

RCA

Electronic Age

Summer 1970

U. of ILL. LIBRARY
SEP 23 1971
CHICAGO CIRCLE





Cover: The burden of Atlas becomes increasingly unbearable as man continues to pollute his planet. An article on pollution in America begins on page 8.

Electronic Age

Published
Quarterly by

RCA

30 Rockefeller Plaza
New York, NY 10020

©1970, RCA—all rights reserved. For permission to reprint or reproduce any portion of the magazine, write to the Editor, Electronic Age, 30 Rockefeller Plaza, New York, NY 10020. Printed in USA.

When requesting a change of address, please include the code letters and numbers appearing with stenciled address.

Editor
JULES KOSLOW

Managing Editor
Kenneth B. Platnick

Associate Editor
Mary Jeanne Carlson

Assistant Editor
Ann Ovodow

Production Associate
Britton G. Bailey

Production Assistant
James W. Rostron

Design Consultant
Sheldon Seidler

Contents

Summer 1970 Vol. 29/No. 3

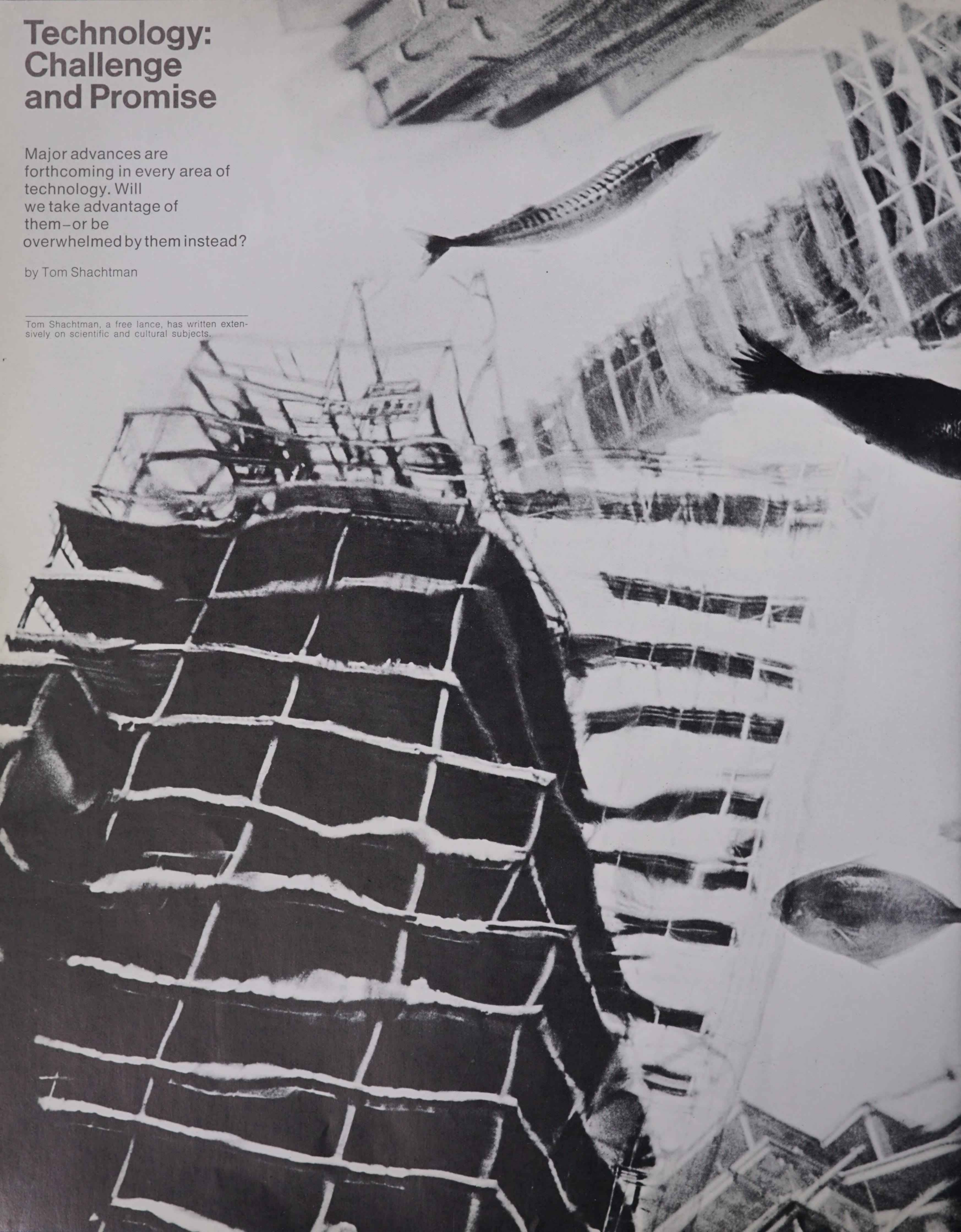
- 2 **Technology: Challenge and Promise** by Tom Shachtman
Programmed dreams. Artificial moons. Robots. During the next 30 years, we can expect major advances in every area of technology. Will we be ready to utilize them effectively? Or will we, for lack of careful planning, be overwhelmed by them?
- 8 **Pollution in America** by Kenneth B. Platnick
The soot on the windowsill and the smarting of our eyes indicate but one area of concern. We can, however, solve the whole problem: All it takes is money. The question is, Who will pay the price to clean up our environment?
- 15 **For the Records . . .**
News of recent RCA recordings.
- 16 **Pop Music — Hit Sound of the Recording Industry** by Robert Micklin
Record sales have increased 1,000 per cent since 1954, with nearly \$2 billion in sales expected this year. Much of the success may be due to the appeal of the recording artists, but much is also due to more sophisticated recording and marketing techniques.
- 21 **Books at Random . . .**
News of recent books from Random House.
- 22 **The Huntley-Brinkley Bandwagon** by Joe Derby
Although their news show got off to a slow start, it eventually won wide acclaim — and, during its 14-year lifetime, led the way to a new era in TV journalism.
- 28 **Information: An Exhibition**
A communications exhibition presented by the Museum of Modern Art.
- 32 **Crime and Computers** by Richard B. Rusch
New applications of computer technology have made policemen and machines the "dynamic duo" of the 1970s, electronically extending the reach of the law's long arm across the nation.
- 35 **This Electronic Age . . .**
A page of cartoons.
- 36 **Electronically Speaking . . .**
Recent RCA developments in electronics.

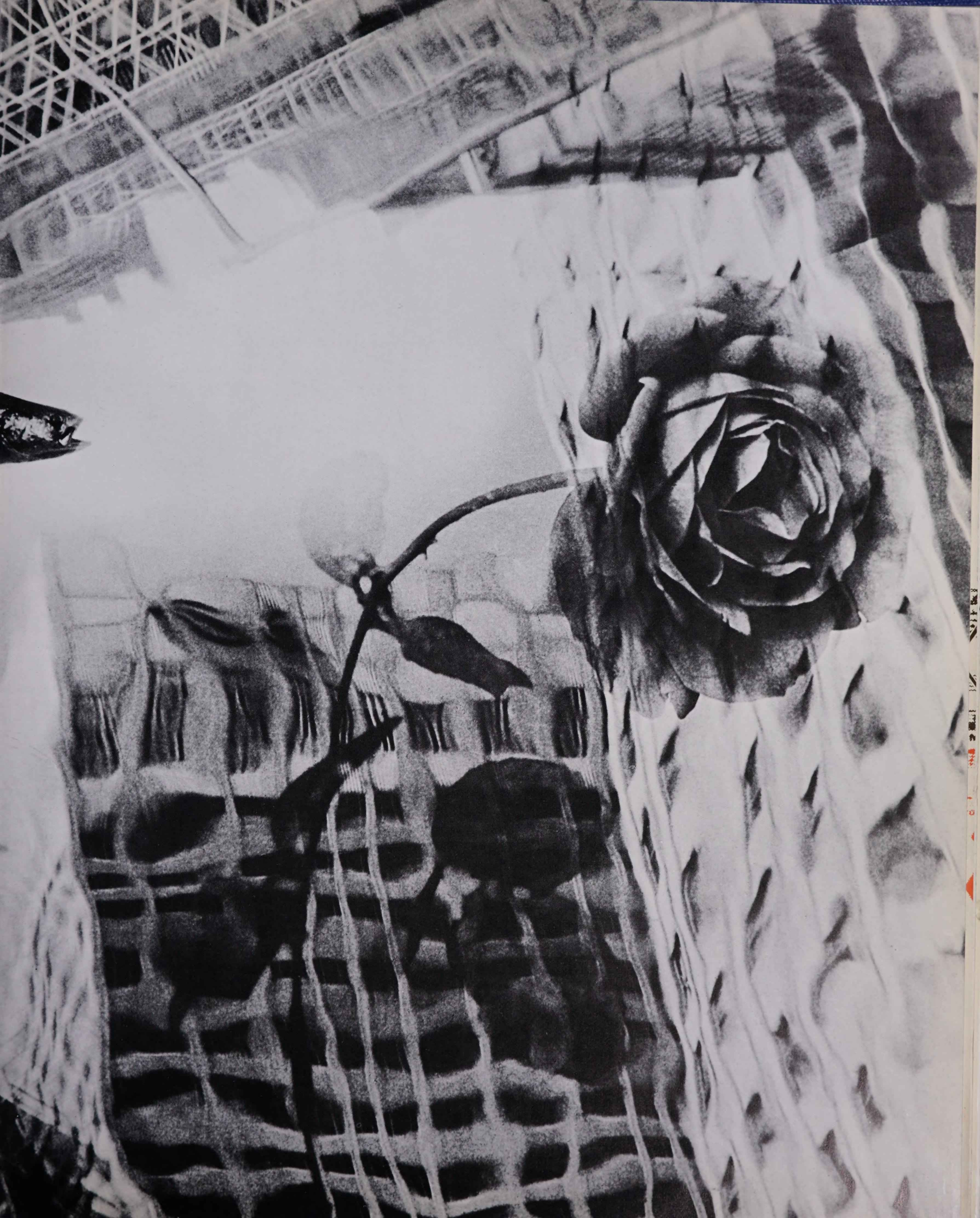
Technology: Challenge and Promise

Major advances are forthcoming in every area of technology. Will we take advantage of them—or be overwhelmed by them instead?

by Tom Shachtman

Tom Shachtman, a free lance, has written extensively on scientific and cultural subjects.







The internal combustion engine has contributed to the transformation of the American landscape.

Goethe's Faust had an unquenchable thirst. He wished for infinite knowledge and the power to change the world; he would design a perfect state where men lived in harmony, good health, and comfort. Mephistopheles offered him all that he might need to alter the world in any way he wished. And just as Faust was staggered by the implications of the offer, so men today are staggered by the Faustian powers within humanity's reach:

- Programmed dreams
- Space defense systems
- Artificial moons and other methods of lighting large areas at night
- Chemical methods for improved memory and learning
- Capability to choose the sex of unborn children
- Improved capability to "change" sex
- Human hibernation for relatively extensive periods (months to years)
- New biological and chemical methods to identify, trace, incapacitate, or annoy people for police and military uses
- More sophisticated architectural engineering (geodesic domes, thin shells, pressurized skins, esoteric materials)
- More reliable and longer-range weather forecasting; some control of weather or climate
- Flexible penology without necessarily using prisons
- Extensive use of robots and machines "slaved" to humans.

These are but a few of the "likely" advances foreseen by Hudson Institute futurists Herman Kahn and Anthony Wie-

ner between now and the year 2000. In every area of technology, rapid strides are being taken to afford man still broader control of his universe.

Consider the cluster of technologies involving biology and medicine. In the next several years, there will be transplants of all sorts within the human body, including spare parts made from synthetic materials. (Indeed, 20,000 Americans are walking around today with electronic pacemakers for their hearts.) Intensive care units will save an increasing number of people from death caused by premature heart attack. Hormonal control will retard the aging process. Nutritional aids will make people generally healthier. Drugs will be used to stabilize mental illnesses and to control mental processes. Test-tube babies, long a subject of speculation, will become a reality; and birth defects — of which there are now 250,000 cases a year in the United States alone — will be virtually eliminated.

The result of all these biological innovations and improvements may well bear out the predictions of Olaf Helmer and Theodore Gordon in a recent study for the Rand Corporation. Their findings indicate that the average American may expect a 100-year life-span by the end of this century — even earlier if sufficient funds are allocated for research and development.

What might such a blessing mean? It could mean as many as 50 million Americans retired from their jobs, living on Social Security benefits for as long as 35

or 40 years and putting a severe strain on the national economy. It could mean mounting overpopulation throughout the world, perhaps a rising desire for euthanasia or a higher suicide rate. We must be ready, in greeting technological advances, to face the very real social problems they pose.

Few Americans would want to halt our increasing capabilities to extend life by making people healthier. Few would not welcome reduction in birth defects through genetic control. But who is to determine which traits are desirable and which are to be discarded?

"Everyone agrees that high intelligence is a desirable trait," says one leading geneticist, H. Bentley Glass of the State University of New York. "But we do not want to breed criminals with high intelligence. It must go along with high ethical standards."

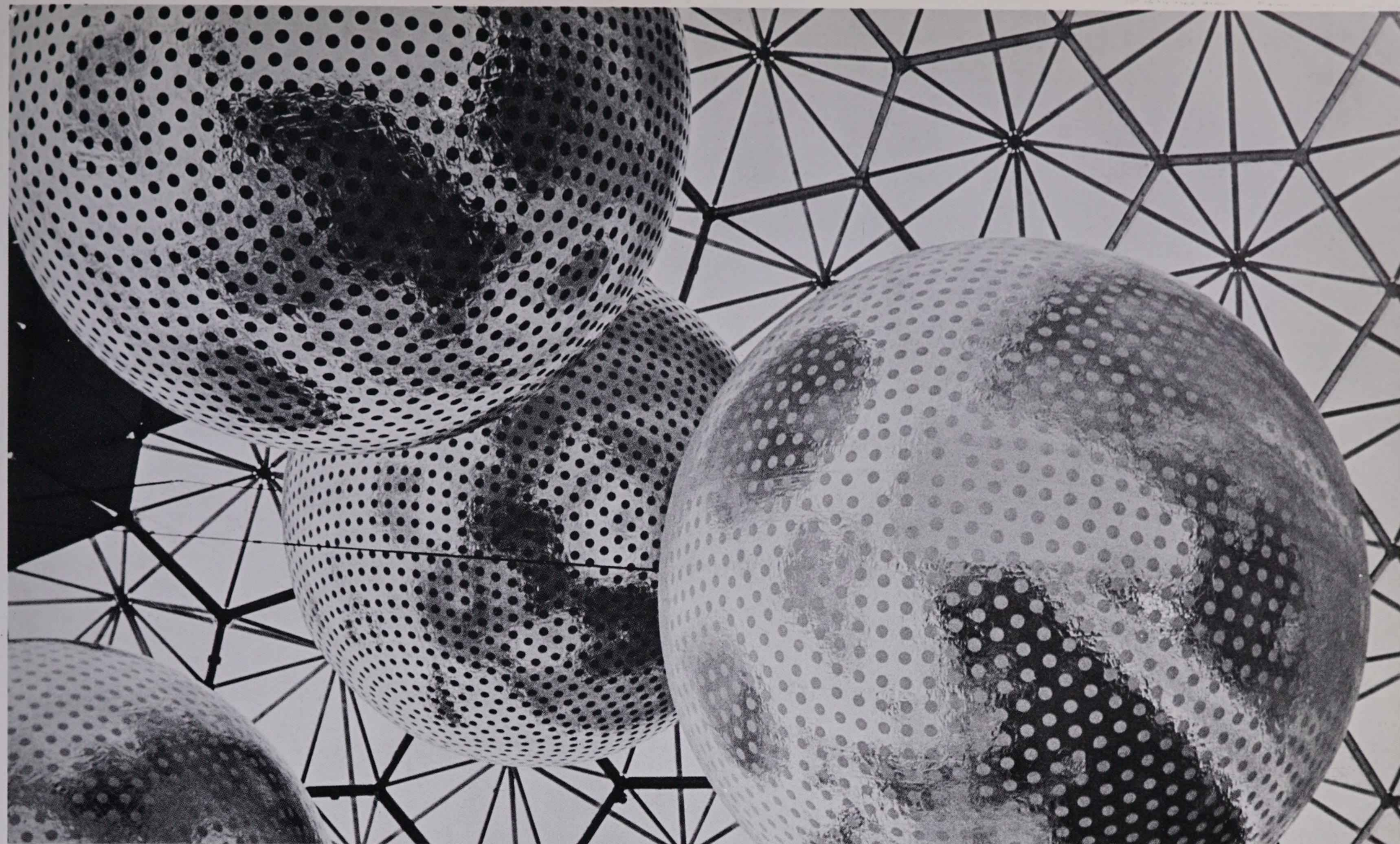
Similarly, it is unthinkable that, given the choice, one would choose not to cure cancer when so many people suffer from the dread disease. But who will set priorities to permit application of the half-billion dollars required for such conquest over a period of, say, five to 10 years?

Informational technologies, too, have radically changed our lives in the last quarter-century. Who, in the years immediately following World War II, spoke in terms of printouts or binary systems or digital-analog hybrids? Or, for that matter, who spoke then of things that are now commonplace, such things as credit cards and direct-dial telephone systems?

Computers have changed our lives very quickly, and their full impact has not yet begun to be felt. A computer expert today will tell you of machines that take inputs of human voices and give out spoken answers without the necessity of special language programming. He will tell you of computer terminals in the home that may preclude children ever having to go to school for their education, of instant credit transfers that may eliminate cash transactions altogether, of instant global communication via satellite, of housewives freed from almost all housework chores by robot machines whose actions are programmed by household computers.

Progress in this area, however, is not without its own set of social problems. People who have trouble getting credit today — the unemployed or underemployed — may become the outcasts of an economic system based heavily on credit. Or, as one British observer wrote early this year of America's steps in this direction, "an economy run on chronic personal debt, where even bus fares will be paid by credit card and debited by computer, cannot afford to create a class of virtual outlaws."

Children taught entirely by computers may suffer social alienation without daily academic exercises in a classroom full of their peers. Housewives suddenly freed from tending house and family may flood into the job market in such increasing numbers as to raise the level of unemployment. (The president of an economic consulting firm in New York cal-



Air-density satellites from the Explorer series of geophysical spacecraft.

culated in June of this year that nearly 44 per cent of all women over the age of 16 are either employed or seeking employment — compared with about 38 per cent in the early 1960s and 35 per cent in the early 1950s.)

Problems of privacy will be increased substantially when more information about individuals and groups is being bandied about. Already some soothsaying computer experts, such as Paul Baran of the Institute for the Future, have told us about invasions of privacy caused by easy access to information gathered for purposes of income tax reporting, medical insurance, credit-card data, and job-history statistics. Credit-investigating firms alone (and there are more than 2,000 of these in the United States) have amassed detailed information on 100 million people. And the Medical Information Bureau, a cooperative set up to serve the needs of the life insurance industry, maintains files on some 11 million people, including such information as drinking habits, driving record, medical condition, and even extramarital affairs.

Advances in electrical circuitry will soon permit compression of solid-state electronic systems to one-hundredth the size of those available a decade ago. The benefits of miniaturization also entail serious threats to privacy that may result from easier, better concealed eavesdropping equipment.

Again, any decisions to pass up the benefits of information technology will not be easily made, because this technology promises to make life so much

richer in so many ways. But we must be aware of the consequences before we proceed.

The same is true of still another cluster, that of the technologies of power. Advances in this area will be centered on the development of nuclear electric power for the construction of power plants in outer space, unlimited electrical energy on earth, decreased air pollution by use of smokeless electrical power, the building of ships that need refueling only once every few years (and do not pollute the ocean), elimination of insect pests via radiation controls, more accurate medical diagnoses based on more precise radioisotopic techniques, harbors and canals dug by nuclear explosions, and fresh water from desalting the seas. A Stanford Research Institute study projects expenditures of \$500-700 million during the 1970s for desalination plant construction alone.

But energy production is not an unmitigated good. It can create serious troubles. By 1980, newly built nuclear power plants will probably utilize about half the nation's water flow for cooling. That's half the flow of every river and stream in the continental United States. If water is not used as a coolant, then the air will have to be used; and that could have profound effects on weather and atmospheric temperature.

Furthermore, the buildup of nuclear wastes from the various plants — desalting works, nuclear fuels for shipboard reactors, and the like — is a cumulative problem. Nuclear waste materials need

virtually perpetual storage; and the more nuclear energy is used to power our society, the more wastes we will have to contend with. These wastes, as *New York Times* correspondent Anthony Lewis points out, are corrosive liquids that boil for more than 100 years — and continue to be lethal for thousands of years. In less than 20 years, nine of 183 tanks used for storage in Idaho, South Carolina, and Washington have already failed.

The storage problem may be licked in the future. But the proliferation of nuclear wastes will be an ever-increasing headache for a power-oriented society.

This same enormity of challenge is proffered by many other new technologies. We must meet these challenges,



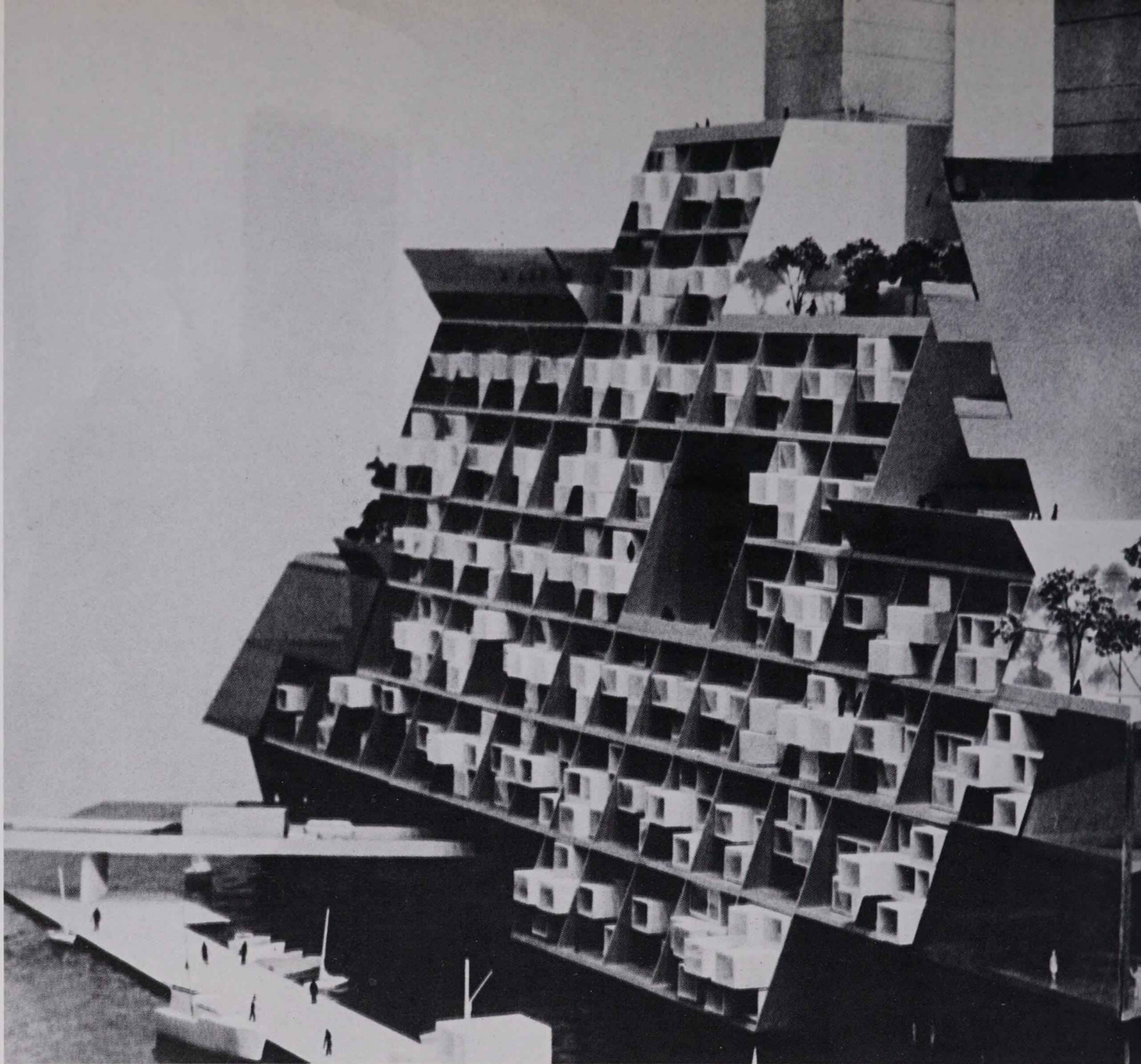
Technicians at Atomic Energy Commission Hanford plant, Richland, Wash., lift "fishpole" camera to take photographs inside underground storage tanks for radioactive waste.

and we must meet them now. For, as the renowned Buckminster Fuller never tires of pointing out, all men are citizens aboard the "spaceship earth." And the earth as a system is now in grave danger as a result of environmental crises. Careful attention must be given to inputs that affect the system, especially from the powerful levers of our new technologies.

The word "ecology" has recently become a part of the vocabulary of the man in the street. It was first used less than 100 years ago, in 1873, and its implications have yet to be fully comprehended. But Fuller's statement offers a useful perspective: Everything we do affects everything else, because it all takes place within our all-encompassing system, our "spaceship earth."

We must look, therefore, at the promises and performances of all technologies — past, present, and future — and evaluate what should be done about them. In this we are more fortunate than Faust, since in his own time that mortal could not have studied the consequences of his own devil-granted powers. In some ways, at least, we can.

We can, for instance, evaluate some of the effects of past technologies. The Sahara, for example, once boasted lush greenery and thriving civilizations. And in the once-fertile Tigris-Euphrates valley, the so-called "cradle of civilization," there is only dust today. In both cases, it was probably bad or overeager cultivation and irrigation that caused the land to give out. A powerful technology overwhelmed the resources it was working



“Everything we do affects everything else, because it all takes place within our all-encompassing system, our ‘spaceship earth.’”

on. Today, we know better than to over-farm. At least, those people who live and work in technologically advanced countries try to control their efforts. But in such regions as Central America, which suffers the pressures of an expanding population, overfarming is going on even today — leaching the soil of its nutrients, starting fertile land once more on the way to becoming a desert. History’s lesson has not yet been fully learned.

Technological know-how alone is not the answer. Take the case of the Aswan Dam, one of the most ambitious engineering and irrigation projects in the world, completed by the Russians in 1964. By changing the way in which water flows down from upper Egypt to lower Egypt and the Mediterranean, the ecology of the area has been greatly affected. True, the Egyptians get a few better crops from more predictable floodings of their land. But these advantages have been far outweighed by other results of the dam project. Nutrients from the soil are trapped behind the dam, and the croplands that depended heavily on them in the past have since lost some of their fertility. Moreover, nutrients carried to the waters at the mouth of the Nile have caused unexpected growth of sea plants there. The vegetation attracts fish away from other areas of the Mediterranean — and from the fishing fleets of other nations — thus altering not only

the ecology of the area but its economy as well.

The Aswan Dam was logical and perhaps imperative for a country that wanted to enter the modern age with sufficient electricity, independent of the natural and unpredictable cycles of flooding and drought. But its construction points up the need to weigh the advantages of technology more carefully than ever, for our capacity to affect the world is greater than it has ever been.

This is far from easy to do. Some products of our technologies have had consequences that were virtually unforeseeable. A case in point is the internal combustion engine. To be sure, we were grateful for the advent of this marvelous device. It accelerated our development as a society. It eased the life of the individual considerably. And when the motorcar was built, incorporating the engine, surely no one thought to count the lead particles in its exhaust. Today, of course, we do, and for every reason that superior hindsight allows. We know too well the ravages of air pollution.

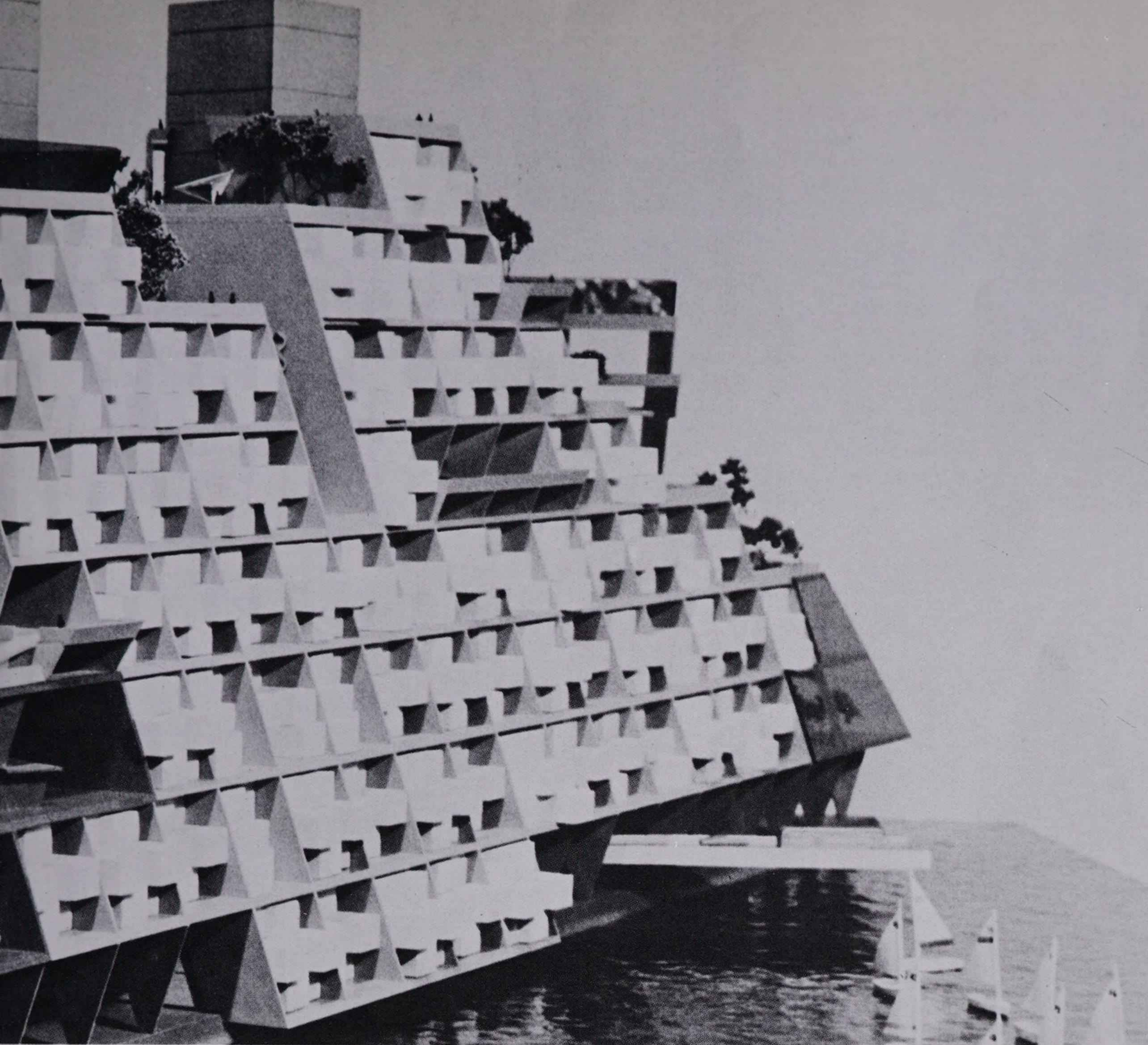
Modern society may have outgrown the internal combustion engine, as some experts contend, but not because the device has failed us technologically. Rather, it has worked too well. This is not the fault of technology but of other factors. If the prospect of an internal combustion engine confronted us today for the first

time, who is to say that we would foresee — and ward off — such ills as it may have generated since its actual inception?

We might. Information is the key to planning; caution is the watchword. A prime example involves a proposal to build a sea-level canal through the Isthmus of Panama to replace the present and outmoded lock canal. From the outset, however, scientists have registered doubts concerning consequences of the project. They have pointed out that the Pacific Ocean is higher and colder than the Atlantic and that this might disturb marine ecology on both sides of the isthmus, which has separated the oceans for millions of years.

To illustrate one possible difficulty, Dr. Ira Rubinoff of the Smithsonian Tropical Research Institute mated two similar species of fish. The males were taken from one side of the isthmus, the females from the other. Their offspring were sterile, indicating that, if species were allowed to mix freely in a sea-level canal, some major fisheries might be wiped out in a generation.

There is further uncertainty as to the effects that would accrue from one ocean pouring its excess into another. Many of the great cities of the world rim the Atlantic Coast; these might be seriously affected by a rise in sea level. Also, as Dr. LaMont Cole of Cornell University points out, no one really knows how



Model of floating tetrahedron "city" designed by Buckminster Fuller.

much radioactivity would be released into the air from atomic blasts that might be needed to dig the canal.

It is encouraging to note that, in this case, the government is carefully looking into the consequences of technology at its disposal before leaping onto a path of irreversible destruction.

There are hopeful signs, too, in moves to counteract the effects of past mistakes. Six years ago, the Municipality of Metropolitan Seattle was created to permit city, suburban, and county officials to deal jointly with the problem of water pollution. In a period of just three years, from 1964 to 1967, the eutrophication (or aging) of nearby Lake Washington, which had borne the brunt of sewage disposal for the area, was slowed down and the growth of algae reversed. "In a way, we're lucky," says a young lawyer who led the fight for creating the public group. "Compared to the East Coast, this is still 'new' country. They had a 150-year head start on us in polluting their lakes and streams, and they have a lot of repair work to do. We're catching it in time."

Public consciousness has now been alerted to environmental dangers. Certainly, the technological capabilities to avoid other disasters are at hand. The major question confronting mankind is whether or not to use those capabilities.

Recently, doctors have learned how to

transplant human hearts. Within a few years, they will be able to transplant human brains. Successful experiments have already been performed with monkeys, and the perfection of brain-transfer techniques for human beings is simply an academic exercise that will be soon completed. The problems are moral, not technological. And many people in the medical profession are now having trouble deciding whether these procedures are ethically acceptable.

Hence, the overriding question for future life becomes not how to gain the Faustian powers of our dreams but, more importantly, whether we should use them once they are in our grasp.

Should we forgo using nuclear-reactor technology to desalt the seas on a grand scale because by-products of the reactors might leak into the environment in some unknown way and despoil everything?

Should we forgo the further exploration of space because we might contaminate or be contaminated by forms of life that might exist on another planet?

Should we forgo developing multiple-warhead reentry systems because their use might destroy the human race?

The questions are by no means easily answered. There are those who would go quickly, do all things possible, let the consequences muddle themselves out as best they can. Such an attitude is basi-

cally untenable. The sheer enormity of man's powers precludes the precipitous use of those powers. But the alternative extreme, to withdraw from any such attempts, is simply impossible. To pull back from the very brink of greatness is entirely contrary to human nature. Continued exploration of outer space, for example, will not be ignored.

The point is that the products of technology have lost the innocence of singular accomplishments. All technology is now part of a system, our total system, our "spaceship earth." We can no longer afford to sit and wait to see what the future may bring. We must actively pursue the future. For, as the economist Robert L. Heilbroner so aptly put it, "the coming generation will be the last generation to seize control over technology before technology has irreversibly seized control over it."

Everything has a risk-to-benefit ratio. Most students of the future — such men as Kahn, Gordon, and Helmer — have thus concluded that the risks implicit in our powers must always be balanced against possible gains before we take any steps that will affect our future.

Not unlike military planners, we must now plan alternative strategies and then use our technologies accordingly. And we must understand our own social values so that we can plan well. We must, in short, know what we want. ■

Pollution in America

by Kenneth B. Platnick

america was once a paradise of timberland and stream but it is dying because of the greed and money lust of a thousand little kings who slashed the timber all to hell and would not be controlled and changed the climate and stole the rainfall from posterity and it wont be long now it wont be long till everything is desert from the alleghe-nies to the rockies the deserts are coming the deserts are spreading the springs and streams are drying up one day the mississippi itself will be a bed of sand ants and scorpions and centipedes shall inherit the earth.

From the lives and times of archy and mehitabel, by Don Marquis, copyright 1935 by Doubleday & Company, Inc.

The world of the 1970s, caught up in a fabulous swirl of technical progress, is also headed, as one European scientist has said, for a veritable "stink explosion." For pollution is the by-product of industrial advance. And, in both, America leads the field.

"The United States," says editor-conservationist Norman Cousins, "with less than 2 per cent of the world's people, accounts for almost 30 per cent of poisons being dumped into the sky and the seas." The average American, in fact, is responsible for more than one full ton of waste each year. Much of this is the result of simple neglect. Much is the result of necessary consumption.

It may come as something of a surprise to weight watchers, but an American typically devours about 2.8 pounds of food and 4.0 pounds of water a day. He also breathes some 30 pounds of air. Only a small portion of the total intake is re-

Kenneth B. Platnick is on the RCA Public Affairs staff.

tained for use by the body. The rest is discharged in a form unfit for consumption by others.

Multiply those figures by 200 million Americans, and the total volume of daily consumption is staggering. The mere arithmetic of consumer needs poses a serious threat to man's future. And scientists are hard at work developing both new foods and the means to conserve those which exist.

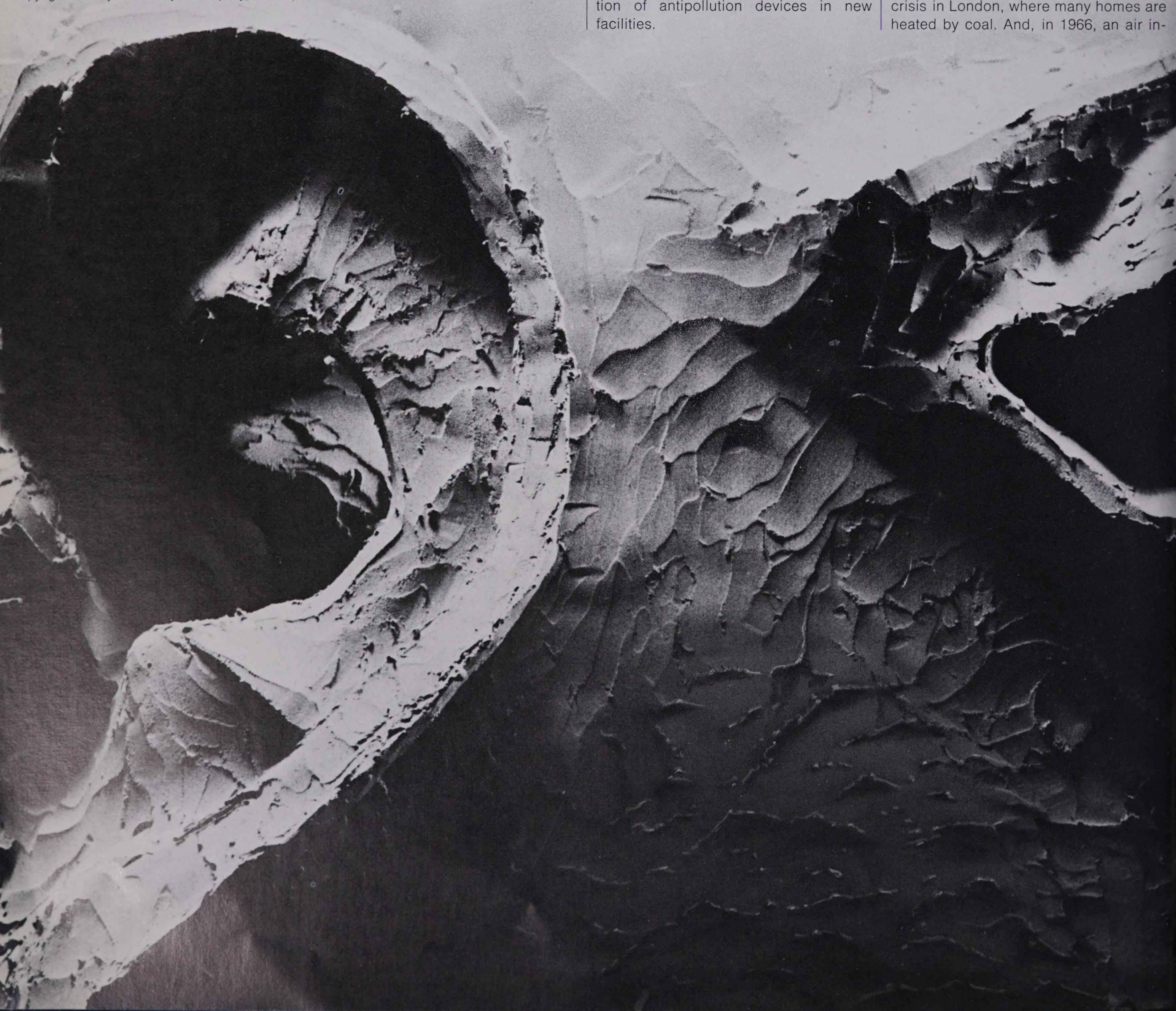
More serious still is the continuing, even increasing, destruction of available resources before they can be used — the fouling of our air and water, the killing of the plants and animals around us, the ruination of our total environment.

This year, American industry will spend nearly \$2.3 billion trying to limit the extent of that ruination. The amount, according to a recent McGraw-Hill survey of capital expenditures among major U.S. corporations, is 37 per cent higher than that spent in 1969. Expenditures include the upgrading of factories and equipment already in operation and the incorporation of antipollution devices in new facilities.

The monetary costs of fighting pollution will undoubtedly climb as industry continues to make strides in its capacity to produce more and better goods and services. But the price of unchecked pollution would be disastrous.

Take, for example, those 30 pounds of air we breathe each day. The oxygen content is vital to our survival; but, with increasing and alarming frequency, that element is displaced by various undesirable gases pumped into the atmosphere through industrial processes. Not only gases but solid particles as well may be introduced into the lungs, causing serious damage to the respiratory organs, possibly even cancer. Sophisticated measuring devices, such as RCA's newly developed Quantacon tube, help industrial plants measure contamination of the air. However, for most of us, the soot on the windowsill or the smarting of our eyes is enough to tell the story.

The story can be terribly grim. During two weeks in December, 1952, some 4,000 deaths were attributed to a smog crisis in London, where many homes are heated by coal. And, in 1966, an air in-



version trapped New York City residents inside what was described as a "poison balloon." The lower atmosphere became clogged with such noxious pollutants as chimney smoke, automobile exhaust, and industrial waste. Over a single weekend, at least 168 people died as a result of this atmospheric poisoning, most of them men and women with critical respiratory and heart ailments.

Recent scientific estimates indicate that the average New Yorker feeds his lungs the equivalent of 38 cigarettes' worth of toxic materials every day. And the city's Department of Air Resources, which maintains data on dozens of components of air pollution from 38 locations in five boroughs, has developed for public use a general index of acceptability. (In June, 1970, for example, the atmosphere was deemed "good" on 0 days, "acceptable" on 3 days, "unsatisfactory" on 15 days, and "unhealthy" on 12 days.)

Nor are New Yorkers alone in their plight. Virtually every community that boasts industrial operations is fully involved in the pollution problem. In July, Congressman Ken Hechler summed up an 11-year-old situation confronting residents of Vienna, W. Va., near an electric power plant and a ferroalloy works along the Ohio River. "When the smog covers the sun," he quipped, "you have one way of telling it's morning. The birds start coughing."

Of all air pollutants, the one that poses the most critical problem is sulfur dioxide. Other sulfur and nitrogen oxides continue to threaten the "breathability" of the air around us — as, in fact, do the carbon monoxide fumes of vehicular exhaust — but the rise in sulfur dioxide pollution of the atmosphere seems almost uncontrollable. A report issued jointly this spring by the National Research Council and the National Academy of Engineering foresees an increase in the next 30 years of more than 300 per cent in the emission of this compound as the demand for electricity in the U.S. multiplies. (At present, pollution from sulfur

dioxide derives mainly from oil- and coal-fired electricity generating plants.) The report, while strongly urging federal support and industry commitment to meet the problem, notes pessimistically that there is little hope for doing more than holding sulfur dioxide pollution to its present levels.

Space heating and incineration are major sources of air pollution in urban areas; manufacturing waste contaminates the atmosphere in industrial suburban, even rural, areas. But the automobile transcends these local problems, loosing vapors of filth wherever it travels: as much as 3,200 pounds of carbon monoxide, 75 pounds of nitrogen oxides, 18 pounds of aldehydes, 17 pounds of sulfur compounds, and four pounds of ammonia and organic acids per 1,000 gallons of gasoline consumed.

Those gases which are most dangerously offensive to human life also pose a

dire threat to the animals and plants on which man depends. A stretch of barren land near Ducktown, Tenn., attests to the damage done by sulfur dioxide that was first emitted from two copper smelters in the area over 100 years ago; not only was plant life killed off by the noxious vapors, but the soil itself was so damaged chemically as to render it incapable of sustaining vegetation thereafter.

Nor has man been content with fouling the air he must breathe. He has brought about untold damage — in some cases, absolute ruin — to his water resources as well. In the U.S. alone, 30 per cent of all community water supplies were recently found to contain excessive amounts of germs and noxious chemicals, including traces of pesticides and arsenic, which as one federal official mildly concluded "can be serious to people who have been drinking it for years."

A New York congressman, Richard D. McCarthy of Buffalo, decided last May to get a firsthand view of the problem of water pollution. Donning the gear of a professional diver, and in fact accom-





"The solution to the problem of pollution, then, would seem to depend heavily on the success of industrial efforts to join with government and the consumer public in a common, unrelenting drive. The alternative can only spell disaster."

panied by a professional diver, McCarthy spent seven minutes waste deep in the big muddy waters of the Hudson River.

"We'd have stayed in longer," he said as he emerged, "but we didn't want to get infected."

Fortunately, the Hudson and other similarly plagued waterways are not used for drinking water. But the problems they pose are serious enough: the spread of human disease, the killing of aquatic life, the loss of important recreation sites.

Some water pollution originates from the disposal of domestic wastes, some from the disposal of a whole town's untreated sewage. There are many communities totally lacking in treatment facilities. There are many communities whose facilities are so overburdened that much of their sewage must be discharged directly into public waters.

A great deal of the fault lies with industry. Dredging operations, mine drainage, oil spills, the runoff of pesticides and waste chemicals, all these contribute heavily to the ruin. Thermal pollution, which occurs when water used for cooling is returned to streams at a temperature too high to sustain oxygen for certain organic substances, adds substantially to the problem.

Another ingredient on the pollution scene is noise. Its effects can be shattering, quite literally, as the sonic boom of certain jet aircraft has already demonstrated. The boom is not a single sound but a continuous shock wave carried along by the plane over its entire route. (In the case of the planned SST, that shock wave is expected to be about 50

Participant in New York City's Earth Day, April 22.

miles wide.) Property damage and physical discomfort incurred as a result of sonic boom have already accounted for lawsuits of more than \$1 billion.

In urban America, the cacophony of jackhammers, subways, motor traffic, and high-frequency police sirens is as much a part of the total environment as garbage-ridden sidewalks, soot-filled air, or arsenic-fortified water.

And the condition of that environment can only be expected to go from bad to worse. For, as one highly regarded economic news reporter has pointed out, the basic cause of pollution growth in America is the growth of production.

"We already know," says Edwin L. Dale, Jr., of *The New York Times*, "that the national output in 1980 will be, and almost must be, some 50 per cent higher than it is now. . . . If an economy of \$900 billion in 1969 produces the pollution and clutter we are all familiar with, what will an economy half again as large produce?"

Probably the most dramatic show of concern for the problems implicit in such a proposition was the celebration of a quasi-official Earth Day on April 22. It was a nationwide exercise in awareness. Whether or not that awareness leads to action — or, indeed, whether or not that awareness can be publicly sustained — is yet to be seen. But the fact remains that the mass rallies that made up the whole Earth Day experience were not spontaneously generated. They were the planned, coordinated climax of a long-building swell of public resentment over the neglect of the environment.

Neglect by whom? Resentment against whom? The blame is not easily placed, although the very statement of the case has served to stir a widespread interest in its resolution.

A consumer group called the Environmental Defense Fund has charged government and business interests with injury to public health and safety. Among its successes in this area was the decision by a major chemical company in June to discontinue production of DDT following EDF-initiated court proceedings to prohibit the company from discharging wastes into a federal wildlife refuge in Alabama.

An absence of specific legislation has seriously impeded federal efforts to clean up the nation's environment — even if there existed the will to do the job. During the 1960s, a number of acts (Clean Water Restoration Act, Solid Waste Disposal Act, Aircraft Noise Abatement Act) were passed by Congress to set standards for control, but few dealt

fully with the matter of enforcement and none was developed in coordination with any other as part of a concerted government drive. The National Environmental Policy Act of 1969 captured the general mood of Congress by declaring its intent "to create and maintain conditions under which man and nature can exist in productive harmony" and by providing for a Council on Environmental Quality to advise the President on policies in accord with that intent.

(An interim solution to one particular problem was discovered this past spring by an enterprising researcher on Capitol Hill. This was the 1899 Refuse Act, which prohibits the dumping of refuse into waterways without the permission of the U.S. Army Corps of Engineers. The act was brought to light by a Wisconsin congressman, Henry S. Reuss, who filed suit against 149 companies in his state for violation of its provisions. Ironically, the first official use of the act was to claim boarding rights against a Soviet tanker accused of spilling oil into waters off the Alaska shore.)

To a large extent, government response to the pollution problem has rested with state officials. Implementation of many programs planned at the federal level has been left to the initiative of the states. In some cases, state legislatures themselves have authorized tax incentives to implement pollution-abatement techniques and devices. In New York, deductions from taxable income, both personal and corporate, are allowed for tangible, depreciable equipment purchased for purposes of pollution control. In Michigan, such facilities are exempt from property taxes, and purchases of tangible personal property for those facilities are exempt from sales and use taxes.

City ordinances, too, are being revised to help limit the dangers of pollution — from apartment-house garbage incineration to building codes for industrial sewage disposal and smog-producing effluents.

Summing up the respective roles of government at all levels, the President's science adviser, Dr. Lee A. DuBridge, has urged that the federal administration be considered "an enforcer of last resort" when local and state officials are themselves unable or unwilling to enforce restrictions. But industrial pollution, he maintains, must continue to be a private responsibility, and costs of environmental protection should be borne largely by the polluters themselves.

The extent of corporate responsibility varies, naturally, with the nature of the





"In urban America, the cacophony of jackhammers, subways, motor traffic, and high-frequency police sirens is as much a part of the total environment as garbage-ridden sidewalks, soot-filled air, or arsenic-fortified water."

company and its operations. Of a total \$2.3 billion reported for capital expenditures on pollution by American corporations in 1970, more than one-sixth (\$378 million) is projected by electric utilities alone. The figure represents an increase of 157 per cent over actual 1969 expenditures, compared with an average 37 per cent increase for all industries during the year.

But price alone is not the measure of concern. Corporate awareness is evident at all levels of spending, from such major polluters as gas and electric utilities and mining companies to others whose operations are relatively "clean." Among the latter is RCA, which, despite its size and importance in the industrial community, has not figured substantially in the national picture of environmental control. Yet, the company formally began a concerted drive against pollution three years ago with the establishment of an engineering survey unit to determine the specific effects of each of its manufacturing activities. The first job was to assemble data from all plant locations on the volume and toxicity of chemicals in use there. Major immediate problems were identified and programs to correct them set in motion. The engineers' findings also provided information for the more efficient design of new equipment as well as the possible relocation of entire plant operations.

Such decisions as plant relocation and revised work procedures will be the responsibility of a new Pollution Control Committee set up early this year on the basis of a preliminary study. The committee, comprising representatives of all major divisions of the Corporation, is charged with coordinating and guiding the work of plant engineers, providing a suitable communications link between all parties engaged in antipollution work, and ensuring that the company "does in fact not only abide by the laws of the land but that it keeps well within anticipated laws."

Exemplary of these efforts has been the continued upgrading of the waste treatment plant at RCA's Lancaster, Pa., site. Underground lines, collection systems, and pumping stations were installed as far back as 1952, and subsequent expansion and improvement have cost well over \$500,000 to increase capacity for treating chromates, cyanides, fluorides, and acids separately under automatic metered control. As a result, the water discharged into local streams is actually potable (or fit to drink) — which is considerably more than the law requires, since Pennsylvania authorities do not consider any stream in the state to be potable. Nonetheless, in Lancaster, as in other Pennsylvania locations (such

as Scranton and Mountaintop), the company has thus provided for the maintenance of aquatic life and community recreation facilities through the careful planning of its industrial operations.

Sometimes the extent of those operations increases unexpectedly, as was the case with the company's Burlington, Mass., plant. Built in 1960 as an engineering unit, the Burlington plant soon began production of custom-made equipment, mainly for government use. Two additions to the plant eventually taxed its sewage system to the limit. A third addition, now in the planning stages, would render that system wholly inadequate. To preclude this possibility, RCA Burlington hired a Boston engineering firm specializing in waste disposal to study requirements for discharging both industrial and domestic waste into the metropolitan Boston treatment system. Costs for reevaluation and implementation will total more than \$100,000.

The Burlington plant, of course, is a fairly new one. In some cases (as in Camden or Indianapolis), facilities now date back 50 or 60 years, and attention is being given to the phasing out of old machinery there in favor of newer equipment that can help reduce pollution. The emphasis throughout the company, however, is on planned growth — considering pollution from the start as a major area of concern in establishing any new manufacturing site. A prime example is the RCA plant in Midland, Ont., recently cited by Canadian authorities for releasing the best-treated effluents of all manufacturing operations in the province. The plant, which manufactures color television picture tubes, was constructed during 1966-67, and provision was made at the outset for a waste treatment plant that cost more than half a million dollars to build. Current operating costs, including depreciation and overhead costs, are estimated at \$38,000 a year — or about \$1.40 per 1,000 gallons of effluent.

The price of pollution control in these areas has been relatively low. Yet, in the case of a major polluter, costs may be astronomical. According to one expert in the field, S. Smith Griswold, president of Seversky Environmental Dynamics Research Associates, a thorough job for all industries could prove to be more expensive than landing men on the moon. And Dr. DuBridge himself noted recently that "it's perfectly possible to have completely pure air and completely pure water, but the cost would be infinite."

Occasionally, the cost may be turned to profit, as was the case with those Ducktown smelters when a sulfuric acid plant was installed to control sulfur dioxide pollution of the atmosphere. The acid found a ready and growing market

in the manufacture of explosives and, since the advent of World War I, has actually become the factory's principal source of revenue; the copper itself is now a by-product of the operation.

More recently, one U.S. manufacturer has developed a refining system that steams wood chips, sawdust, and furniture waste into a strong, uniform material for fiberboard that is difficult to distinguish from actual lumber when painted. The waste is usefully consumed; and the result, from the maker's point of view, is enhanced profit potential.

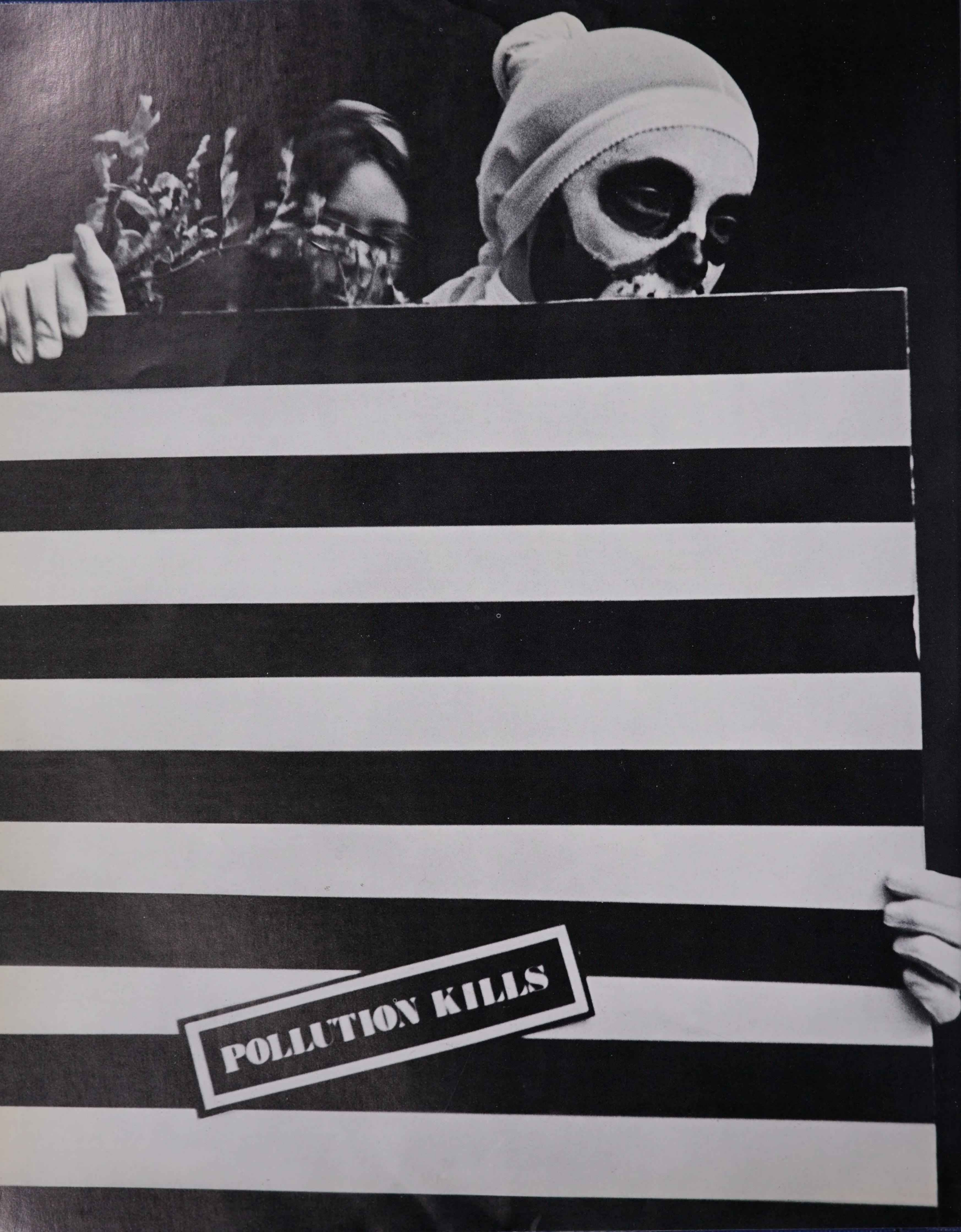
The technology of pollution control may be difficult to master, but it can be mastered. General Motors president Edward N. Cole assures us that, if the federal government demanded, automobile manufacturers could, by 1980, produce engines that would be virtually pollution-free. Meanwhile, gasoline refineries are working hard on reducing hydrocarbon and carbon monoxide emissions that clog the air above our streets and highways.

But who will bear the ultimate costs of this new technology? Business is business, after all, and companies must maintain a fair margin of profit to stay in business. If the costs of pollution control run high and a company's profit margin is substantially cut — perhaps even to deficit levels — then those costs must be passed along to the consumer or the company will not survive.

The question in a nutshell, as one financial weekly put it, is this: Will Americans really be willing to spend another \$30-40 billion on automobile use "just to get a few particles of lead out of the gasoline"?

When it means paying higher prices for the same product, how will the individual consumer react? Will he gladly underwrite the costs of antipollution technology responsible for the higher prices? Or will he balk as public clamor for a cleaner environment nears reality? Columbia University sociology professor Amatai Etzioni predicts that the coming decade will see no real progress in pollution abatement, although people will press on enthusiastically for the public good — "with open minds, good hearts, but closed pocketbooks."

The solution to the problem of pollution, then, would seem to depend heavily on the success of industrial efforts to join with government and the consumer public in a common, unrelenting drive. The alternative can only spell disaster. For, so long as each group continues to concern itself exclusively with its own interests, the interests of none will be served. And, in the end, the earth may well, indeed, become the vast desert of archy's dire predictions — a wasteland monument to man's thoughtless greed. ■



POLLUTION KILLS



Vivaldi: The Eight Concerti for Viola d'amore

Walter Trampler, viola d'amore
Alberto Lysy conducting the Camerata Bariloche LSC-7065

Walter Trampler has undertaken a comprehensive survey of all eight concerti written for the viola d'amore by Antonio Vivaldi. Trampler performs six of these as solos. In the others, he is accompanied by lutenist Giuseppe Anedda and the well-known Italian ensemble, the Camerata Bariloche. The instrument played by Trampler on this Red Seal recording was made in 1743 by Carcassi; it was given to the Juilliard School of Music for the personal use of the artist, who teaches at the school.



The Last Sweet Days of Isaac

The Original Cast Recording LSO-1169

A 1970 rock musical by Gretchen Cryer and Nancy Ford, "The Last Sweet Days of Isaac," was co-winner of an "Obie" award for the best off-Broadway musical of the season. The show also was chosen as the best off-Broadway musical by the New York Outer Circle critics. This recording continues RCA Records' involvement in the off-Broadway theatrical world, which began with original cast albums of "Hair" and "Your Own Thing" and has since included such hits as "Promenade" and "Joy." Austin Pendleton and Fredricka Weber star in the production, which includes the exciting vocal/instrumental rock group, The Zeitgeist.



Strauss: Salome

Montserrat Caballé, Sherrill Milnes, Richard Lewis, Regina Resnik, James King, and Julia Hamari
Erich Leinsdorf conducting the London Symphony Orchestra LSD-7053

Strauss' *Salome*, based on Oscar Wilde's play of the same name, was first performed at the Dresden Royal Opera in 1905. It was an immense success, marked by 38 curtain calls at the end of opening night. Two years later, however, the New York premiere was met with public outrage. One critic called it "abhorrent, bestial, and loathsome." Yet the role of Salome has always ranked as a tour de force for any prima donna. Miss Caballé, featured in this two-record Red Seal release, considers it her favorite.



Schumann: Kreisleriana, Op. 16, The Prophet Bird, and Arabeske, Op. 18

Artur Rubinstein, pianist LSC-3108

This is the latest addition to Artur Rubinstein's recorded repertoire of the music of Robert Schumann. It features a distinctive interpretation of the composer's longest and most subtle piece for solo piano, "Kreisleriana," which was inspired by musical criticisms written by E. T. A. Hoffmann under the pseudonym Johannes Kreisler. Rubinstein has also chosen two shorter compositions, the radiant "Arabeske" and "The Prophet Bird," a work closely related to the feature piece in its air of mystery and its use of pianistic color.



Previn Conducts Strauss

André Previn conducting the London Symphony Orchestra LSC-3135

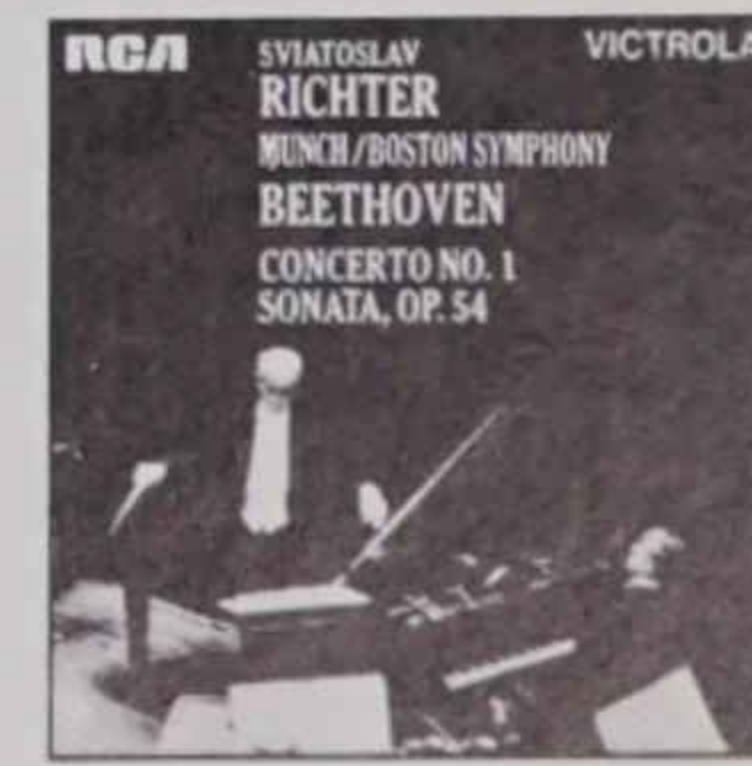
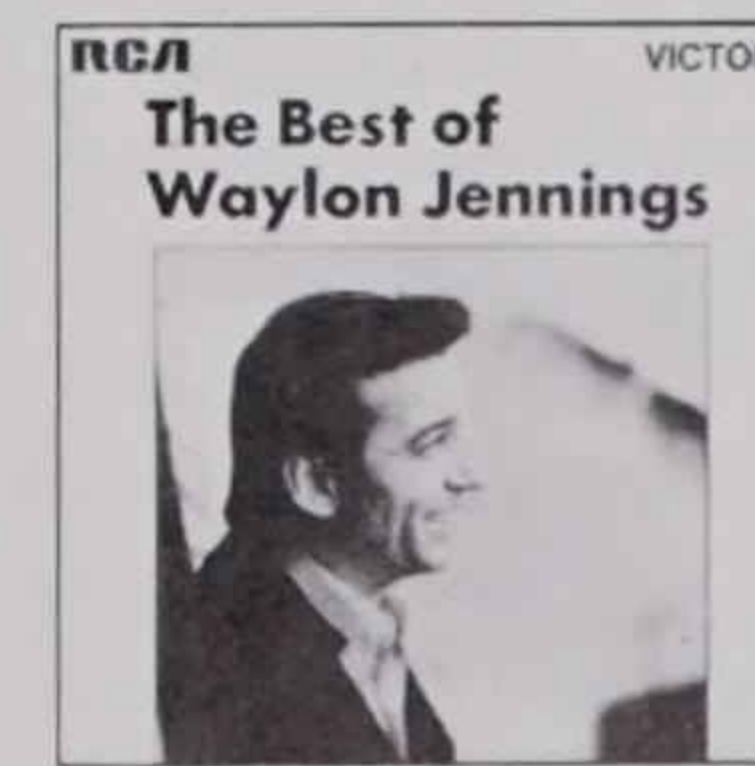
The popularity of the motion picture, "2001: A Space Odyssey," has been credited with renewing interest in compositions by Richard Strauss, featuring as it does the composer's "Thus Spake Zarathustra." In this Red Seal recording, André Previn acquaints today's audiences with other works by the composer at various stages of his long, creative life. In addition to two great standards, "Der Rosenkavalier" and "Don Juan," Previn offers the first recording of the commemorative waltz, "München." Strauss composed it for a film in 1939, but the film was never shown and the work was not performed until 1951.



Fireworks

José Feliciano LSP-4370

"Fireworks" is José Feliciano's first album since the release of "alive alive-o!" last December. On this album, Feliciano offers more examples of his guitar virtuosity and unique singing talents. The album's title song is an instrumental transcribed for the guitar by Feliciano from Handel's "Fireworks Suite." Other Feliciano originals featured are "Destiny," "Pegao," and "Once There Was a Love," written in collaboration with the album producer, Rick Jarrard. The artist also interprets five songs from the Lennon-McCartney songbook and one of the great Rolling Stones' hits, "Satisfaction."



Other Current RCA Releases



POP MUSIC Hit Sound of the Recording Industry

Since 1954, record sales have increased 1,000 per cent. Sophisticated recording and marketing techniques are part of the reason. The rest is "in the grooves."

by Robert Micklin

What does it take to strike gold in the recording industry? Musicianship? Yes. Personality? Yes. Something else? Definitely yes.

For, of all the successful recording artists last year, top honors went to a recording group that was not a group of recognizable personalities at all but a concept, instead — a combine of anonymous performers billed as the Archies. The group was featured initially as the musical accompaniment of an animated

Robert Micklin is a reporter for the Long Island daily, *Newsday*.

TV series based on the comic strip "Archie." Immediately, though, they created something of a recording sensation with American youngsters. Their hit single, "Sugar, Sugar," sold more than 6 million copies in 1969, making it the year's best seller.

Such success, of course, is to a large extent the product of craftsmanship and marketing know-how within the industry. But it also reflects the burgeoning of the industry itself during the last 15 years. For recordings, once thought headed for an early death with the advent of radio,



then supposedly relegated to near-oblivion by that miraculous invention called television, have become the fastest growing medium of home entertainment.

In 1954, retail sales (list price) totaled \$182.7 million. The very next year, that figure jumped to \$235 million as the trend took hold firmly and went on to top the billion-dollar mark in 1967. Last year's total record and tape sales reached \$1.6 billion, with projections for 1970 nearing the \$2-billion mark.

Why? Because, says a leading independent merchandiser of economy-

priced records, "recorded music is still one of the least expensive forms of professional entertainment for the consumer, and it can be enjoyed over and over again."

Another reason stems from the nature of America's fast-paced technological society in the mid-1950s. A generation of World War II babies was becoming a generation of affluent teen-agers, and the recently developed "rock 'n roll" sound fairly represented their response to the sociopolitical environment.

At first, rock music was of a simple,

basic form — plaintive laments sung to the accompaniment of two or three guitar chords. Then came the so-called "British explosion" of 1964, beginning with the success of the long-haired Beatles and, later, other such groups as Herman's Hermits, the Dave Clark Five, and the earthy Rolling Stones. This element brought a certain sophistication to rock music, with lyrics evolving from "I love you, yeah, yeah, yeah" to statements about self-identity, personal freedom, drugs, and sex.

The group sound became the pop

sound of the 1960s. Yet, even among groups there was a wide diversity of styles. There was the sweet California swing of The Mamas and The Papas, and there was the bouncing country rock of The Lovin' Spoonful. There were the wry and melodic innovations of the Beatles, the imagistic poetry of Bob Dylan's electronic folk rock, the psychedelic "acid rock" of The Jefferson Airplane.

It probably comes as no surprise to anyone with a radio or television set, a phonograph, or a teen-ager in the family that pop music today accounts for 75 per

Above: Pete Townshend (The Who). Below, left to right: Jorma Kaukonen and Marty Balin (The Jefferson Airplane); Elvis Presley; Mick Jagger (The Rolling Stones); Roger Daltry (The Who); The Guess Who; Janis Joplin.

cent of all recordings sold in America. Pop (including rock, country, folk, and so-called "easy listening" music) is the dominant sound of the record business. Classical music garners 7 per cent of the market, leaving the remainder to such diverse categories as jazz, Broadway and other show albums, movie soundtracks, children's records, and the spoken word — although, in the case of a Broadway show such as "Hair" or such movies as "Easy Rider" and "Midnight Cowboy,"

the music is undeniably of the pop idiom. Market researchers at RCA Records estimate the youth market in America at 49 million potential buyers — with teenage girls responsible for the greatest portion of actual spending. In 1969, this market accounted for nearly \$1.1 billion of the industry's \$1.6-billion sales.

Big sales mean big money. Last year, for example, singer Tom Jones produced six albums for London Records that sold more than \$1 million apiece. Capitol's



Glen Campbell earned four such albums; and RCA's Elvis Presley, who has been awarded more Gold Records than any other performer in history, had three. "There is no formula," says one advertising executive, "no magic way to determine a hit. Sometimes you think you have a tremendous record, and you send it out, and it drops dead."

A hit record, in industry terms, doesn't necessarily mean a million seller. To get a grasp on the upper rungs of the pop

charts, a single must sell at least 200,000 copies, more likely 300,000. An album is usually considered a hit if it sells upward of 70,000 copies.

"In deciding how many records to press," says the manager of field sales for a leading manufacturer, "a number of factors must be considered: the artist's previous sales, geographical concentration in broadcasting his current release, even what kind of music the record contains. With either singles or albums, we

might start off with an initial distribution of 10,000 records and keep a back-up stock ready just in case."

Sales figures are compiled by the Recording Industry Association of America, which independently audits data supplied by its 55 member record companies. Member companies now account for 90 per cent of all record production and sales in the United States. Each pays from \$75 to \$28,000 a year in dues, depending on its business volume. In addi-

tion, a \$150 fee is charged for each audit.

Each million seller—either a single selling a million copies or an album that earns \$1 million in tape and record sales (based on one-third list prices)—is formally recognized by the association with the award of a Gold Record. The trophy is actually nothing more than a thinly plated metal disc manufactured at a cost of \$10, but it has become the sales standard of the industry.

"The idea of the Gold Record has been



'There is no formula,' says one advertising executive, 'no magic way to determine a hit. Sometimes you think you have a tremendous record, and you send it out, and it drops dead.' "

around quite awhile," says Henry Brief, executive director of the association. "But in the 1950s, it got to be such a publicity gimmick that it lost its meaning. Every performer who could stand in front of a microphone was given a golden copy of his product by the company he recorded for. In 1958, we started authenticating sales figures through a private accounting firm. Every year since, more and more companies have cooperated in our effort, and now our Gold Records are prized throughout the industry."

Last year, 93 albums and 65 singles won Gold Record awards for sales. A sampling of the list shows such diverse hits as the soundtrack of the motion picture "2001: A Space Odyssey," the Archies' "Sugar, Sugar," "Switched-On Bach" by Walter Carlos performing on a Moog Electronic Music Synthesizer, the original Broadway cast album of "Hair," Dean Martin's "Gentle On My Mind," Roy Stevens' "Gitarzan," and the Beatles' "Abbey Road."

However, few record executives believe that these awards have much real effect on either record sales or an artist's career. As one company executive put it, "They're always after-the-fact awards, and by the time they're given out, the record has already had its impact. The dealers know it's a hit."

The association, of course, does not limit its role to the handing out of gold discs. Basically, it is a lobby organization representing the recording industry's interests in Washington and in state capitals. It is actively involved in such matters as postal rates, copyright laws, marketing statistics, and the prevention of record and tape counterfeiting. (Legitimate record companies estimate losses of \$100-150 million a year through counterfeit reproduction of their works.) In addition, the association acts as the industry's public relations arm and sets record engineering standards for its members.

The mechanics of recording can be an expensive proposition. To produce a single record costs an average of \$3,500; a long-playing album, about \$17,000. Gone are the days when a band would assemble in front of a microphone and simply run through its song a couple of times.

Today's records are pieced together by means of multitrack control panels. Vocals are recorded on one or more tracks, rhythm accompaniment on other tracks, orchestral parts on still others. All are mixed onto a final master tape. Such sophisticated techniques allow for an extremely wide variety of tonal effects scarcely hinted at in the 1950s (when such musicians as Les Paul and Mary Ford were experimenting with multiple-track recordings).



Overseeing this operation is the A&R (Artist and Repertoire) man. Essentially, he is the record's producer. Just as the movie has become a director's medium, recording has become a producer's medium. The A&R man hires the musicians, oversees their musical arrangements, budgets studio time, judges the quality of performance, directs the recording session, and helps prepare the resulting tapes into a finished recording.

He is the one man, then, who is involved at every stage of planning and production. He must not only be attuned to what the public wants; he must also know how to produce it. Performers rely heavily on his guidance, and many will work only with a particular favorite — even switch company affiliations in order to work with him.

The studio has thus become both an electronics laboratory and a miniature concert hall; and studio time spent in the making of a record has tripled in just the last five years. Pop musicians today must hear in playback the sounds they have produced in order to organize them into a finished recording. Frequently, certain sounds suggest revisions and additions that alter the original concept of the performance. Reportedly, the Beatles spent some 900 studio hours producing their famous "Sgt. Pepper's Lonely Hearts Club Band," an album that won two "Grammy" awards (engineering and cover design) in 1968.

Like the Gold Record, the coveted Grammy is an after-the-fact tribute — ostensibly to artistic, rather than commer-

cial, success. Taking its cue from Hollywood's "Oscar," the National Academy of Recording Arts and Sciences established this prize 12 years ago. Each year, the academy's members (more than 3,000 musicians, singers, conductors, producers, engineers, composers, and arrangers) vote for the best individual performances in 45 categories.

Winners last March included The Fifth Dimension for Best Contemporary Performance by a Group ("Aquarius"/"Let the Sunshine In"), Johnny Cash for Best Male Country Vocal Performance ("A Boy Named Sue"), and Leontyne Price for Best Classical Vocal Soloist Performance (two scenes from Samuel Barber's "Antony and Cleopatra" and "Knoxville: Summer of 1915").

"We try to be oblivious to sales when we vote," says George Simon, executive director of the academy's New York chapter. "Of course, many times the best records are the biggest sellers. But the real reason the Grammy was set up was to recognize quality and creativity. We try to be the conscience of the industry, but sometimes a conscience is hard to keep when people are faced with the almighty dollar sign."

Awards notwithstanding, sales figures remain the most important measure of a record's success. Record companies have, therefore, set up elaborate promotion, marketing, and advertising departments intensely aware of and specifically geared to the fiercely competitive nature of the record business. The national promotion manager's staff of regional and

local promotion men are the shock troops of the business. They visit radio stations regularly to bring new releases to the attention of program directors and disc jockeys.

"There's no doubt," says the manager of advertising and sales promotion for one of the country's major record manufacturers, "that air play is the most important factor in the making of a hit record. Without it, you're dead."

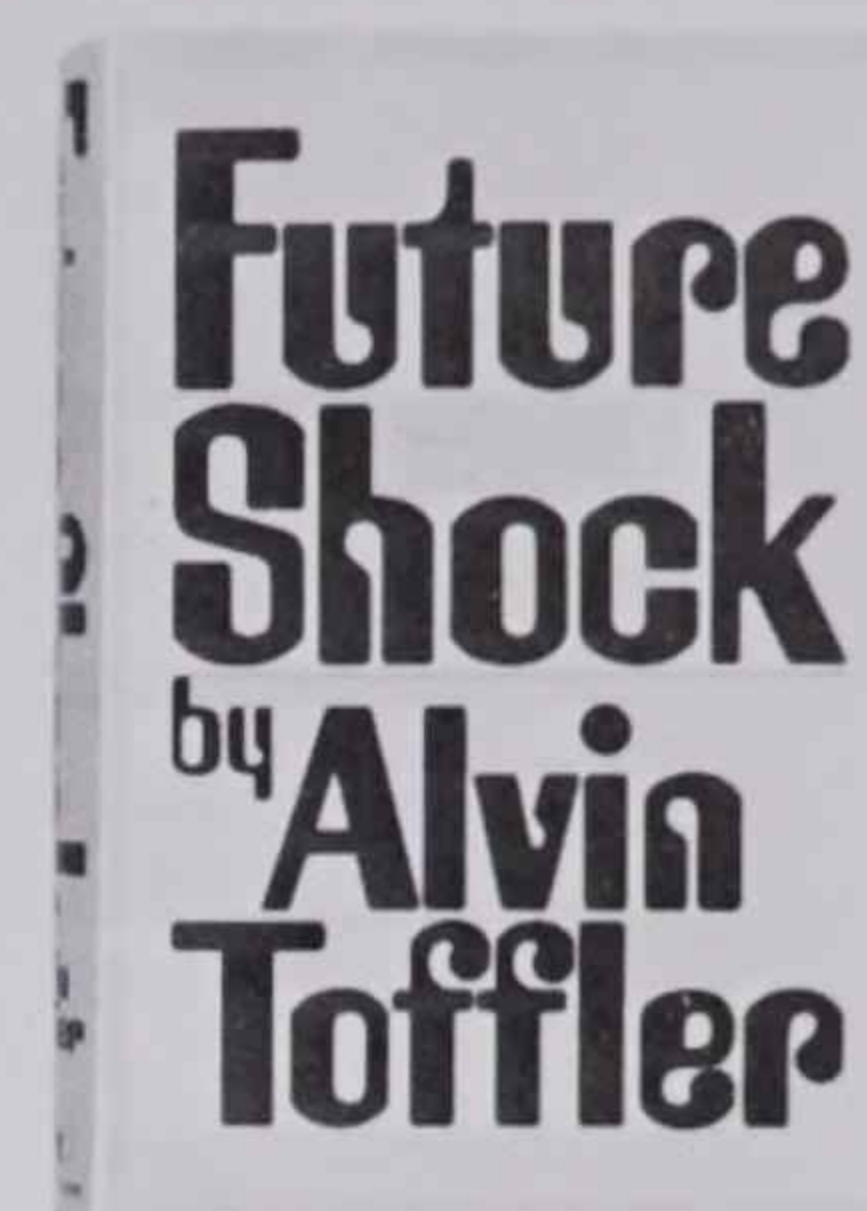
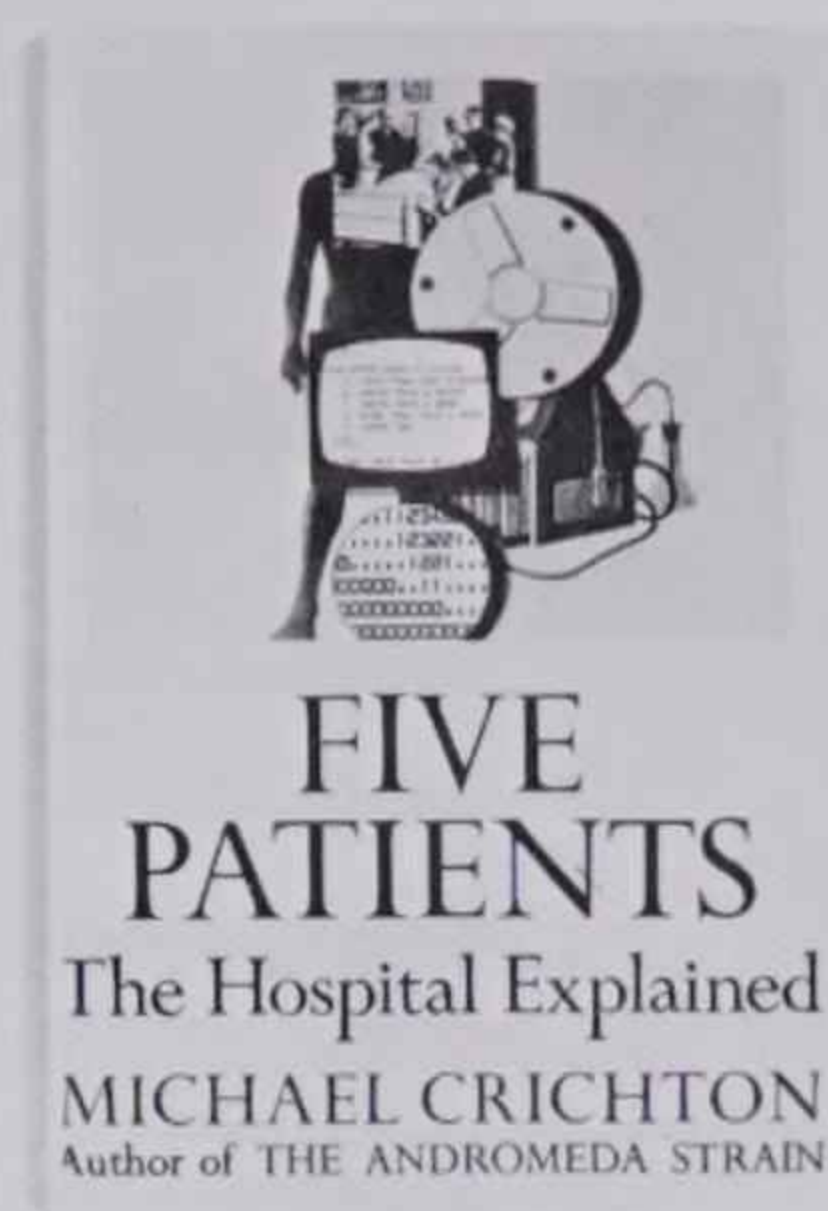
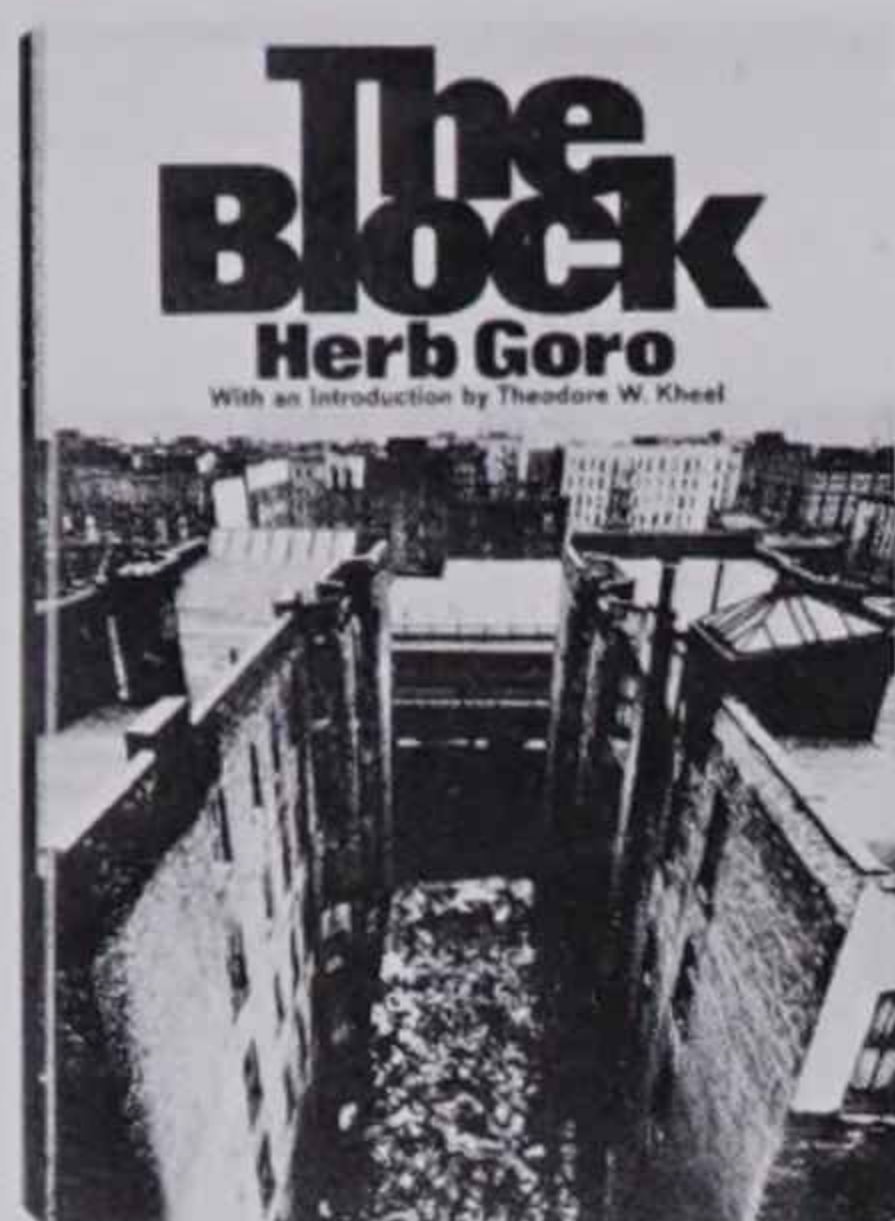
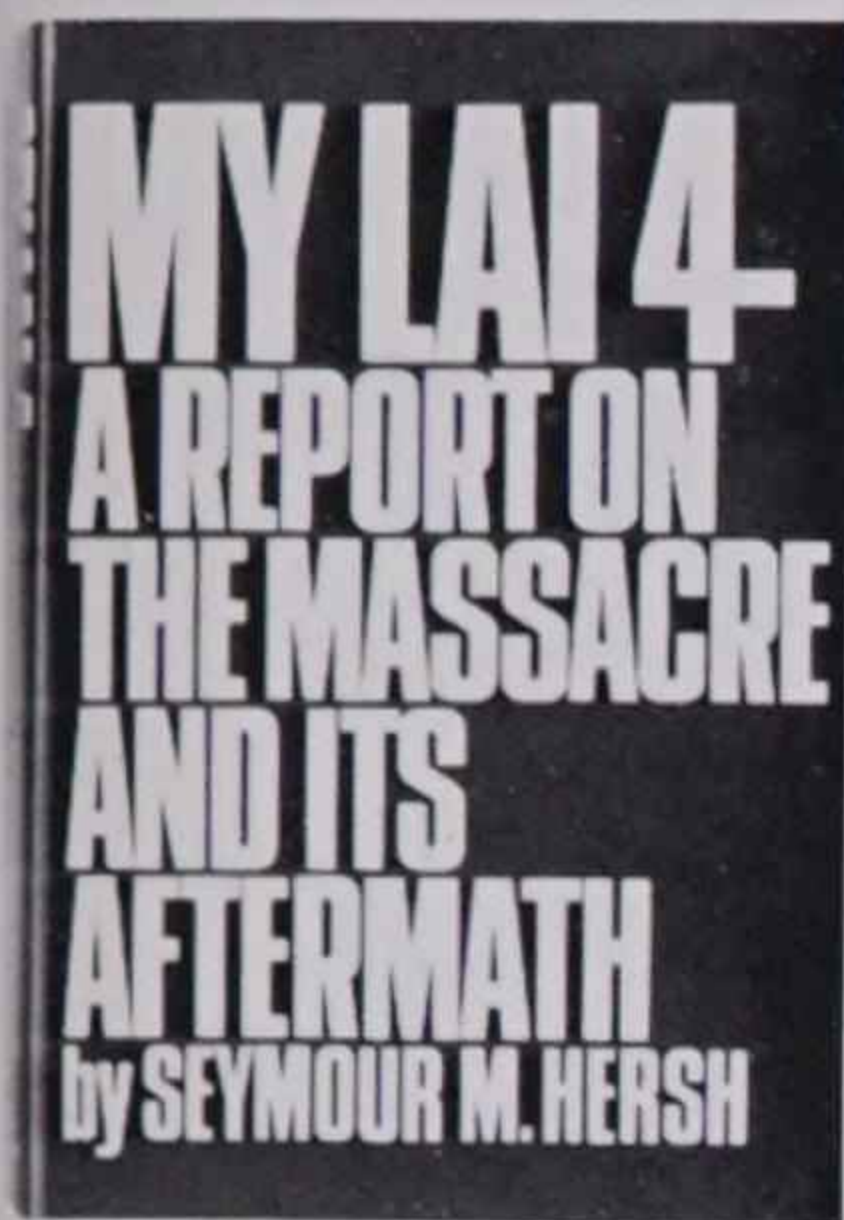
Conversely, recordings have become the backbone of radio broadcasting. Nearly 80 per cent of all programming, according to recent industry estimates, is recorded music. Air play is usually followed by full-scale publicity aimed at the general public. The choicest new records are advertised in such influential music trade publications as *Billboard*, *Cashbox*, and *Record World*. Radio commercials are scheduled throughout the day. Press kits (colorful packages that usually include a copy of the new record, photographs, a biography of the featured artist, and a brief sales pitch) are sent to newspaper and magazine writers and critics. Live concerts are arranged and personal interviews offered to the media.

To draw the attention of prospective record buyers, companies have gone heavily into the artful packaging of their products. In fact, some of today's most imaginative and arresting photography and design have been created to fill the racks of record shops.

Most major companies have their own art departments, including staff photographers and designers; but they sometimes commission free-lance artists to prepare album covers for them. Cover photography is also frequently assigned to free-lancers, occasionally to prestigious photo studios. Costs can go as high as \$2,000, although the price of cover art is more often in the \$400-500 range. Several record companies are now reproducing cover art in poster form, free of any promotional type and intended for framing and display.

There is a limit, though. Clever packaging may count heavily in the making of a hit record, as may novelty recording techniques and tie-ins with other media. But the fundamental requirement for success is the popular appeal of the performing artist or artists.

"You can only go so far in generating excitement," says one veteran recording executive, "because if it's not in the grooves, it's just not going to make it." ■



My Lai 4
by Seymour M. Hersh (Random House)

On March 16, 1968, a company of American fighting men entered My Lai 4, a small hamlet in South Vietnam, and, it is claimed, systematically murdered its inhabitants. Reports of the alleged atrocity were first disclosed publicly by Seymour M. Hersh in a Pulitzer Prize-winning series of newspaper stories published last November. Hersh's book is the story of Charlie Company, its men and its officers, from their arrival in Vietnam until that tragic day in March. The author, who traveled more than 50,000 miles around the United States and interviewed nearly 50 members of the military unit, has not only reconstructed events surrounding the massacre at My Lai 4 but also has gained a penetrating insight into why they occurred.

The Block
by Herb Goro (Random House)

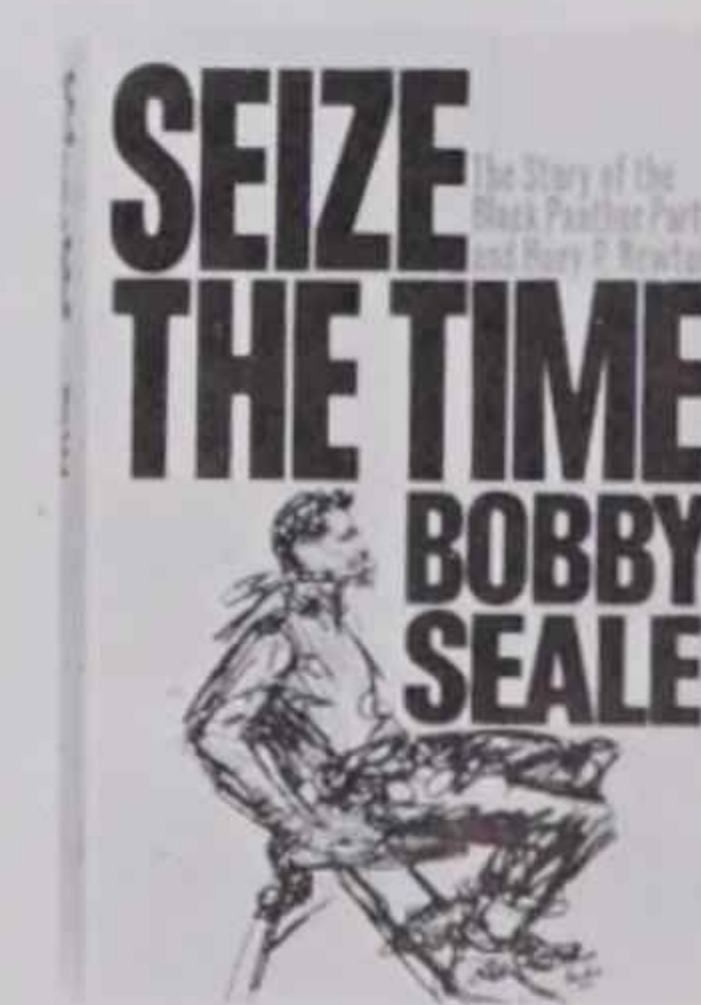
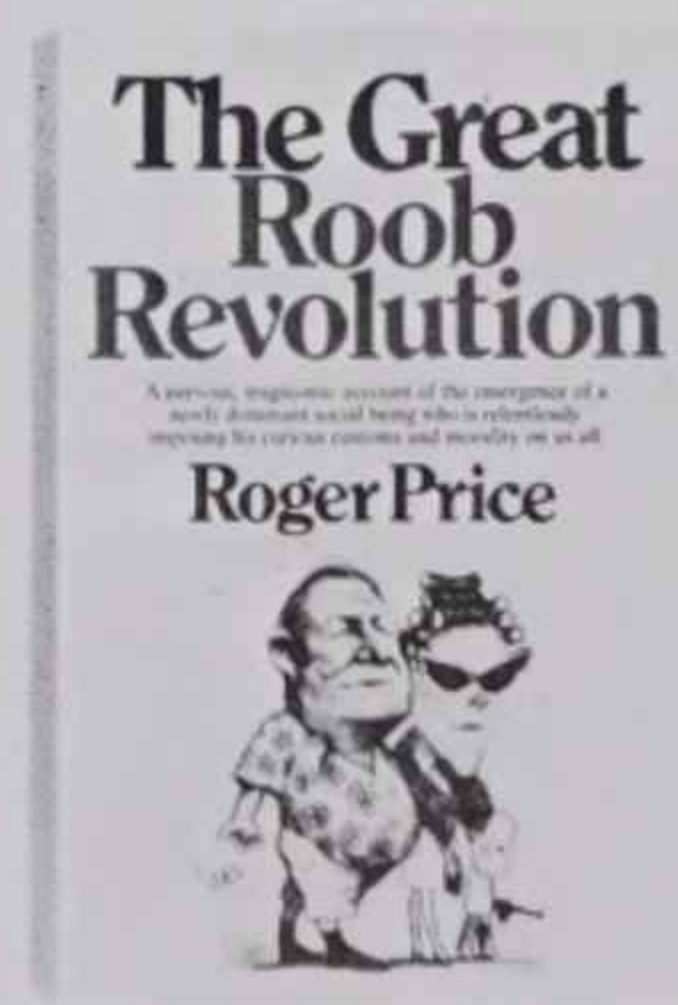
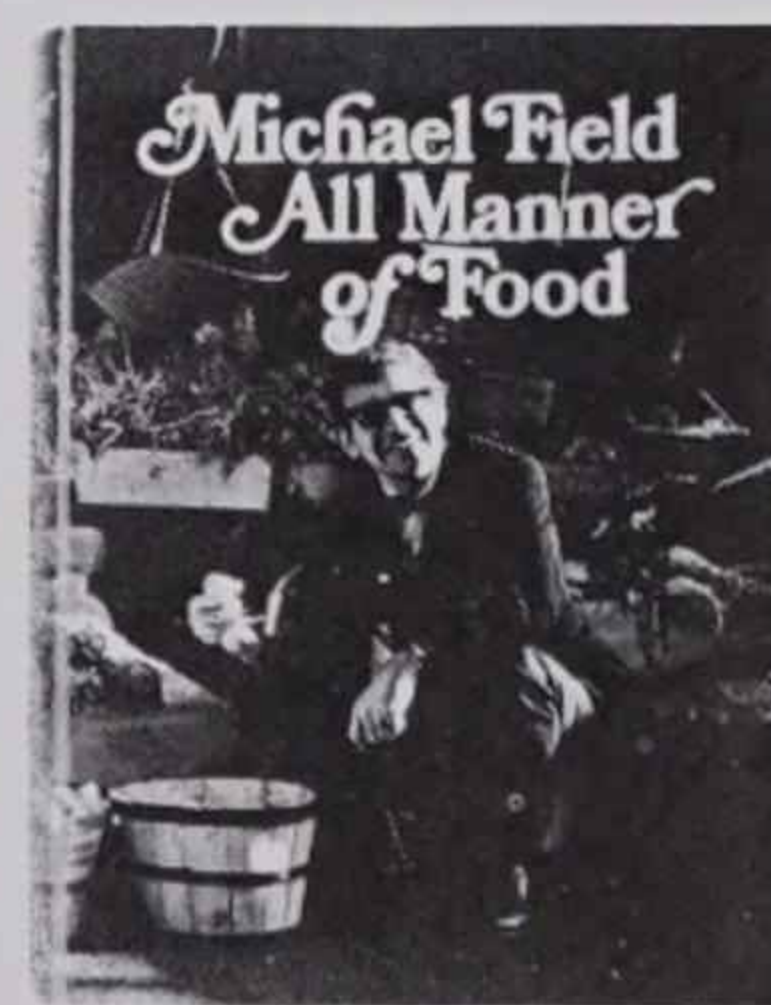
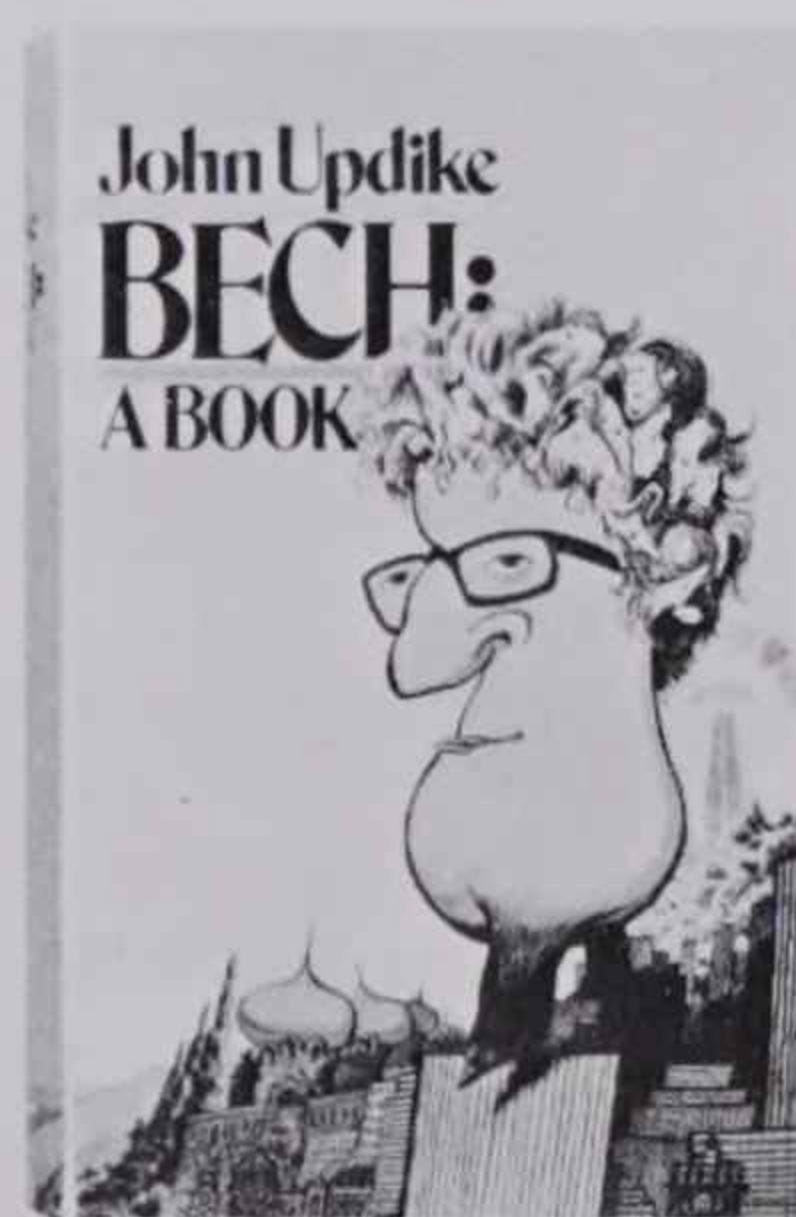
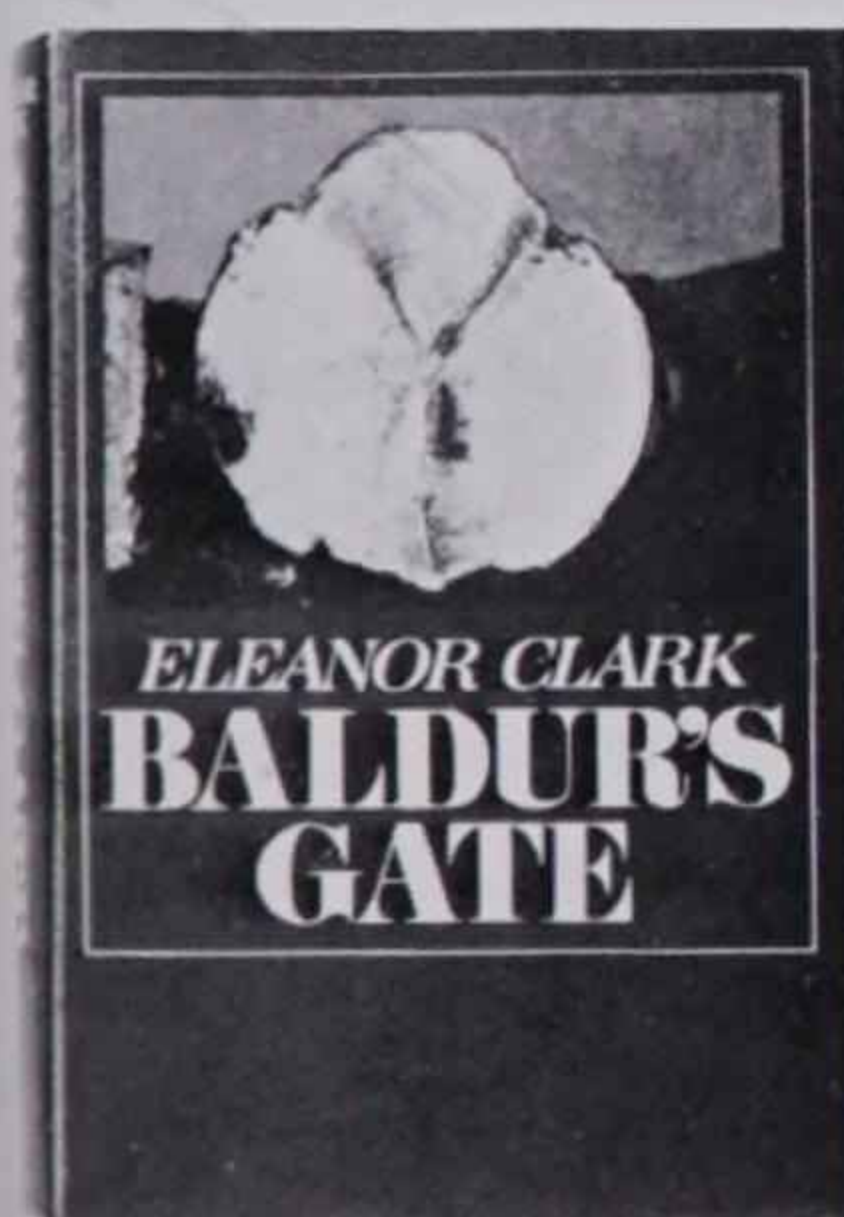
This book is the result of a year spent by photographer Herb Goro in a decayed slum area of New York City's East Bronx, where more than 150,000 inhabitants of the area live in rotted, sometimes abandoned, tenements. There are 120 pages of photographs depicting the plight of these people—the tenants, the police, the men and women dying, and the parents of children being born. The 30,000-word text consists of tape-recorded interviews with the people seen in the pictures. As a whole, the book is a moving account of social disaster, a portrait of human misery, concentrating on the lives of three adolescents as they come of age, struggle briefly to survive, and fail.

Five Patients
by Michael Crichton (Alfred A. Knopf)

In his first work of nonfiction, the 27-year-old author of *The Andromeda Strain* draws upon his experiences at Harvard Medical School and Massachusetts General Hospital to give the layman a fascinating inside look at what is happening today to our hospitals and to the patients they treat. To dramatize and demonstrate the changes taking place—and to point to future possibilities—Crichton recreates the experiences of five patients who entered Massachusetts General last year. Each case offers the reader a broader understanding of modern medical practice, of hospital life and problems, and of the hospital staff.

Future Shock
by Alvin Toffler (Random House)

"In the three short decades between now and the twenty-first century, millions of ordinary, psychologically normal people will face an abrupt collision with the future." These words open an extraordinary book that will make it difficult for readers ever again to think about themselves in traditional terms. Exploring the hidden impacts of change, Toffler shows how change affects the products we buy, the communities we live in, the organizations we create, the mass media we exploit, and even our patterns of friendship and love. Many social thinkers have drawn upon the past to illuminate the present. Toffler views the future as a means of helping us understand and cope with life today.



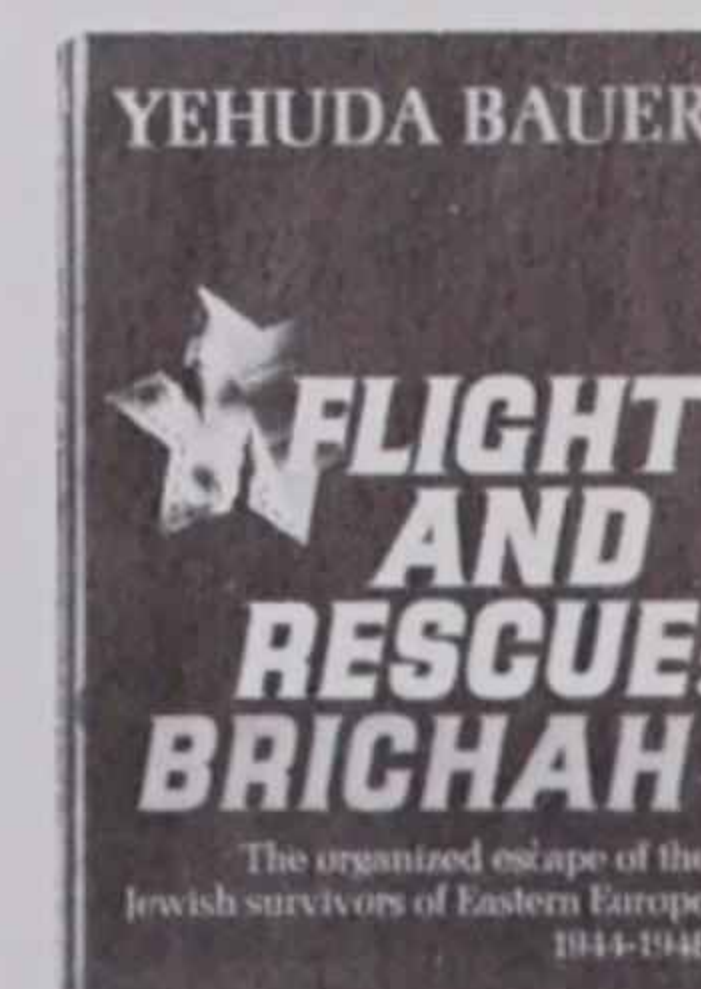
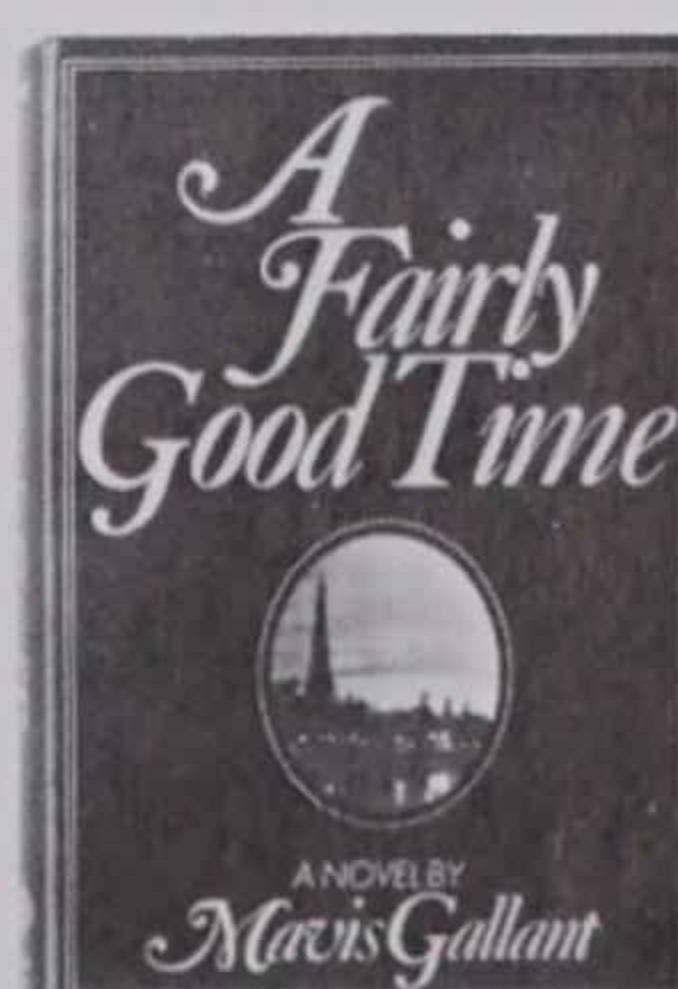
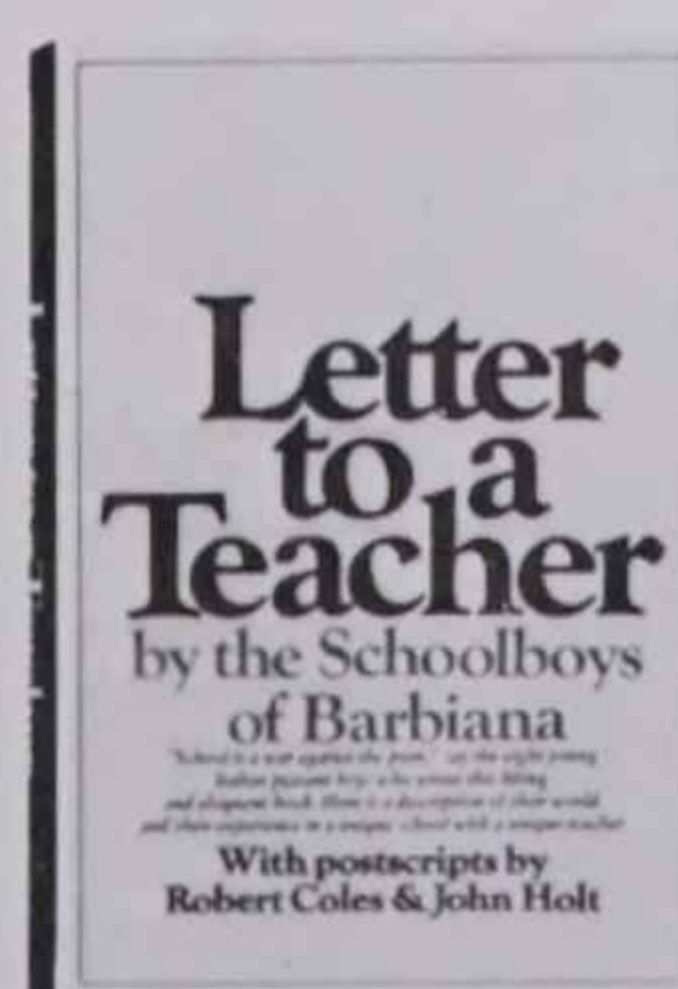
Other Recent Random House Books

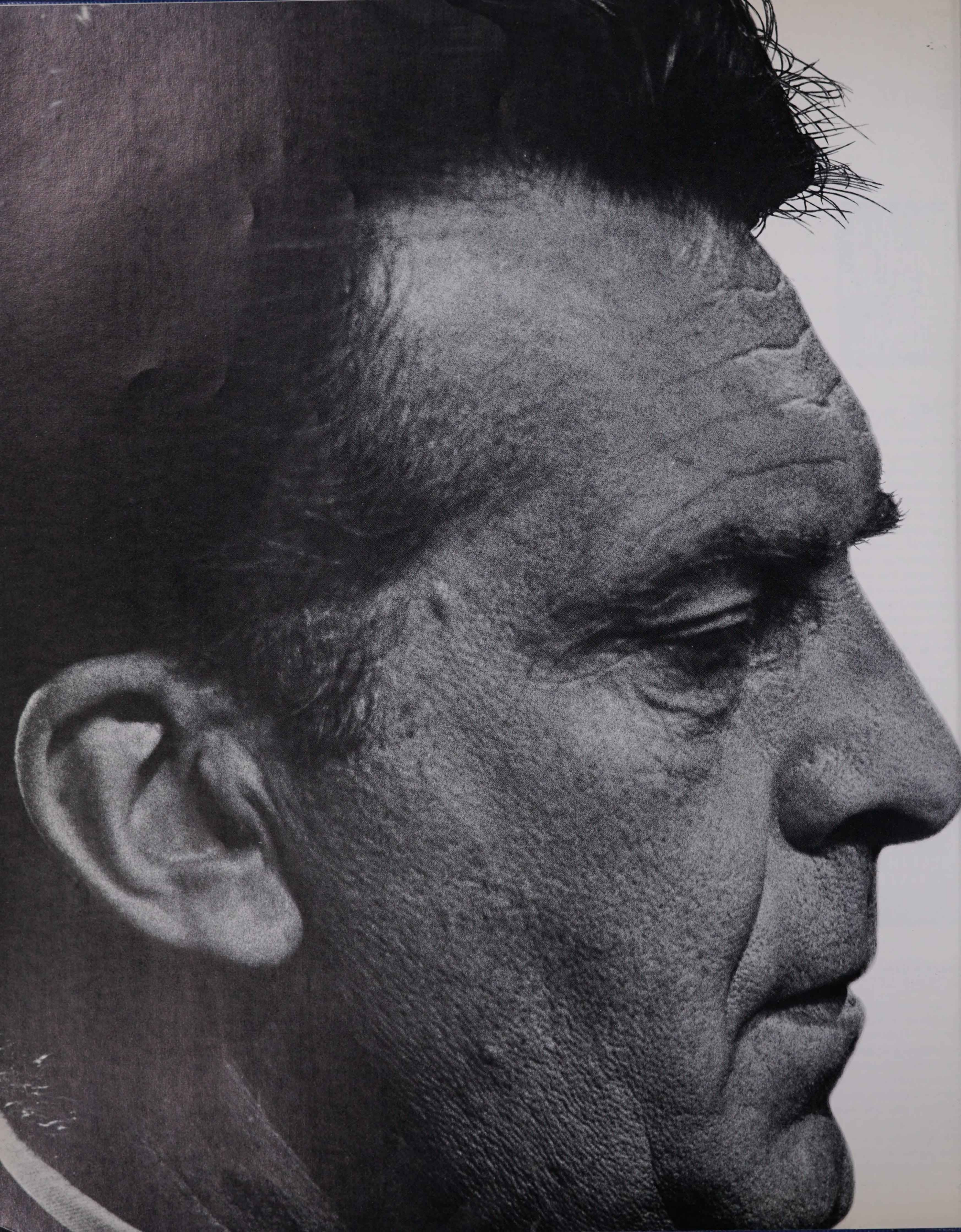
Baldur's Gate
by Eleanor Clark (Pantheon)

This is Eleanor Clark's first work since her National Book Award winner, *The Oysters of Locmariaquer*. The book is set in Jordan, a Connecticut village, during the 1950s. Its protagonist, Eva, is a young woman whose roots are in the substantial and elegant past, which, since the war, has faded into remote history. Her present is one of turbulence and change, and her future a mystery and challenge. Essentially, Eva's world is our own; and Miss Clark defines it with subtlety, assuredness, and humor.

Bech: A Book
by John Updike (Alfred A. Knopf)

Readers of the *New Yorker* magazine already know Henry Bech, the "moderately well-known" Jewish writer created by novelist John Updike. Now, seven of the Bech stories have been collected in one volume, complete with a bibliographical appendix and a foreword by Bech addressed to Updike. Exemplifying the plight of the artist in America, the stories carry Bech through professional, philosophical, and sexual anxieties and conclude with his entrance into heaven.

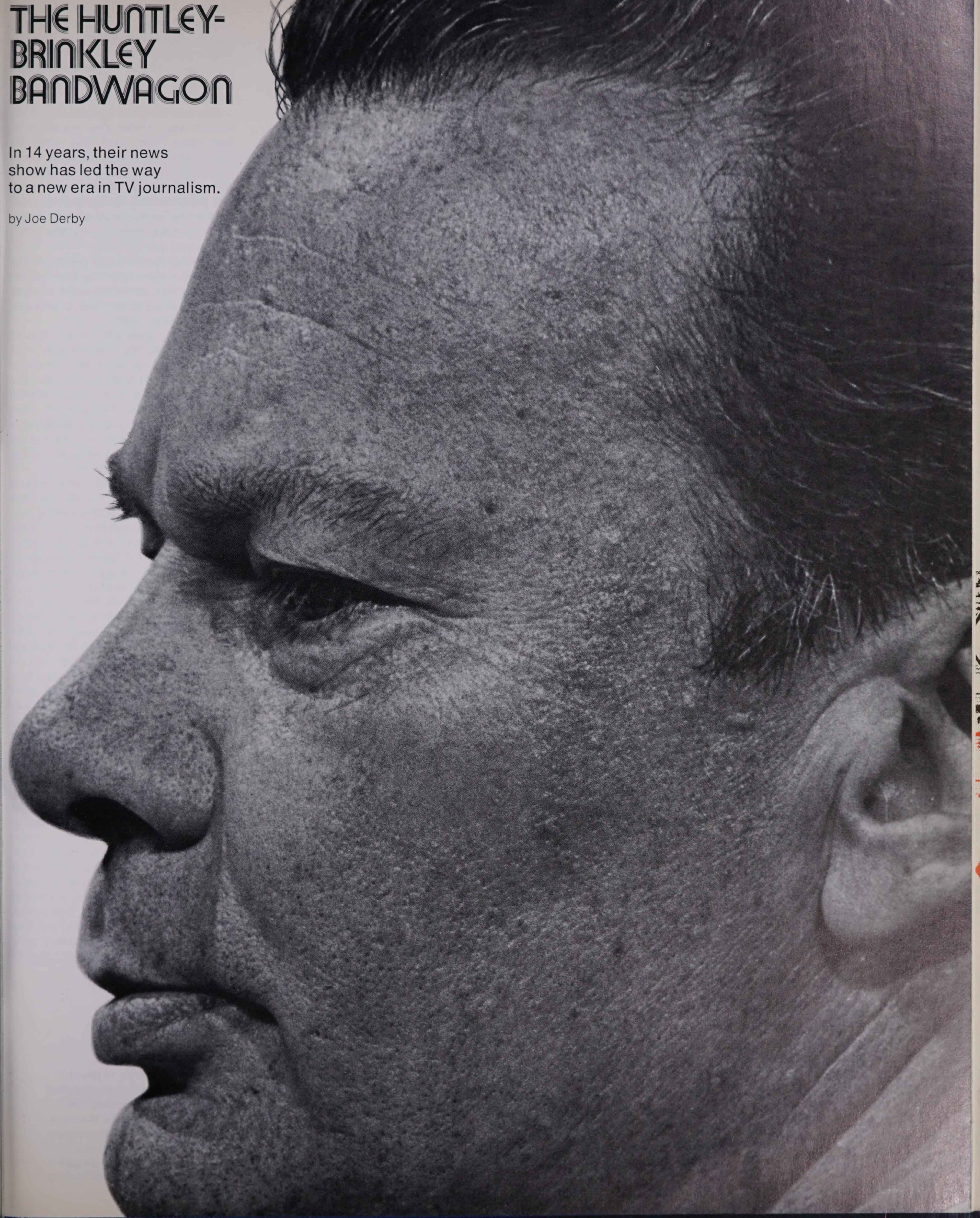




THE HUNTLEY- BRINKLEY BANDWAGON

In 14 years, their news
show has led the way
to a new era in TV journalism.

by Joe Derby





The place was Chicago. The date was August 14, 1956, just a few days before the opening of the Democratic National Convention. Reuven Frank, executive producer of NBC-TV convention coverage, called a staff meeting at the Drake Hotel.

"I talked about the many problems we faced," says Frank, now president of NBC News, "fully aware that CBS, with Ed Murrow and Walter Cronkite, would have the biggest share of audience. I mentioned casually that Chet Huntley and David Brinkley would be our anchor-men for the entire convention. And from the back of the room I heard, 'Who in hell are Huntley and Brinkley?'"

"There wasn't a single person in that conference room who had the slightest idea then that, within two years, Huntley and Brinkley would be household names. And I include myself."

The critics were the first to jump on the Huntley-Brinkley bandwagon. They sensed a new era in political broadcast journalism. They wrote about the "delightful irreverence of Brinkley," and the informal, low-keyed Huntley putting into long-range perspective the weighty problems of the day. They enjoyed the refreshing, witty interplay between the two newcomers.

How did such a fortunate pairing come about? No one really knows. Even the handful of men who teamed Huntley and Brinkley do not remember. Since 1943, Brinkley had been working in relative obscurity with NBC News, Washington. Huntley was an unknown quantity altogether; he had been hired in 1955, one year before the conventions.

The only recollection on which all of them agree is that it was Frank who coined the sign-off, "Good night, Chet. Good night, David." And Frank remembers that neither of them wanted to say it.

Much has been written about them since the 1956 conventions. Much of it is accurate. But one rumor persists that is completely untrue. Most often, it takes the form of a simple question: "They really don't get along, do they?"

David Brinkley and Chet Huntley are fond of each other. During all the years they have worked in elbow-to-elbow intimacy, there has never been a harsh word between them.

Yet, they have little in common. Huntley is an extrovert. He likes people, all kinds of people. It's almost a reflex. Brinkley, on the other hand, is shy and retiring, an introvert whose description of a cocktail party to former Defense Secretary Robert McNamara may be a

Joe Derby is on the NBC Corporate Information staff.

"Now, almost exactly 14 years since they first sat down together before a camera, Huntley has returned to his beloved Montana.... But tens of millions of Americans, spanning three generations, will long remember him as part of a news team that made history."

classic. "A painful din of babbling voices," he called it, "growing more incoherent by the drink and dedicated to the utter destruction of man's central nervous system."

Robert Northshield, who as executive producer of "The Huntley-Brinkley Report" was their boss for several years, explains the difference between them this way: "Huntley doesn't know he's Chet Huntley. He really believes he can do what you and I do, go where you and I go, and be just another one of the boys. Brinkley knows he's David Brinkley and doesn't like it. He resents that he can't come and go as he pleases without attracting attention."

Sometimes, this sense of being a celebrity even interferes with Brinkley's work. In 1964, for example, while covering Nelson Rockefeller's primary campaign in Portland, Ore., Brinkley found himself attracting larger crowds than the New York governor. He left town.

Brinkley rarely leaves his Washington office for lunch. And Huntley has learned to frequent the same few restaurants for lunch, walking underground through the Rockefeller Plaza complex whenever possible.

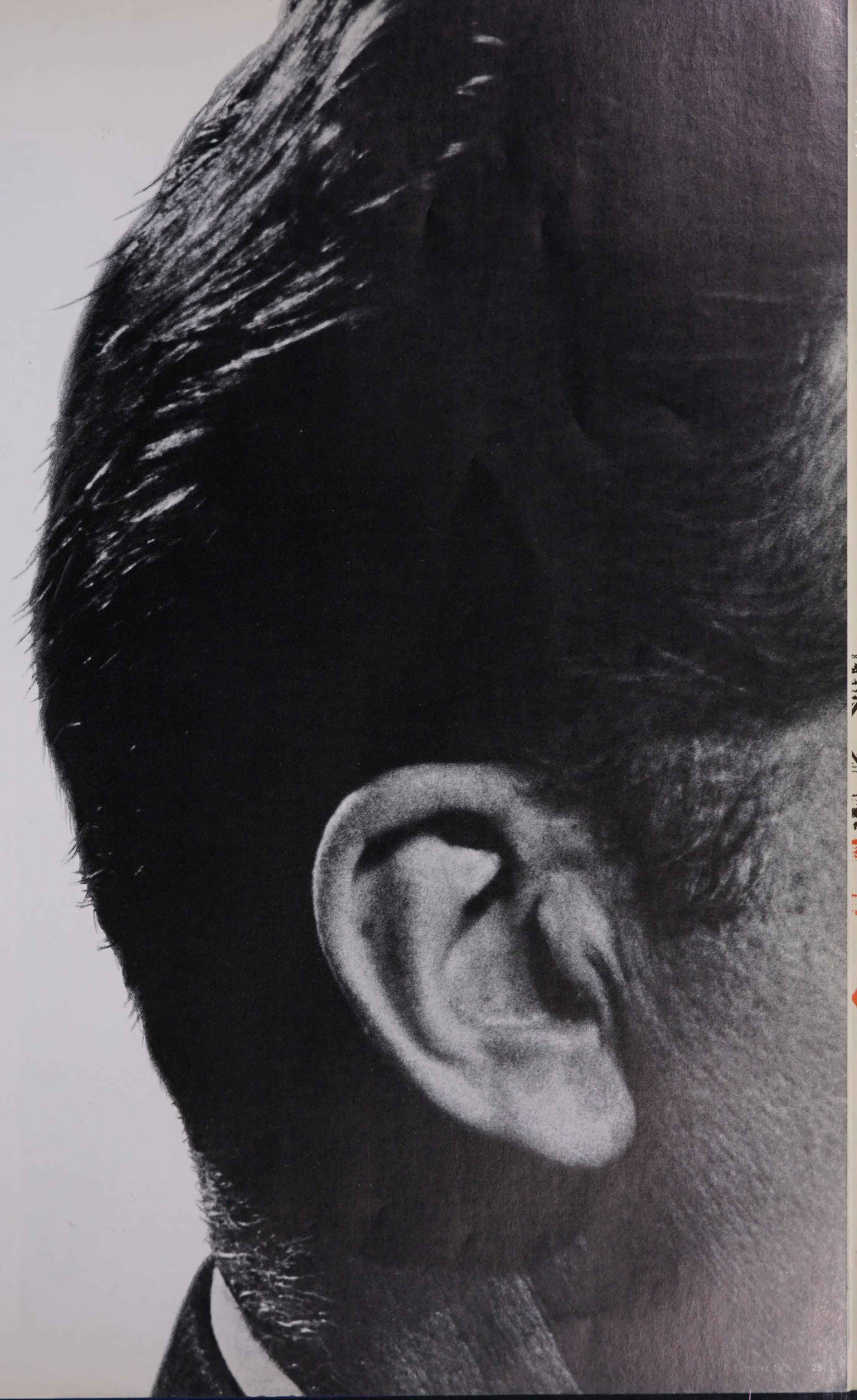
"People who pass me underground don't seem to have the inclination to stop me," he explains, "unlike those on the open streets."

A basic personality difference is underlined by their reactions to the general public. Almost anybody can impose on Huntley in a public place, and he has the temperament and patience to put up with it. Last January, in a St. Paul restaurant, one man not only invited himself to Huntley's table but left a sizable unpaid check.

Brinkley, by contrast, is genuinely baffled and annoyed by bad manners. On an NBC elevator in New York recently, a fellow passenger turned to Brinkley and said, "Hi, Dave. I'm from Texas!" Brinkley looked at the man as though he were observing an escapee from a lunatic asylum.

The characteristics they share are perhaps more profound than their differences. Both came from poor families, Huntley from near-poverty. David's first job was working for \$5 a week after school on a Wilmington, N.C., newspaper. Huntley started at \$10 plus apartment working full time for a Seattle radio station in 1934.

Both have a feeling for the underdog and are more emotional than is generally known. Both are patriotic, but their patriotism is more along the lines of "My country has to be right" than "My country, right or wrong."



"Huntley is an extrovert. He likes people, all kinds of people. It's almost a reflex. Brinkley, on the other hand, is shy and retiring...."



Richard Nixon talks with Huntley and Brinkley in Los Angeles during 1960 Presidential campaign.

Huntley loves to work. He is up at 6:30 every morning and reads several newspapers before arriving at the office around 9:30. He writes two radio pieces a day (he has never missed a deadline in 14 years), devotes two hours to correspondence, then turns his attention to his part of the evening's TV newscast. He writes so fast that editors have confidently given him a story to write with as little as 15 minutes before air time.

Although Huntley can be as explosive as Brinkley, his normal temperament is best illustrated by his response to an incident that occurred during the 1968 Democratic Convention in Chicago. He had spent 11 consecutive hours on the air and, during all that time, eaten only half a candy bar that Brinkley had pushed across the desk to him. Nearby, however, in a broadcast booth that had been converted into a small dining room, there was a complete lobster dinner awaiting him. As David took over, Huntley eased out of his seat, stretched, and walked to the booth. There he was informed by a

frightened waitress that a Tennessee politician, invited up to the booth by an NBC friend, had eaten the dinner himself. Huntley looked sadly at the waitress and sighed, "Well, the way this convention is going, it may be the last full meal the poor man will have for a while. No use complaining."

Brinkley loves to write but yearns to get out from behind his desk and roam the country. He complains of boredom and overwork. Yet, he is tremendously competitive and feels he must excel at whatever he does.

Both men love the outdoors but for different reasons. Brinkley responds aesthetically; he loves nature and the raw

beauty of the land. Huntley always envisions it bursting with crops or alive with cattle.

Architects say that Brinkley could have been an outstanding architectural designer. They base their opinion on two houses he designed and built in Maryland, one in Chevy Chase and the other in Potomac.

Brinkley has the graceful, slim physique of a tennis player. At nearly six foot three, he towers two inches above his partner. But he complains of lack of stamina. Huntley, on the other hand, is physically rugged and seldom sick. In pursuit of a suspected burglar in his Manhattan townhouse, he vaulted over a 10-foot courtyard wall in full view of his dinner guests. The "suspect" turned out to be the Huntley maid.

They are fiercely loyal to each other. When Huntley refused to honor AFTRA picket lines at NBC some years ago, Brinkley, who joined the strike, let the word go out: "I admire Chet's stand. It's a matter of principle with him. If, when this is over, I hear of any attempt to blackball him, they'll have to deal with me. I don't agree with Chet, but I admire him."

It was Brinkley who introduced Chet to Tipton Stringer, NBC's lovely young weather girl in the nation's capital. He did so minutes before air time one evening in 1957, via the closed-circuit system that links the two newscasters in New York and Washington. Chet followed through and married the girl two years later.

Brinkley has a pixieish sense of humor. He never corrects people who call him Chet, and he loves to tell the story of the grandmother type who stopped him last February at LaGuardia Airport.

"Chet, I watch you every night," she confided. "You're wonderful. But, tell me, how do you stand that idiot partner of yours down in Washington?"

There is also a bit of Huck Finn in Brinkley. He likes to play hooky whenever there's an opportunity. In fact, he once made a speech before a small group of girls at a very small secretarial school in a tiny Ohio town "just to get out from behind this desk." He gave the school a high-sounding name, and his superiors approved his absence.

After the initial success of Huntley and Brinkley at the 1956 Democratic and Republican conventions, it was decided to

try the team on NBC's nightly newscast, replacing John Cameron Swayze. Frank, who was to produce "The Huntley-Brinkley Report" for nine years, remembers that he was against having a two-star program. "The idea of being the man in the middle between two intelligent, sensitive, and at least a little bit temperamental men was more than I could imagine," Frank says. "I had arguments with both of them, often. But I never had an argument with David involving Chet or with Chet involving David. They are both gentlemen. This is a business where backstabbing, while it may not be a way of life, can certainly be a technique of survival. I have never heard of either of them employing such a technique—toward each other or any other colleague."

Huntley and Brinkley made their newscast debut on October 29, 1956. Yet, as far as television audiences were concerned, they might just as well have talked to themselves. CBS stayed on top of the ratings, week after week. And only a few intimates at NBC know how close the team came to being disbanded.

"The late Bill McAndrew [first president of NBC News] was my boss at the time," Frank remembers, "and I knew pressure was building on him to do something about Huntley and Brinkley."

Months passed. Frank expected the word from McAndrew any day. But McAndrew resisted top management until mid-1957. Then, one day, he told Frank, "You'd better prepare Huntley. David has seniority, and we'll keep him. But Chet may have to go."

As Frank puts it, "The saddest lunch I ever had in my life was that one with Huntley. They were both good men. But not enough people were watching. I told Chet to expect the worst."

Meanwhile, McAndrew, a man whose memory is revered at NBC, fought a delaying action with management. Then, as Huntley phrases it, "The country vote came in." By the end of the year, Americans had chosen them as their No. 1 news program, turning to them in ever-growing numbers.

For nearly 12 years they were the nation's top news program, winning vir-



Chet Huntley vacations at Montana ranch with his wife, the former Tipton Stringer.



Olympic skier Jean-Claude Killy (right) joins Huntley at St. Paul, Minn., Winter Carnival.

tually every news award in the broadcast industry. They also became the single largest advertising buy in the industry's history.

No two men in America are invited to give as many college commencement addresses. And only the President of the United States gets more mail. Between them, Huntley and Brinkley average more than 1,500 letters a week. There is love mail, hate mail, and a few other kinds of mail, too.

According to his secretary, "Chet gets a letter almost weekly from a woman who wants to know 'if you saw me when I disrobed before the set last night.' "

Brinkley gets frequent letters from a woman who offers to "feed, clothe, and give you spending money until death do us part." The newscaster met her when he addressed a luncheon in a Southern city not long ago.

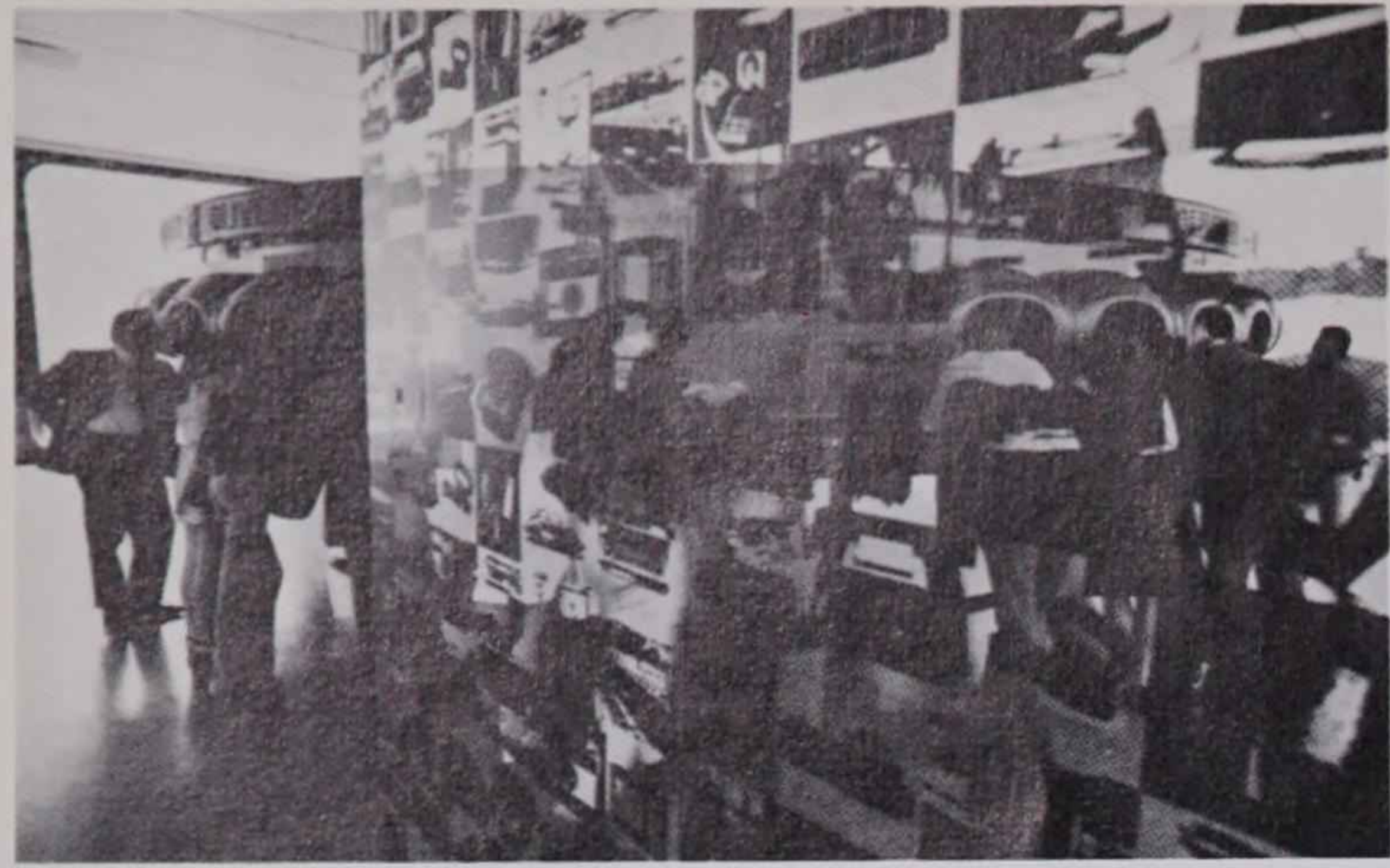
"She wasn't much," he recalls, grinning.

Now, almost exactly 14 years since they first sat down together before a camera, Huntley has returned to his beloved Montana. There he will head a recreation-resort area. But tens of millions of Americans, spanning three generations, will long remember him as part of a news team that made history. And they will miss him.

David Brinkley will miss him most of all. Good-bye, Chet. ■



Huntley attends cattle auction at Reed Point, Mont., with niece and nephew.



INFORMATION An Exhibition

Museum of Modern Art
New York City Summer, 1970

Many of the young artists represented here have addressed themselves to the question of how to create an art that reaches out to an audience larger than that which has been interested in contemporary art in the last few decades. Their attempt to be poetic and imaginative, without being either aloof or condescending, has led them into the communications areas that "Information" reflects.

The public is constantly bombarded with strong visual imagery, be it in the newspapers or periodicals, on television, or in the cinema. An artist certainly cannot compete with a man on the moon in the living room. This has created an ambiguous and ironic position for the artist, a dilemma as to what he can do with contemporary media that reach many more people than the art gallery.

Inevitably for art, film and videotape are growing in importance. At this point, they are major mass media. Their influence has meant that the general audience is beginning to be unwilling to give the delicate responses needed for looking at a painting. Artists are beginning to use this to their advantage. They hope to introduce a large public to more refined aesthetic experiences.

There is always the sense of communication. These artists are questioning our prejudices. They are asking us to renounce our inhibitions. They are also asking that we reassess what we have always taken for granted as our accepted and culturally conditioned aesthetic response to art. ■

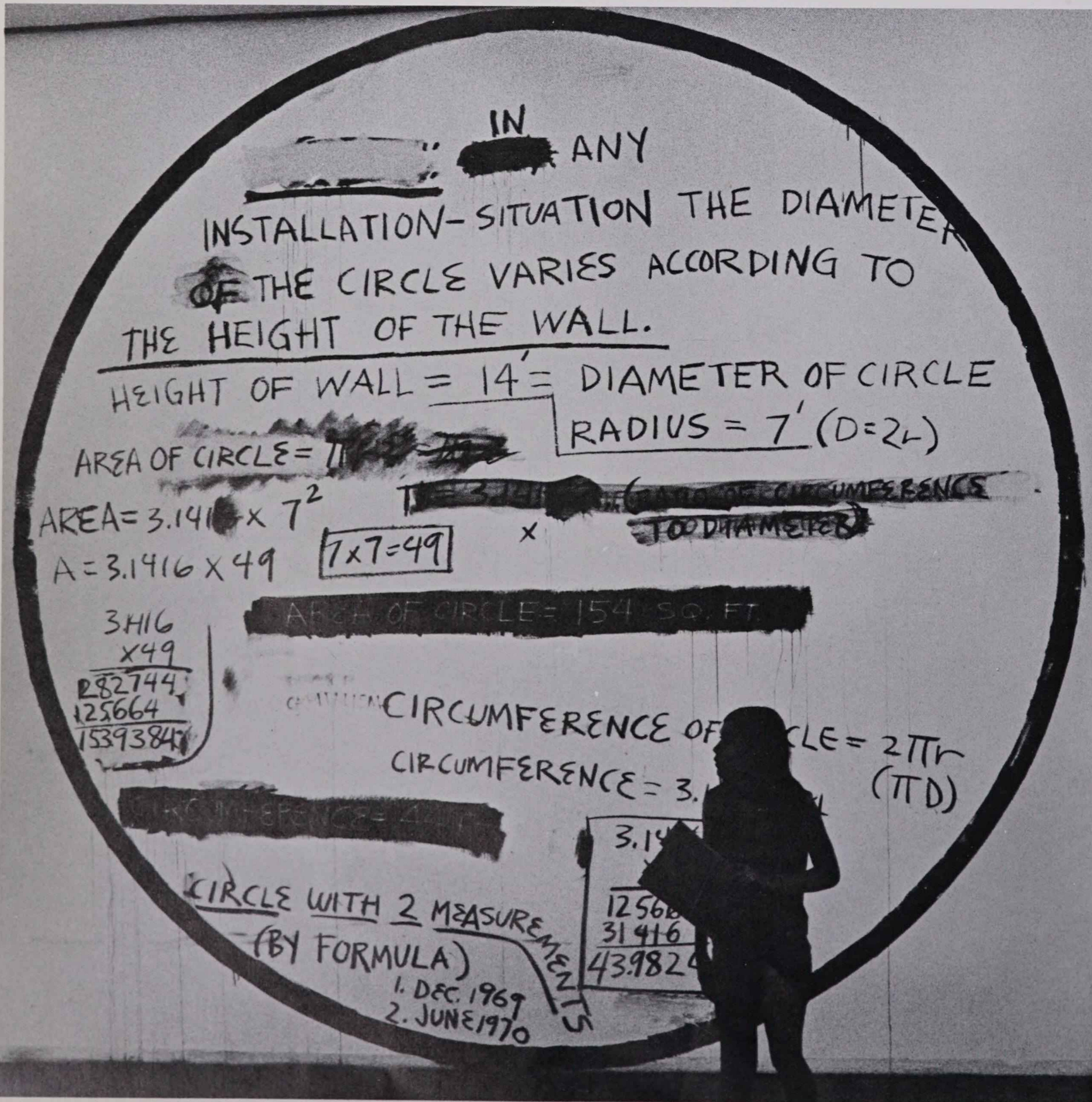
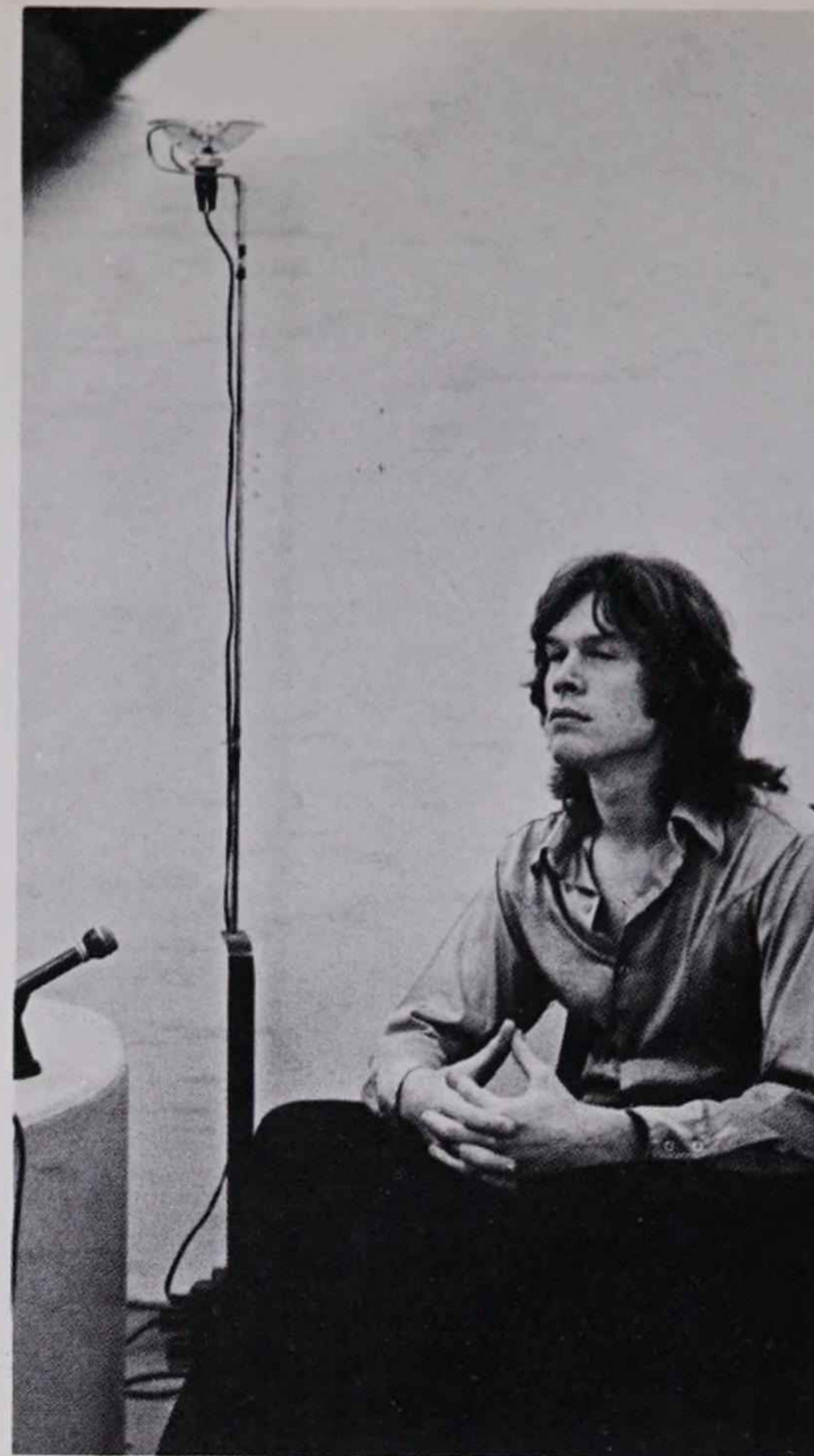
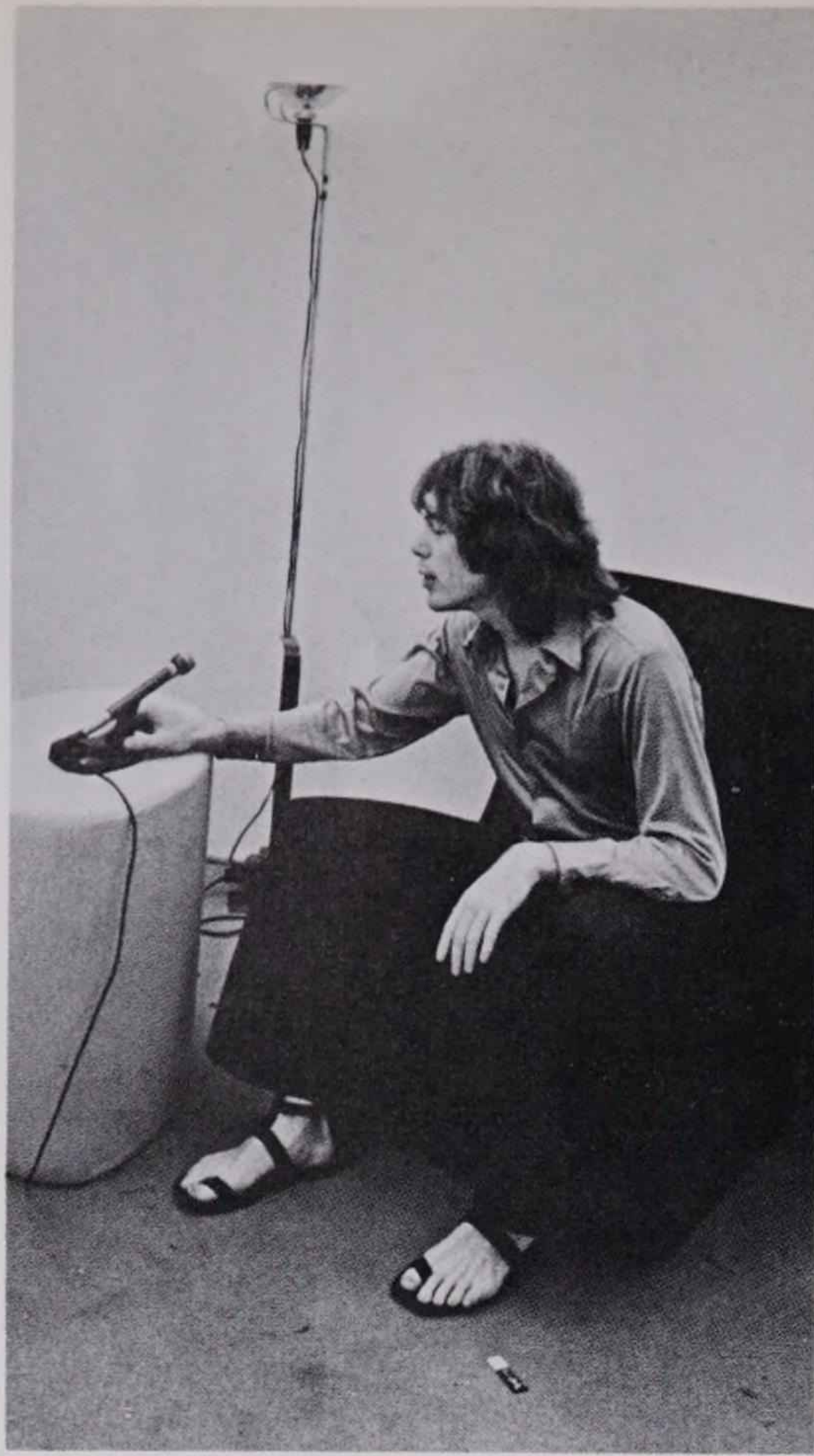
Abridged from an essay by Kynaston L. McShine, Associate Curator of Painting and Sculpture, Museum of Modern Art.

Above: Exhibition's entrance panel features communications facilities now in everyday use. Right: "Anonymous Sculpture: Cooling Towers, 1961-1970" by Bernhard and Hilla Becher. Series of photographs of comparable utilitarian structures shows variety of shape and configuration. Far right: Detail from *Time* magazine (May 2, 1969) article on sculptor Walter de Maria.



In the future
everybody will be
world famous
for fifteen minutes.

Andy Warhol



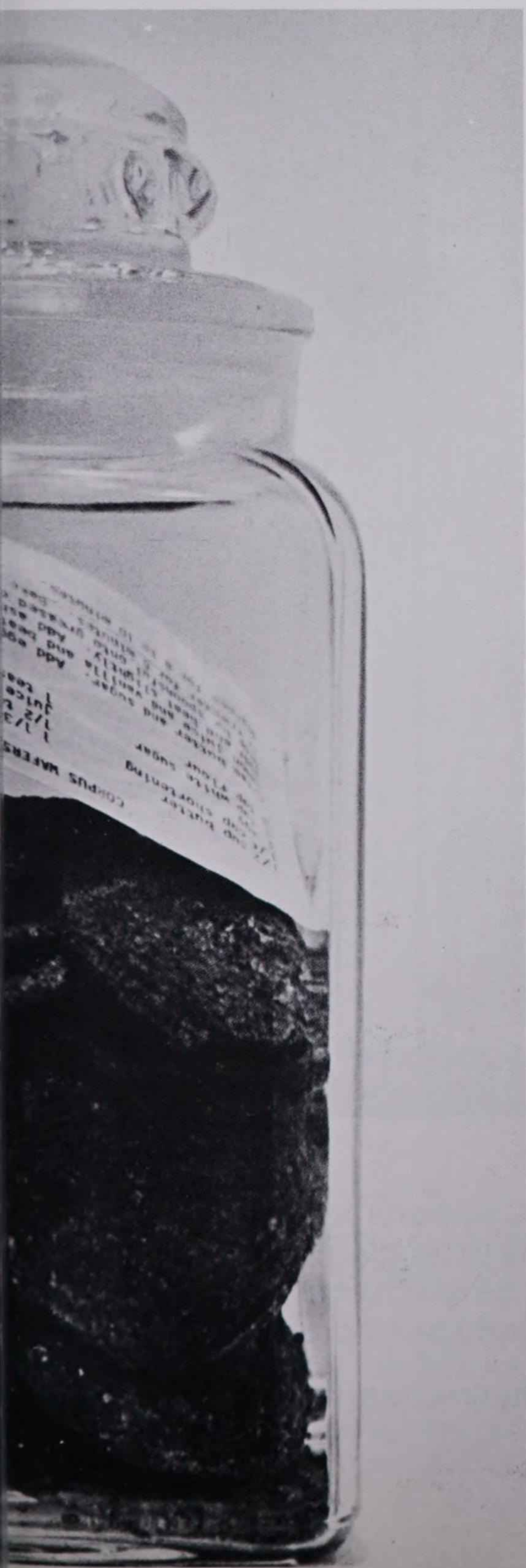


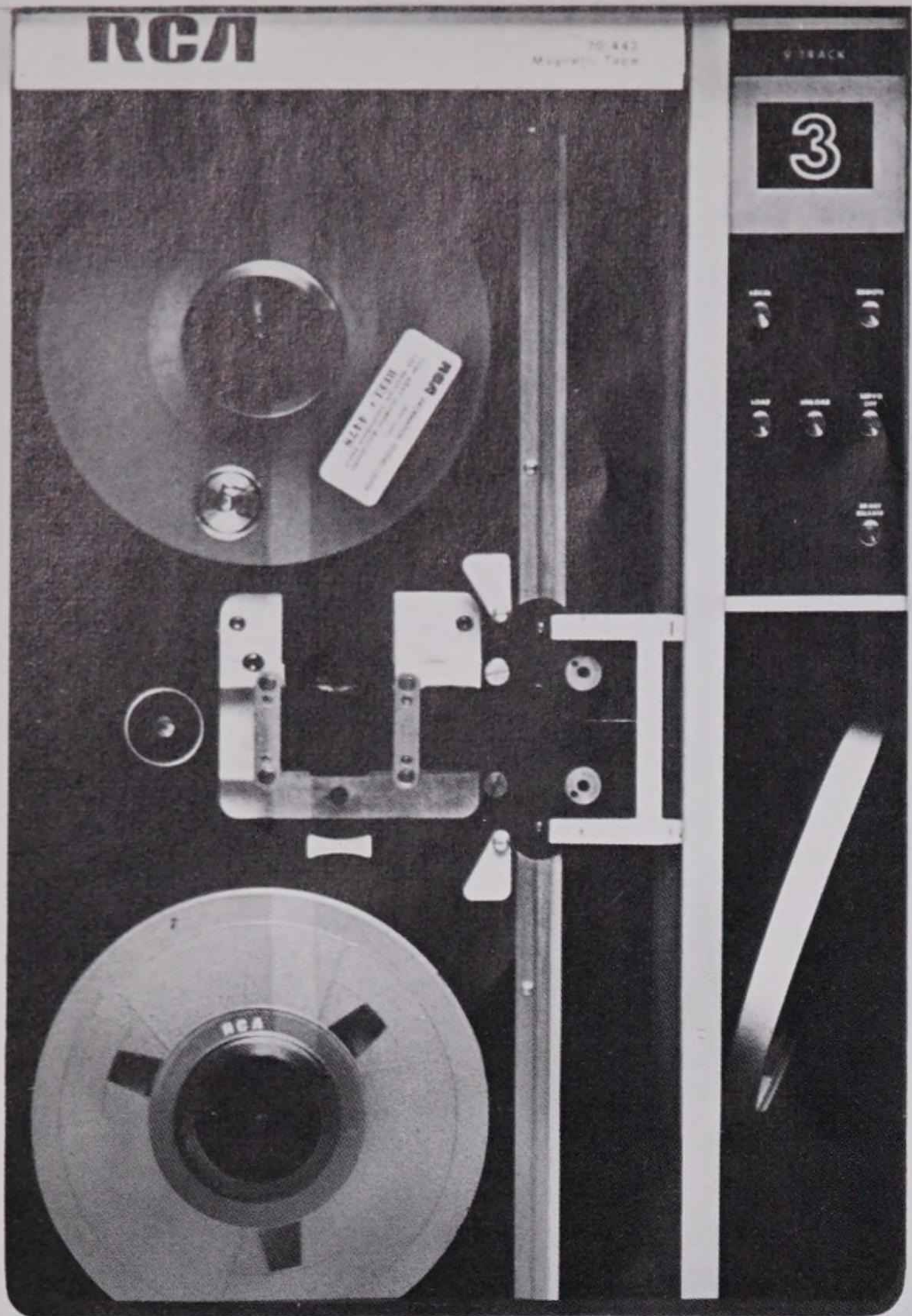
Left: Argentine "Group Frontera" (Adolfo Bronowski, Carlos Espartaco, Mercedes Esteves, and Ines Gross) set up audience-participation situation in which subject is televised alone in a room, answering personal questions put to him automatically, then becomes a viewer of the scene on TV monitors in a gallery outside the recording room. "The object of our work," says a spokesman for the group, "is to formulate a theory of the role of mass media in the identification of a society's culture."

Below left: "Measurement Series: By Formula (Circle)" by Mel Bochner. Size of the circle is determined by ceiling height. Contents of the circle (words and numbers) are determined by circle measurements.

Below center: "Corpus Wafers" by John Baldessari embodies what the artist calls "recycled art." Cookies in cookie jar are topped with copy of recipe: "The world has too much art—I have made too many objects—what to do. Burn all my paintings, etc. done in the past ten years. Have them cremated in a mortuary.... make into palatable material and mix into food, cookies, etc. Feed to guests at an art event."

Below right: "Information Machine" by Ettore Sottsass, Jr., features continuous showing of films for viewing through individual panels. Designer likens system to a "visual jukebox."







INTERSTATE FLIGHT - MURDER, MANSLAUGHTER

WANTED BY FBI

MARIE DEAN ARRINGTON

DESCRIPTION
 AGE: 35, born August 16, 1933, Leesburg, Florida
 HEIGHT: 5'2" EYES: brown
 WEIGHT: 119 to 126 pounds COMPLEXION: dark
 BUILD: small RACE: Negro
 HAIR: black NATIONALITY: American
 OCCUPATIONS: cook, domestic maid, laborer, migratory farm worker, restaurant worker

SCARS AND MARKS: cut scar left side of chin, two vaccination scars upper left arm, cut scar left forearm, bite scar left wrist, cut scar center of chest

REMARKS: may wear wig
SOCIAL SECURITY NUMBER USED: 261-50-2098


CRIMINAL RECORD
 Arrington has been convicted of murder in the first degree, manslaughter assault and battery, robbery, grand larceny, issuing worthless checks and escape.

CAUTION
 ARRINGTON, WHILE FREE ON APPEAL BOND FOR MANSLAUGHTER CONVICTION IN WHICH VICTIM WAS SHOT, WAS CONVICTED OF BRUTAL MURDER IN WHICH VICTIM WAS RIDDLED WITH BULLETS AND RUN OVER SEVERAL TIMES BY AUTOMOBILE. DESCRIBED AS COLD-BLOODED KILLER. ARRINGTON SHOULD BE CONSIDERED EXTREMELY DANGEROUS.

INTERSTATE FLIGHT - MURDER, MANSLAUGHTER

WANTED BY FBI

EDMUND J. DEVLIN



DESCRIPTION
 AGE: 35, born December 27, 1933
 HEIGHT: 5'6" to 5'7"
 WEIGHT: 190 to 215 pounds
 BUILD: heavy
 HAIR: light brown
 OCCUPATIONS: bricklayer, car laborer, trucker

SCARS AND MARKS: scar left side of chin, "Theresa"

SOCIAL SECURITY NUMBERS USED:

CRIMINAL RECORD
 Devlin has been convicted of murder in the first degree, robbery and assault, robbery with a knife.

CAUTION
 DEVLIN IS SOUGHT FOR A BRUTAL MURDER IN WHICH VICTIM WAS RIDDLED WITH BULLETS AND RUN OVER SEVERAL TIMES BY AUTOMOBILE. DESCRIBED AS COLD-BLOODED KILLER. DEVLIN SHOULD BE CONSIDERED VERY DANGEROUS.

CRIME and Computers

Computer technology is extending the reach of the law's long arm across the nation.

by Richard B. Rusch

PROPERTY
WANTED BY FBI
DEVLIN



Connecticut
blue
COMPLEXION: light
white
NATIONALITY: American
factory worker, ironworker,
"Dot" upper right arm,
424, 049-24-9009

ing, and theft, attempted
tent to cheat and defraud.

Y IN WHICH HANDGUNS
BY THOMAS FRANCIS
BOTH SHOULD BE CON-

INTERSTATE STOLEN AUTOMOBILE
WANTED BY FBI
JOHN WILLIAM CLOUSER



DESCRIPTION

AGE: 32, born March 29, 1932, Chicago, Illinois
HEIGHT: 5'9"
WEIGHT: 167 to 200 pounds
BUILD: medium
HAIR: blond (may be dyed black)
OCCUPATIONS: clerical worker, stock clerk
SCARS AND MARKS: tattoos, panther right shoulder, heart pierced by arrow left shoulder, blooming rose right chest, dragon's head left chest
REMARKS: described as a weight lifter and has a knowledge of judo

EYES: blue
COMPLEXION: ruddy
RACE: white
NATIONALITY: American

CAUTION

CLOUSER ESCAPED FROM A MENTAL INSTITUTION. HE ALLEGEDLY ASSAULTED ROBBERY VICTIMS AND CLAIMED HE WOULD NOT BE TAKEN ALIVE. REPORTEDLY IS AN EXCELLENT MARKSMAN AND IN POSSESSION OF A KNIFE. CONSIDER EXTREMELY DANGEROUS.

ESCAPED FEDERAL PRISONER
WANTED BY FBI
BENJAMIN HOSKINS PADDOCK



DESCRIPTION

AGE: 42, born November 1, 1926, Sheboygan, Wisconsin
HEIGHT: 6'4"
WEIGHT: 245 pounds
BUILD: large
HAIR: blond, balding (head may be shaved)
OCCUPATIONS: automobile mechanic, electrician, promoter, salesman, service station operator
SCARS AND MARKS: scar over right eyebrow, vaccination scar upper left arm, scar on right knee, birthmark right ankle
REMARKS: may wear glasses or contact lenses, avid bridge player
SOCIAL SECURITY NUMBER USED: 340-18-9361

EYES: gray or green
COMPLEXION: medium
RACE: white
NATIONALITY: American

CRIMINAL RECORD

Paddock has been convicted of bank robbery, automobile larceny and confidence game.

CAUTION

PADDOCK, DIAGNOSED AS PSYCHOPATHIC, HAS CARRIED FIREARMS IN COMMISSION OF BANK ROBBERIES. HE REPORTEDLY HAS SUICIDAL TENDENCIES AND SHOULD BE CONSIDERED ARMED AND VERY DANGEROUS.

"The growth of crime in the 1960s," says FBI Director J. Edgar Hoover, "is a sad commentary and a disgrace to our way of life."

During the decade, crimes of violence increased 130 per cent. Crimes against property rose 151 per cent. And the "victim risk rate"—the risk of becoming the victim of a serious crime—nearly doubled.

Bureau statistics for 1969 show that a

Richard B. Rusch is on the staff of RCA Information Systems.

murder is committed every 36 minutes, a forcible rape every 14 minutes, an aggravated assault every 2 minutes, a robbery every 2 minutes, an auto theft every 36 seconds, a larceny every 21 seconds, and a burglary every 16 seconds.

A large growth in population accounts to some extent for increased criminal activity. But the incidence of crime has outstripped population growth by a rate of 11 to 1. As a result, the facilities of police departments throughout the coun-

try have been severely strained.

To help cope with the enhanced mobility of today's criminal—and, at the same time, protect innocent citizens from formal arrest or lengthy delay when stopped by police—law enforcement agencies are relying more and more on the use of computers. The President's Commission on Law Enforcement and Administration of Justice recently stressed "the importance of having complete and timely information about crimes and of-

fenders available at the right place and the right time."

"Modern computer and communications technology," said the commission's final report, "permits many users, each sitting in his own office, to have immediate remote access to large computer-based central data banks. Each user can add information to a central file to be shared by others. Access can be restricted so that only specified users can get information."

"Ultimately, courts and social agencies dealing with parolees and juvenile offenders will probably also be using computers...."

Already, there are some 25 state-operated computer systems geared to the needs of law enforcement. And every state but Alaska is tied into the National Crime Information Center (NCIC), established by the FBI in early 1967. (Hawaii is linked with California via Intelsat, a communications satellite orbiting some 23,500 miles over the Pacific Ocean.)

The NCIC is the federal government's pool of documented police information. At present, it includes more than 2 million entries on fugitives from justice, stolen autos, and other positively identifiable stolen property such as guns and negotiable securities. Operating 24 hours a day, seven days a week, its computer system handles thousands of inquiries a day. In many cases, the value of property recovered exceeds the operating cost of the inquiring terminal.

The value of the system was dramatized recently by the bureau in reporting the capture of a murder suspect in North Carolina. The man was wanted for the killing of two persons and the wounding of a third in Ohio three weeks earlier. Stopped by police for a traffic violation, he was arrested on murder charges after a 10-second computer query.

"Too often," says Thomas C. Lynch, Attorney General of California, "individuals are stopped for routine checks and released. Peace officers discover later they are wanted or have property in their possession which had been previously reported as stolen or lost."

Lynch himself has access to the largest and most advanced computer-communications network of any state in the country. Placed in operation last April, the California Law Enforcement Telecommunications System (CLETS) utilizes four RCA computers, two in Los Angeles and two in Sacramento. These link more than 450 state law enforcement agencies with computer data banks at the NCIC and the California Department of Justice, Department of Motor Vehicles, and Highway Patrol.

CLETS computers direct a daily flow of 35,000 intrastate messages over a transmission-line network covering 20,000 miles. More than 1,000 teletype terminals are used to transmit and receive these messages and to secure information from the different data banks.

Thus an officer in the field can quickly check the status of persons, property, vehicles, or firearms. The officer radios an inquiry to his dispatcher, and the dispatcher transmits a coded inquiry to computerized files at the appropriate location. The computers automatically check their records, as well as NCIC records, and almost instantaneously transmit

a response to the dispatcher's terminal. The officer can then determine whether to release the individual, make an arrest, or call for assistance.

Advanced computer systems are also in operation in New York and Michigan. The New York State system, operated by the State Police and soon to be greatly expanded, allows local law enforcement agencies to send messages to other agencies in the state and to retrieve NCIC data. Michigan's Criminal Justice Information System (CJIS), inaugurated this spring, involves not only matters of apprehension but the entire system of justice—arrest, trial, conviction, incarceration, and release. At a cost of about \$3 million, CJIS will convert existing criminal cases over the next three years to standardized records for interagency use.

Recognizing the difficulty of criminal apprehension in an era of mobility, these three states have joined with seven others (Arizona, Connecticut, Florida, Maryland, Minnesota, Texas, and Washington) in an experimental data-sharing project. Together, the 10 states experience more than 75 per cent of the nation's crime. The joint project, called SEARCH (System for Electronic Analysis and Retrieval of Criminal Histories), is expected to cut the time required for relay of records from hours or even days to a matter of minutes through computer storage and electronic transmission equipment. The test program will extend through the summer, with a four-month period of evaluation scheduled to follow. If successful, the program may be joined early next year by several other large states, including Colorado, Illinois, New Jersey, Ohio, and Pennsylvania.

Translating criminal histories into computer language for fast retrieval is far from easy. "For example," says Thomas Trimbach, co-chairman of SEARCH and technical adviser to Michigan's CJIS, "in some states they call it robbery. In others they call it theft. Somewhere else, it isn't even a crime. Our biggest problem is to get everyone to count the beans the same way."

On the local level, a number of cities have installed computer systems, either independently or in conjunction with county law enforcement agencies, to combat crime in metropolitan areas. One of the most comprehensive of these is the Cincinnati area's Project CLEAR, or County Law Enforcement Applied Regionally, which serves 38 police departments in Hamilton County and provides "on-line" access to computers of the Ohio State Highway Patrol and the NCIC. The RCA computers used in CLEAR contain police and court records as well as

data from the Ohio Bureau of Motor Vehicles.

"We foresee imminent expansion beyond Hamilton County and the State of Ohio," says CLEAR Superintendent Andrew O. Atkinson, "to link law enforcement agencies in the eight other counties that come within the scope of the Ohio-Kentucky-Indiana Regional Planning Authority."

In addition to its law enforcement role, the Cincinnati installation also performs information-processing functions for various county offices and acts as the instrument for computer-assisted instruction offered in some public schools. In time, the computer may even manage the flow of traffic in downtown Cincinnati. Sensor pads in the streets would be linked to the computer system, automatically controlling and coordinating traffic lights according to traffic volume and the direction in which the traffic is moving.

A similar computer system is used for law enforcement activities in Kansas City, Mo., instantly providing such wanted-person information as arrest and conviction records, fingerprint codes, and aliases, and communicating directly with the NCIC.

"The computer is no substitute for a policeman or policemen," says Sgt. Charles Boone, a 10-year veteran of the force. "But this thing can save a tremendous amount of time. Where it used to take us an hour to check a man, we can check him in 30 seconds now. It makes my job a lot quicker. And the men now are doing four times the amount of work that I was doing when I was a patrolman on the street."

Tampa, Fla., police officials use an RCA computer system to pinpoint areas of high criminal activity and deploy the 1,000-man police force accordingly. Police chief J. G. Littleton maintains that installation of the system is one of the major reasons that Tampa now enjoys the lowest crime rate of any American city its size.

In May, the city of Buffalo, N. Y., asked RCA to study a command and control communications system to meet present and future operational needs of its police department. "This approach," observed Mayor Frank Sedita, "is expected to result in quicker response from patrol vehicles through the use of more sophisticated techniques for their distribution and control as well as make more effective use of the skill and experience of trained officers."

Between now and 1975, probably 70 per cent or more of the approximately 200 new computer systems activated for law enforcement will be used in metro-

politan areas. Ultimately, courts and social agencies dealing with parolees and juvenile offenders will probably also be using computers — the major restraint at present being the lack of funds. These computers might be tied to the nationwide law enforcement network to allow rapid retrieval of criminal history information. It is even conceivable that the judiciary might use visual-display terminals to review the criminal record of a person on trial as well as information on his social background.

Other possibilities include a highway-control unit capable of automatic vehicle identification. This would involve the installation of optical scanning devices, already available, buried at intervals in a road or placed alongside a road. Numbers embossed on the bottom of a car frame or on the side of a car would be read by the optical device as the car passed—even if the car were moving at a speed of 70 miles an hour or more. The number then would be transmitted directly to a monitoring computer.

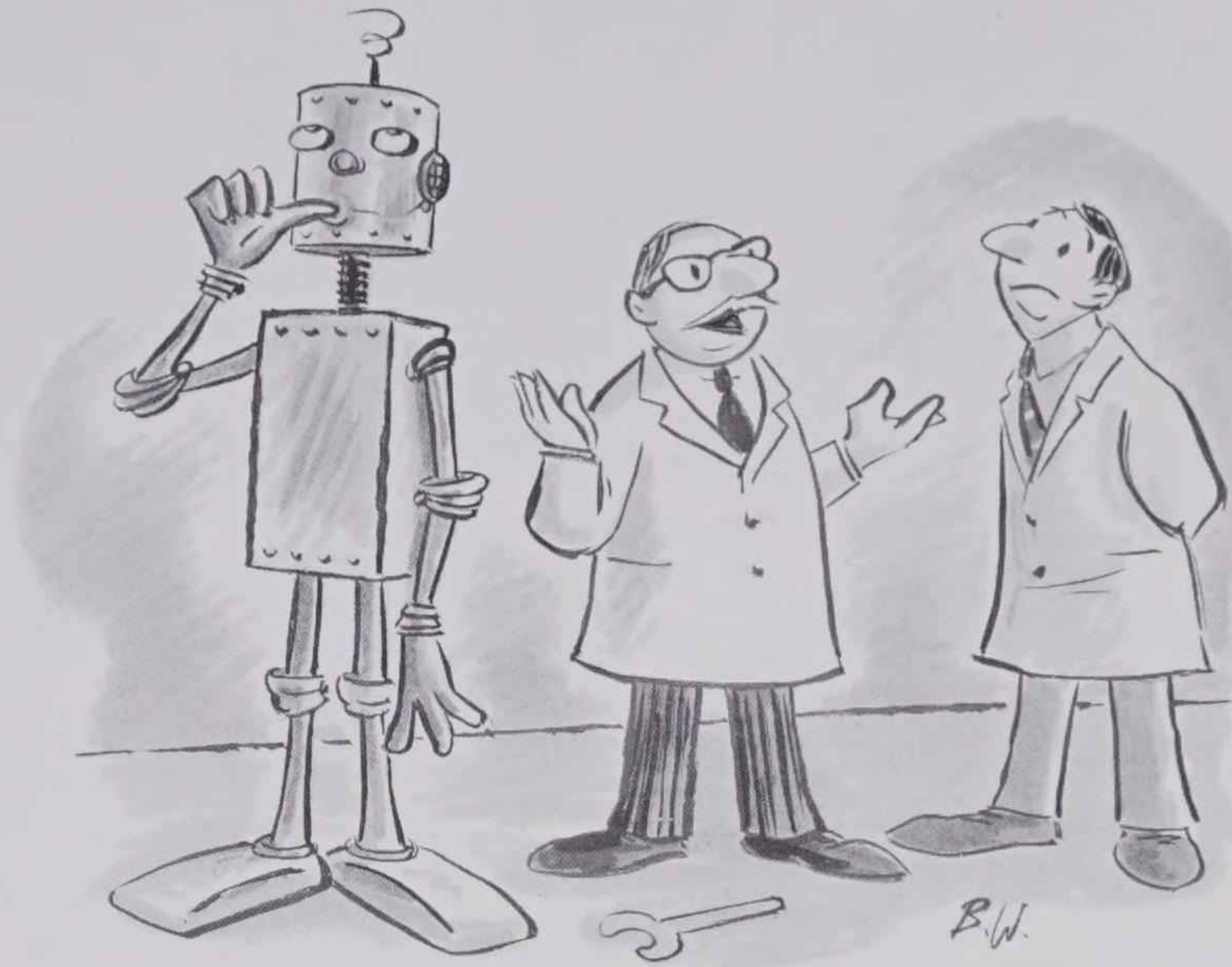
By coupling these optical scanners to a speed-evaluation system incorporated in the same computer, it would be possible to determine automatically which car is speeding and how fast it is traveling, to identify its owner by name, and to issue a summons. It would also be possible to locate any vehicle on any major road in the country.

Could this rapidly expanding computer network ever become, not just a law enforcement tool, but a watchdog of all human activities? Theoretically, it's possible.

"As data banks proliferate," says *New York Times* columnist Tom Wicker, "so will the indiscriminate use of the material they contain. And that raises the question whether an American citizen has a constitutional or legal right *not* to be data-banked, computerized, stored, exchanged, and possibly damaged—materially or in reputation—by the process."

FBI sources, however, see no cause for the alarm of civil libertarians. As a spokesman for the bureau put it recently, "Full capability of a computerized crime information system will be achieved — and will end — on the day when wanted persons are at an absolute minimum and when their pictures in the post office are there strictly for decorative purposes." ■

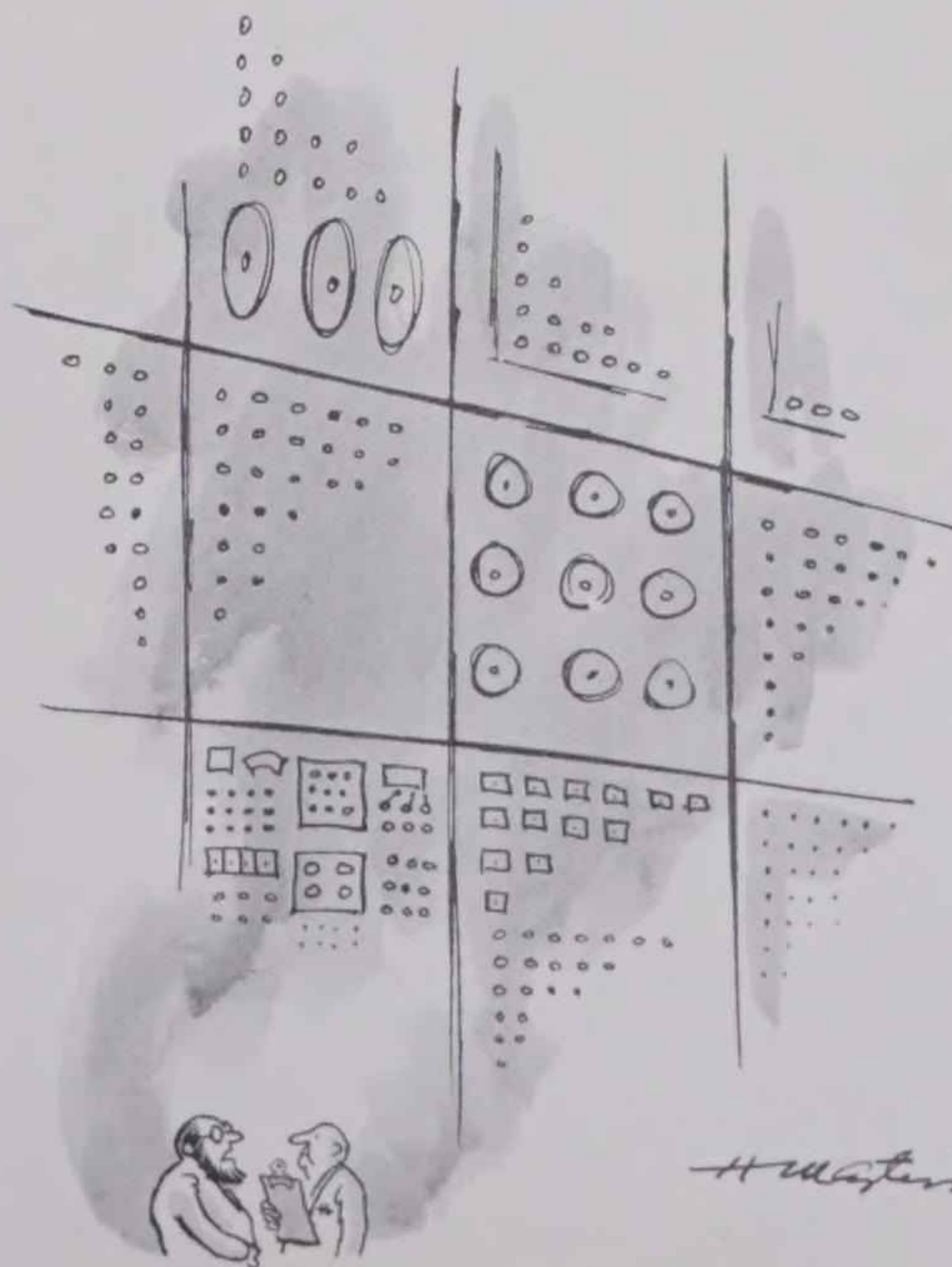
This Electronic Age...



"Of course, our technology is still in its infancy!"



"The facts are: God made the stone. You rearranged it. The question is: Did you improve it?"



"It pains me to think that one day they'll refer to this as a crude invention."

Electronically Speaking...

Recent RCA Developments in Electronics

Avoiding Air Collisions

A collision avoidance system that could be used by all aircraft is urgently needed in these days of increasing air traffic. An answer to this problem, proposed by RCA, is a system called SECANT (Separation Control of Aircraft by Nonsynchronous Techniques).

Key elements of SECANT have already been tested in the laboratory, and the system's ability to handle dense air traffic has been proved by computer simulation. The system is expected to be operationally available in 1973 or 1974.

It works this way: All SECANT-equipped aircraft within range of one another exchange radio signals. Each SECANT-equipped aircraft would have a remitter (combination receiver and transmitter) that would continuously transmit interrogating signals called probes and in turn reply to probes from other aircraft. By measuring characteristics of signals received in response to its interrogations, the system can determine when a collision threat arises.

The unique heart of the RCA system is the signal processor, a device that separates valid signals from spurious ones. The only valid signals to a SECANT-equipped aircraft are those received in response to its own probes. However, a remitter would receive and respond to signals triggered by all aircraft in its range. Therefore, the processor performs the vital function of identifying the valid signals and thereby preventing the sounding of false alarms.

The system is unique among proposed collision avoidance systems since it offers horizontal as well as vertical escape routes and can function either independently or can be integrated into the ground air traffic control system. The latter capability is one of its major operating advantages.

Besides returning a signal in response to a probe from another aircraft, SECANT also enables the responding aircraft to include in its signal such data as type of aircraft, altitude, and serial number. This would allow smaller planes to identify larger ones and avoid the turbulence of their wake.

Thin-Film Holography—Another Use for Lasers

Using a laser beam like a branding iron, scientists at the RCA Laboratories in Princeton are developing ways to imprint holograms on thin metal films only 30 to 40 atoms thick. The new approach eliminates chemical development required to make conventional holograms on photographic film. This and other advantages make thin-film holography especially val-

uable in high-capacity memory systems, nondestructive testing, and scientific measurement.

To make the hologram, light from a pulsed laser is split into two beams. One goes directly to the metal film, which has been deposited on a glass substrate. The other goes first to the object to be holographed and then to the film. At points on the film where light waves from the two converging beams reinforce each other, the light is converted to heat intense enough to evaporate part of the metal film, in proportion to the amount of laser light striking it. Where light waves from the two beams tend to cancel each other, evaporation does not occur.

Exposure to laser light (for five to 20 billionths of a second) thus evaporates parts of the metal film selectively, leaving a kind of holographic engraving. In this way, the film is developed as it is exposed and can be viewed immediately without being moved from its position. This is important in nondestructive testing, when the hologram must be in exactly the same position so that successive observations can be made.

Used in an optical storage system, thin-film holography could record 300-million bits of information on a card the same size as one that would hold 2-million bits in a magnetic memory system. The greater capacity allows storage of large amounts of data that do not need to be revised often, such as records used by motor vehicle bureaus, insurance companies, and certain government agencies.

These holograms would be panchromatic (sensitive to light of all wavelengths) and could be made with infrared lasers that are more efficient but cannot be used with photographic film. Thin-film holograms also have high resolution without the graininess of photographic films.

TV Color Conversion

Another RCA "first" in the television industry is the introduction of a single-tube TV camera that can be converted from black-and-white to full color operation. This new camera produces color pictures with the addition of a special color-encoding optical system and a compact electronic color processor. It will permit educators, industrial trainers, cable TV operators, and other users of closed-circuit television to continue using the same camera if they should decide to switch to color.

This type of conversion became possible as a result of RCA's earlier development of a single-tube camera for color television. Previously, color TV cameras had used a multiple-tube pickup system with optics to separate primary colors.

In the single-tube color camera, color information is obtained by passing light from the scene being televised through two striped filters before it reaches the pickup tube. This technique also produces other essential information, such as picture detail, content, and brightness. The information is gathered on the face of the single tube and processed electronically to produce the color picture. The same type of system is used to convert the black-and-white camera to color.

Laser Altimeter Will Aid Photographic Surveys of the Moon

To aid in mapping the lunar surface through high-precision photographic surveys, RCA is developing a new laser altimeter to be used for the first time during the Apollo 16 mission. It will operate when the Command/Service Module is 40 to 80 miles above the moon's surface and will measure altitude to an accuracy of about six feet.

The laser altimeter, which can take measurements every 16 seconds, may be used independently or with a metric camera. As the camera exposes each frame of film, the laser altimeter will record the altitude electronically on the film. These data also can be recorded in the CSM or transmitted directly to earth.

Use of the laser altimeter in photography is expected to yield more precise information about the moon, which could provide a key to the origins of lunar formations and help in selecting landing sites for future Apollo missions.

Communications System for Lunar Rover

A new portable communications system about the size of a briefcase will help Apollo 16 astronauts range farther than before as they explore the moon's surface. Previously, astronauts had to remain within one to two miles of the Lunar Module so that they could transmit through the system in the Module to maintain communication with earth.

The LCRU (Lunar Communications Relay Unit) designed by RCA will allow the astronauts to transmit directly from the Lunar Rover, a vehicle that will be used for the first time during the Apollo 16 mission. The astronauts will send voice and telemetry data and color TV to earth and receive transmissions from earth.

The LCRU, which measures 5 x 13 x 21 inches and weighs 50 pounds, will be connected to a color TV camera by cable so that pictures of astronauts exploring the surface will be included in the transmission. With the relay unit and camera properly positioned and activated, live color views of the Lunar Module lift-off

from the moon could be beamed to TV audiences for the first time.

Computer Testing of Mariner Sensors

An RCA computer system, Science Operational Support Equipment, will test scientific instruments to be carried aboard the two Mariner spacecraft scheduled to fly by Mars in 1971. The two SOSE units are being supplied by RCA under contract to the Jet Propulsion Laboratory for installation at Cape Kennedy. They are designed to test sensors that will map the planet's surface, measure temperature and composition of the atmosphere, and probe for signs of biological activity. The sensors will be checked during installation, during vacuum-chamber and other environmental tests, and just before launching.

Photo and illustration credits: pages 2-4, David Attie; page 5 (top), Henry Wolf; page 5 (bottom), Atomic Energy Commission; pages 6 and 7, courtesy Buckminster Fuller; pages 8 and 9, sculpture and photos, Eric Moeckli; page 10, *The New York Times*; page 11, John Collier—Black Star; page 12 (top) and page 14, Frida Schubert; page 12 (bottom), Bruce Davidson—Magnum; page 16 (left) and page 19 (upper left and bottom center), Joseph J. Sia; page 17 (right), Salvatore Ficara; page 18 (top left), Decca Records; page 18 (right center), Frank Edwards—Fotos International; pages 24 and 25, courtesy Mrs. Chet Huntley; pages 28-31 and inside back cover, Wolf von dem Bussche; pages 32 and 33, posters courtesy Federal Bureau of Investigation; all other photos, RCA.

Dutch photographer Jan Dibbets used 34 pictures for his "Shadow Piece (The Shadows In My Studio As They Were at 27-7-69 from 8:40-14:10 Photographed Every 10 Minutes)." The work was featured this summer in the Museum of Modern Art's "Information" exhibition. Other works from the exhibition are shown on pages 28-31.



RCA

Electronic Age

Summer 1970

