture. But the synthetics may require less energy than the natural products in the long run. Case in point: two shirts, one all cotton, one a polyester/cotton blend.

In a research program funded by the National Science Foundation and carried out by Yale University's Department of Engineering and Applied Science, the polyester/cotton shirt was the clear energy winner.

Adding up all the energy factors involved in producing the fibers and fabrics and making the two shirts, the study showed that the cotton shirt required about 25 percent less energy than the blend shirt. But the blend shirt was more durable and required less heat in washing, drying and ironing.

Final result: over the total life cycle of the shirts, the all cotton shirt required nearly 88 percent more energy to manufacture and maintain than the polyester/cotton blend.

Correction

In the last issue (No. 2/1978) the two men shown here were incorrectly identified in a photo caption. They are William H. Dempsey, president, Association of American Railroads; and James B. King, chairman of the National Transportation Safety Board.

— Editor



Dempsey



King



What's Your Issue?

What issue do you see as most important in the decade to come?

We welcome readers' replies to this question and will report the response in the next issue.

Use this form or send a card or letter to.

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To me, the most important issue of the 1980's will be _____

Name and Address (not necessary):

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