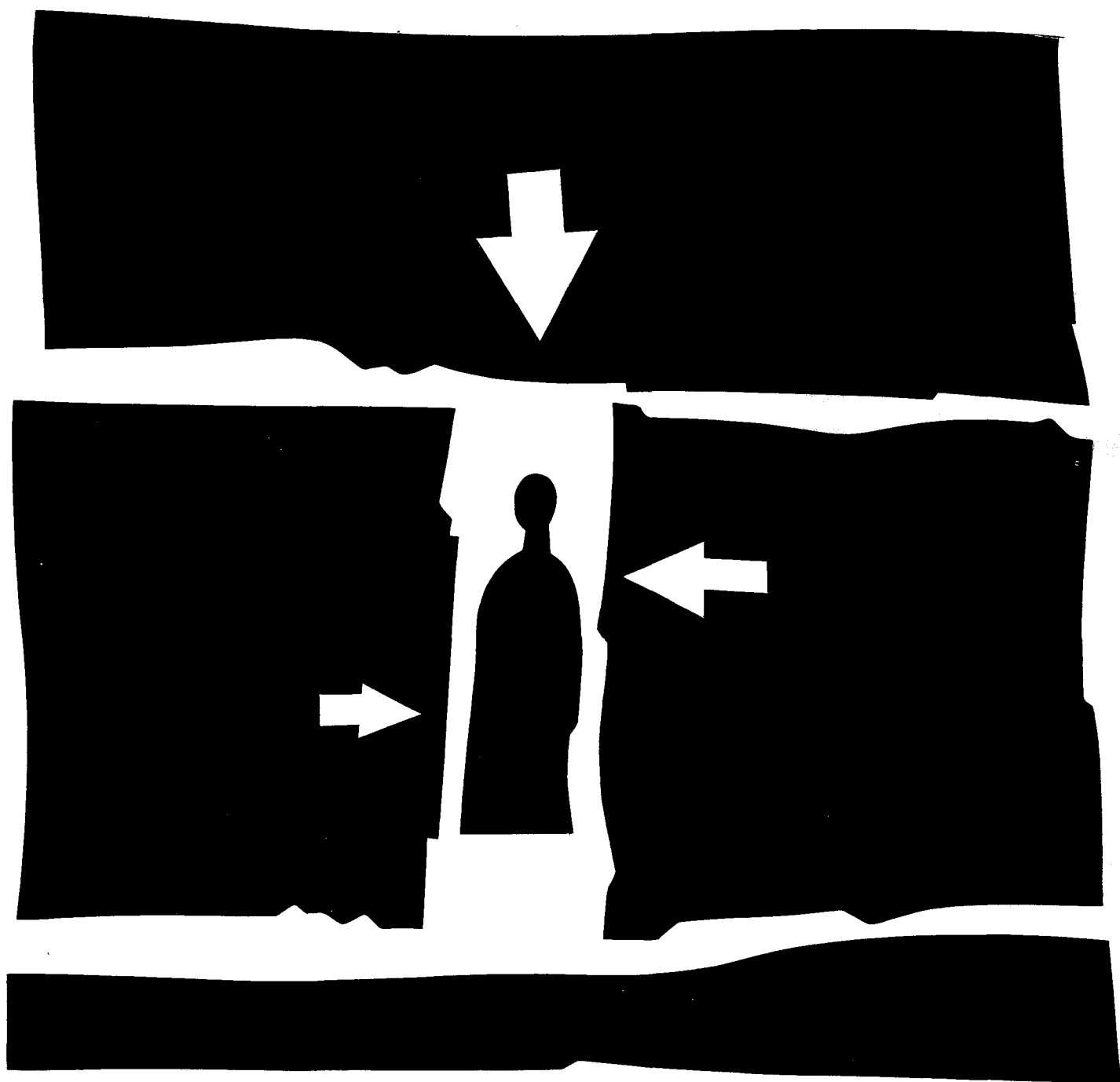




Consider the Connections





Introduction: "Considering The Connections"

Since the fundamental components of the environment—land, air and water—are the basis of all life and of all human activity, protection of the environment bears heavily on virtually all the other human activities which traditionally we have considered separately. For the greater part of human history, populations have been small and the scope of our technology limited. Hence, the failure to relate quality of the environment and such matters as economics, energy, transportation, and urban growth did not necessarily lead to disastrous consequences. Today, this is no longer true. The pressures of human populations and the helter-skelter application of technology are quite capable of severely altering the life supporting capacities of ecological systems. This means, quite simply, that the people of this planet must consider the connections, or perish.

Natural systems are bound together in complicated ways. Waters flow from one body to another and the air knows no boundaries. Chemical compounds, both those known to nature and those created in recent decades outside the time-tested boundaries of nature, move up and down through food chains, permeating ecosystems and affecting both plants and

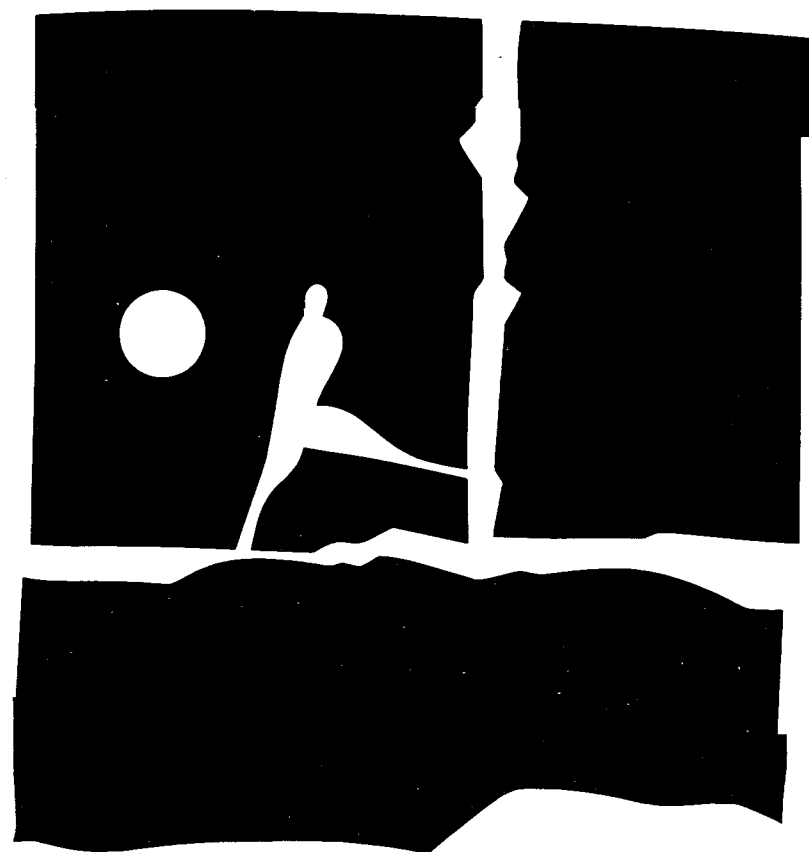
animals, including human beings, in unanticipated ways. Through the recently recognized phenomenon of acid rain, air pollution adversely affects water and aquatic life hundreds of miles removed from the sources themselves. Fertilizers, pesticides and other chemical substances applied to the land wash into surface waters and sink into groundwaters. Hazardous wastes dumped on the land contaminate groundwater supplies with substances that do not degrade and will maintain their potential hazards far, far longer than any human civilization has endured.

A clearer view of the connections between environmental protection and our contemporary way of life would help us avoid or diminish the unanticipated by-product problems which have accompanied the ways we have used science and technology in the past. It would help us learn to satisfy our basic needs for food, clothing, sanitation and shelter through the optimum use of resources without paying an unforeseen cost in pollution and other forms of environmental degradation which threaten our health and well-being.

In this country we are much farther down the road toward environmental responsibility than we were a decade ago. The environmental legislation created or drastically amended in the last decade indicates that our society realizes that environmental goals cannot be achieved by

pollution control alone, but must rely instead on foresighted environmental policies. We have already lessened the gross impacts of air and water pollution. Even more importantly, on the firm foundation of the National Environmental Policy Act of 1969, we have begun at last to look before we leap. We no longer build bridges, power plants, airports or dams without first considering the environmental consequences. Our society has begun to consider the connections—a tendency which we must intensify and expand until we make a habit of taking appropriate account of ecological considerations in our pursuit of critical national and international goals.

This booklet has been prepared to help you consider the connections between your activities and decisions and those land, air and water systems that support your economic and physical well being.



The Environment and Health

Too often, when we hear the word "environment" we think it's "out there," that we are separate from it. In reality, however, we are associated with the environment in numerous complex ways. The human body is about 60 percent water, adults breathe a minimum of 12,000 quarts of air every 24 hours, and in many less obvious ways we are clearly creatures of this planet. As our physical and social environment changes, the physical and chemical make-up of our bodies is altered. As we consume air, water and food, our bodies absorb and react to their contents. Noise and radiation also affect us. The breakdown of ecological systems mirrors our own destiny: as land, air, water and living creatures are affected by environmental mismanagement, our lives are diminished.

The most important objective of environmental protection is the prevention of disease and death. When we overload natural systems with pollutants and cause illness and death through acute air pollution episodes or cause massive fish kills and threaten drinking water supplies, the relationship between cause and effect is

easy to see and understand. But in the last decade we have become acutely aware of the fact that environmentally-caused death and disease can occur under much less dramatic and obvious circumstances. Moreover, since World War II our technological skill has introduced into the world new substances which are utterly alien to the natural processes of the earth. We no longer derive the chemicals we use from naturally occurring materials only—plants, animals, and minerals which evolved in the same environment in which people have always lived. Through three million years of trial and error we have learned which of these substances were edible, which were useful and which were dangerous. In the chemical revolution of the last 40 years or so, however, we have created about five million synthetic compounds—three million since 1971 alone. About 65,000 are in commercial distribution. Most serve us well, but some pose a serious threat when used improperly, or when they enter the environment in ways that were not intended or anticipated. Some are dangerous in quantities so small that they can be detected only with sophisticated instruments capable of detecting chemicals present in parts-per-billion or even parts-per-trillion amounts. Some cause health problems many years after exposure. They provide the coup de grace to the obsolete view that land, air and water have an

almost unlimited capacity to absorb pollution. Neither our bodies nor the natural environment can safely process the quantities and varieties of pollutants produced today.

Health effects related to the environment are not limited to such well-known and serious ailments as cancer, neurological damage, or heart and lung diseases. Environmental pollution also diminishes well-being, lowers human vitality, contributes to lost work time and aggravates chronic illnesses.

The economic benefits of environmental protection are many and varied. The higher the degree of protection, the greater the opportunity for individuals and their families to lead full and productive lives. Society benefits from greater productivity among workers and from lowered public health costs. The prevention of environmentally-related diseases is not free. But compared to the costs of the illnesses and deaths that protection efforts allow us to diminish or avoid, the price is surely small.

The Environment and the Economy

A climate of fluctuating tensions between environmental and economic goals—each vital to a successful society—characterize the current era of transition, with its changing values and new views of “costs” and “benefits.” The democratic processes of our open society have in recent decades stimulated a widespread public involvement in the day-to-day actions of business. This involvement occurs both directly and indirectly—through group pressures, legislation at all levels of government and formal regulations. Some of it is the result of the increasing demand for environmental protection which itself is a direct result of increased public understanding, concern, and involvement.

Nevertheless, we are only beginning to acknowledge the extremely high level of interdependence which exists between what is regarded as a good environment and what is regarded as a good economy. Economic activity and the prosperity it engenders depend on the availability of natural resources and on clean air, good water and usable land. The mismanagement or pollution of these resources sooner

or later leads to the diminishment of economic activity. Industries of all kinds, as well as people, depend on clear air and unpolluted surface and ground water resources, on usable farm land with good top soil. Air and water pollution, oil spills, mismanaged hazardous wastes, improper sewage treatment, and a host of other environmental problems threaten our economy as well as our health.

Most people no longer consider it sound business practice to maximize the production of goods no matter what the costs to the environment. But we have not yet discarded all the evidence of our mistaken views of the past. Our Gross National Product (GNP), for instance, can be very misleading in that it still reflects the old view which includes the market value of products regardless of adverse effects upon health or the environment. Indeed, protection of the environment receives little or no value in this calculation. The costs of

illnesses related in many instances to pollution are, ironically, assigned positive values in the GNP. A more precise evaluation of what the Nation produces would not suggest that it is economically beneficial to expose people to carcinogenic substances.

A more precise measurement of our total economic welfare would indicate that environmental quality means fewer illnesses, greater worker productivity, more purchasing power available for nonmedical goods and services, and greater efficiency in industrial operations.

The recreational values of good air, land and water are also economic values. Millions of Americans provide services to those seeking outdoor recreation—fishing and sightseeing, swimming and hiking—all of which are enhanced by a good environment. As opportunities increase, the benefits of these activities will increase as well. Often, in some of the Nation’s most economically depressed areas, the recreational needs of congested metropolitan centers can be partially met by reclaimed waterfronts and urban lakes, landfills recycled as parks and playgrounds, and effective transportation planning.

Particularly since the beginning of the past decade, the public's concern about and involvement in environmental issues have altered the outlook of business and industrial leaders. Increasingly, while they continue to seek opportunities for expansion and innovation, industrialists also show concern for the hidden, as well as the obvious, costs of many of their products. There is a growing recognition of the connection among energy costs, the desirability of recycling and conservation and the usefulness of new technologies and practices which obviate or stringently curtail the emission of pollutants, most of which are after all, resources out of place. The goal of flourishing industries drawing wisely on America's abundant resources is one that is increasingly shared by environmentalists, business people, government officials, and the public.



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The Environment and Labor

All the members of our society have paid, and are still paying, for the fact that we failed to give adequate attention to environmental issues until recent decades. But none has paid as high a price as workers, particularly in heavily industrialized parts of the country. Workers have often been in double jeopardy in that they are exposed to high levels of contaminants in the workplace and return home to communities often polluted by those same contaminants. Indeed, much of the early scientific concern about the health effects of community air pollution was derived from work done on the exposure of workers to the same pollutants in the workplace. Even though major improvements have been brought about in both the workplace and the community environment, the importance of the relationship between the two has not diminished. Hence, the high level of cooperation between the Environmental Protection Agency (EPA) and the Occupational Safety and Health Administration (OSHA) in carrying out their respective research and regulatory responsibilities.

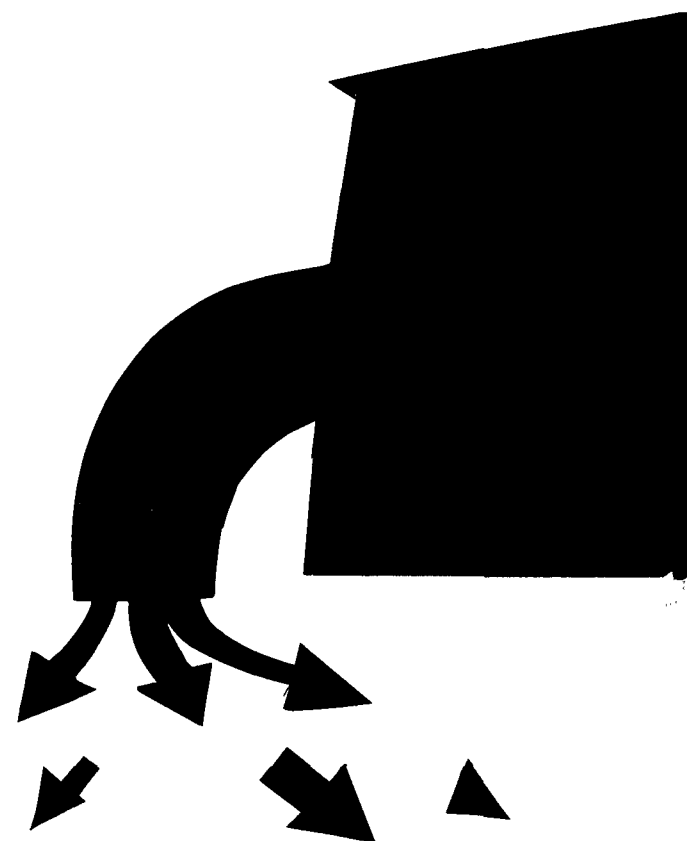
Workers and labor unions have been strong supporters of environmental legislation, not only recently, but in the 1950's

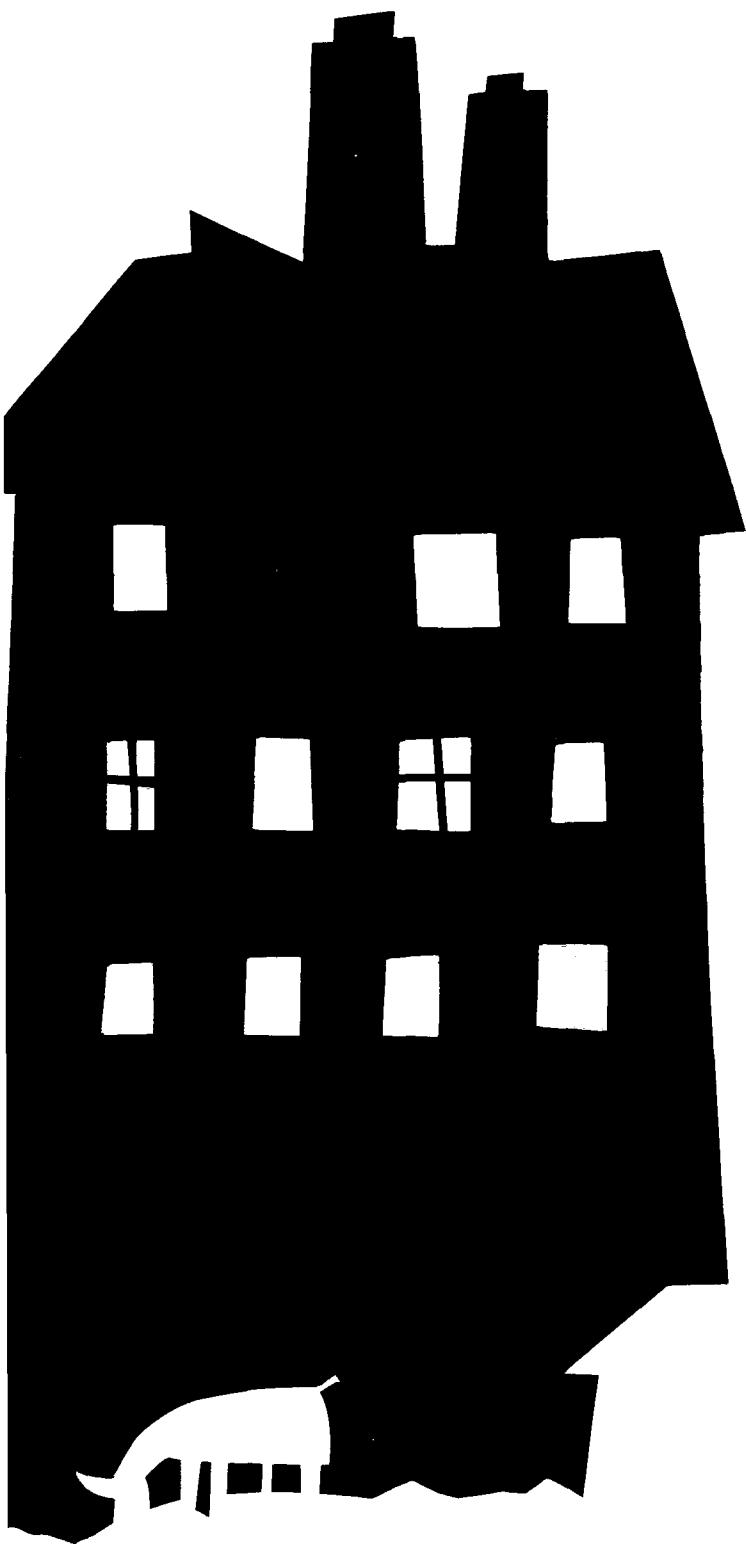
and 1960's as well. Their support has been crucial to the development of the environmental laws which now exist for the protection of all of us at all levels of government. Workers were among the first to note that pollution threatened to turn cities into economic wastelands; that major bodies of water essential for drinking supplies, productive as fisheries and needed by industry and agriculture were gradually being rendered unusable by human and industrial waste. They were among the first to note that exposure to toxic substances was threatening to drain billions of dollars from productive economic growth into welfare and medical expenses.

Labor's support has continued despite the fact that in a few cases pollution control requirements have caused genuine hardships to workers and their communities. Nationwide, between 1971 and 1977, 128 plants employing 23,737 workers were closed. According to plant owners, the closings were due, at least in part, to pollution control requirements. It is noteworthy, however, that in most cases these were antiquated, marginally economic plants which very likely could not have been operated much longer, in any event.

The Federal Government works with State and local officials and with workers and managers toward the end of keeping plants open and people working wherever and whenever possible.

Moreover, environmental protection measures have resulted in the employment of hundreds of thousands of workers. Municipal sewage treatment plant construction, for example, has created 140,000 jobs in a four billion dollar a year building program. Tens of thousands of workers are employed in building, operating and maintaining pollution control equipment throughout the country.





The Urban—Rural Connection

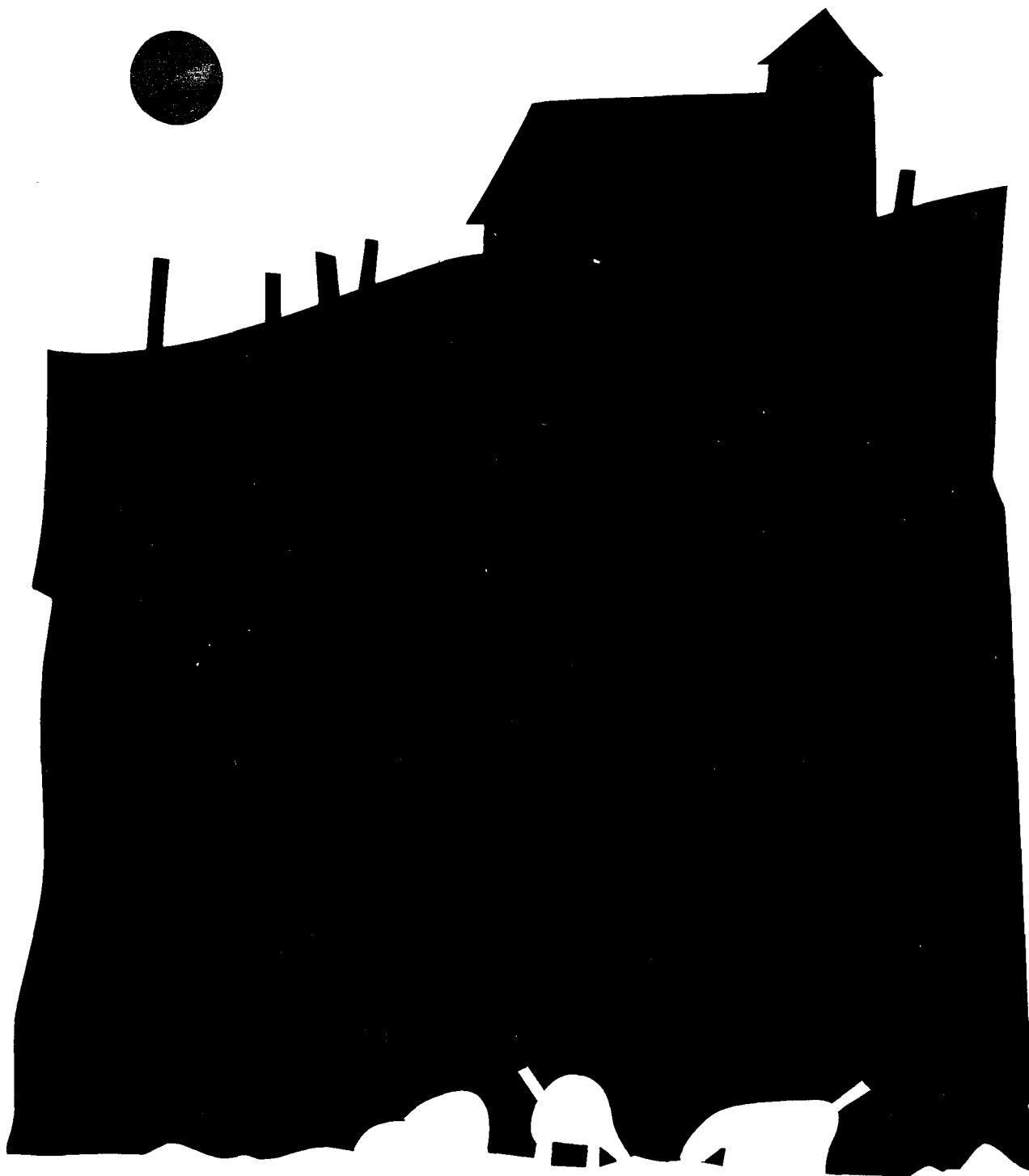
We are not protected from the adverse affects of environmental mismanagement by virtue of where we live. The city and the countryside are connected in numerous complex ways and the problems of one easily shift to the other. Air and water do not respect political boundaries or the distinction between rural and urban areas. Since nearly everyone is downstream or downwind from someone else, when natural resources become polluted, both the rural dweller and the city dweller are affected.

Air pollution from the automobile, from utility plants and from industrial complexes is not restricted to urban areas but is also carried hundreds of miles into the rural countryside, even into other countries.

Rural areas also cannot escape other problems of pollution generated by our highly urban and industrialized society. For example: as land suitable for disposal of solid and hazardous wastes becomes increasingly difficult to locate within metropolitan jurisdictions, cities and industries look to rural counties for solutions.

The movement of pollutants between city and country is not all one way, of course. Sediment erosion from croplands is today the single most prevalent pollutant of surface waters. Along with the sediment comes the bacteria of animal wastes, residues of toxic pesticides, and algae-producing nutrients, all moving into the rivers, lakes and reservoirs upon which many urban centers of the Nation depend for drinking water and recreation.

Cleaning up and controlling the many sources of pollution is a *national* goal in the full sense of the term. Both urban and rural communities profit from clean air, clean water, the safe disposal of wastes and intelligent resource and land management. What happens to the environment, whether urban or rural, ultimately connects us all.



The Environment and Agriculture

America's productive farmland is one of our most valuable natural resources, and a critical element in our foreign balance of payments. An effective environmental protection program helps insure the continued value of this resource, for well-managed land, clean water and clean air all contribute to the quality and quantity of agricultural products.

Numerous vital connections exist between water quality and agriculture. Suitable water is needed for the irrigation of crops and for livestock. Farm families commonly rely upon wells for safe drinking water. Rural ponds and lakes provide recreational opportunities such as swimming and fishing. Maintenance of water supplies suitable for many uses, including those of agriculture, is a major objective of State and Federal water pollution control legislation.

Pollution control measures are essential because agricultural runoff seriously affects water quality in two-thirds of our river basins. Important water supplies—the Lower Colorado, for example—have been polluted by salts washed out of the soil through irrigation.

Runoff also accounts for over half of the Nation's man-made sediment load. An estimated 1.8 billion tons of topsoil from agricultural croplands are eroded into America's streams, lakes and waterways

each year. Attached to the soil particles reaching the water are insecticides, weed killers, fungicides, nitrates and phosphates from fertilizers, and the bacteria of animal wastes from barnyards and animal feedlots. Excessive sediment in water is detrimental to fish populations. The United States pays one half billion dollars annually to remove sediment (both natural and man-made) from waterways. We pay still more to clean up drinking water supplies.

Protecting rivers and streams from sediment also contributes to maintaining topsoils on the land. Farmers are losing precious soils at a rate faster than that of the "dustbowl" days of the depression. Since 1935, agricultural practices have so severely damaged farmland that one hundred million acres of land can no longer be cultivated and over half the topsoil on yet another hundred million acres has been lost. Natural processes replenish some of this topsoil, but not nearly fast enough and not on a uniform basis.

Farmers must also be concerned about air pollution. Current research indicates that air pollution may adversely affect plant growth and reduce production, particularly near large urban centers. A more recently recognized problem is posed by acid rain, which is formed when nitric oxides and sulfur oxides, produced by burning fossil fuels, increase the acidity of precipitation. Because air pollution is carried hundreds of miles, acid rain may harm crops far distant from pollution sources.

Excessive or improper use of pesticides can pose a problem not only to water quality, but to crops and even to farmers themselves. Long term use of pesticides often leads to the development of resistant strains of pests for which alternative pesticide chemicals are not always available. Natural predators of pests often are unwittingly destroyed by the use of pesticides and once secondary pests then become primary, moving unchecked through crops.

Improperly applied, pesticides have poisoned farmers during the process of spraying, and have seriously affected the health of some farmworkers and their families, as well as nearby residents. When improperly sprayed near waterways pesticides can affect drinking water supplies and kill fish and other wildlife.

New management practices to control pests, together with greater care in the use of pesticides by trained applicators, will help protect against some of these problems.

Between 1967 and 1977 urban sprawl replaced nearly 17 million acres of farmland with residential, industrial and shopping center developments. Loss of farmland means a smaller base for food and fiber production as well as the loss of needed environmental benefits. Additionally, urban sprawl increases energy cost. Food must be transported greater distances, and food production may be forced to less suitable and more erosive land. The current drive for massive energy development and expanded mining of fossil fuels threatens new diversions from the agricultural use of land and water.

The multiple factors that affect food and fiber agricultural production, so vital to public welfare and the national economy, illustrate in a compelling way the connections that link agriculture and environmental issues.

The Environment and Transportation

The evolution of our country's transportation systems presents a compelling demonstration of the connections between the uses of technology, social patterns and the environment. Our choices in past decades among the modes of moving people and goods were largely dictated by available technology, employed without regard to the impact upon land, air, water or energy resources.

Looking back in time it is easy to see that we did not anticipate the far reaching consequences of these choices. The automobile is an apt example. In this century, we have not merely accepted, we have embraced the automobile as the favorite form of personal transportation. But, until very recently, we gave no consideration whatsoever to the questions of how, when or where to best employ it. The social, cultural and environmental consequences of this national decision, for good and for ill, are far greater than anyone had foreseen.

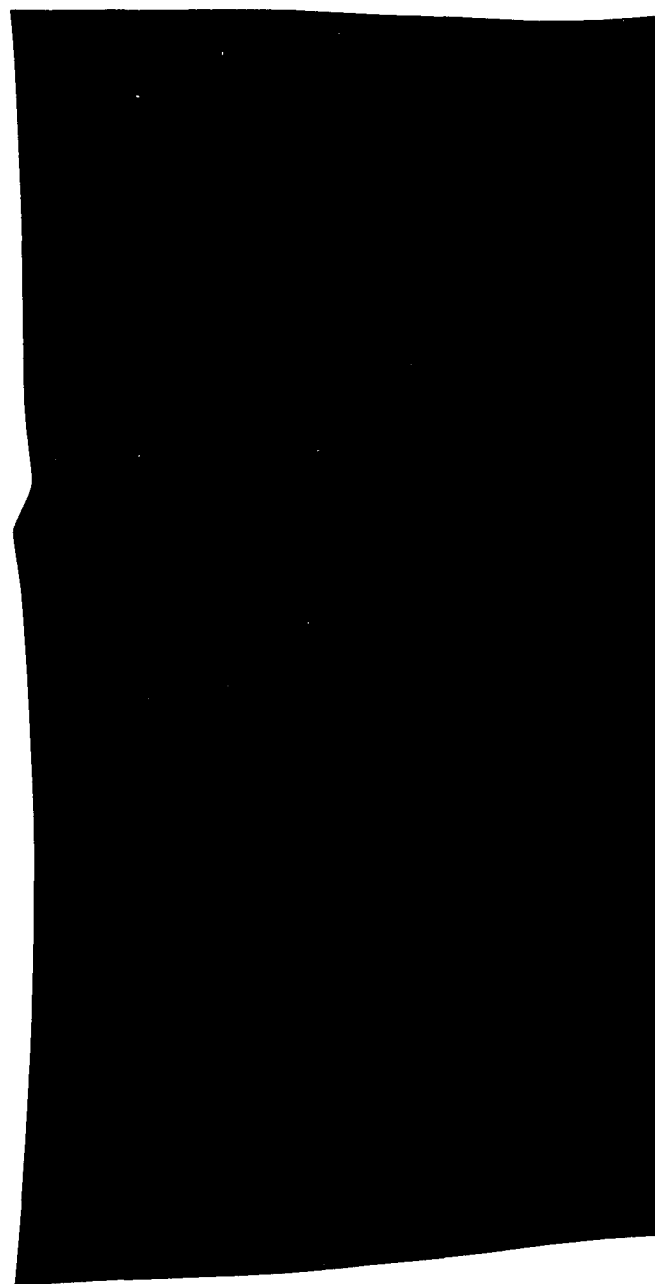
Suburban sprawl, with its many environmental consequences discussed elsewhere in this booklet, is the creation of the automobile. This in turn soon diminished the utility and economic viability of mass transit systems. The resultant dependence of commuters upon their cars created the expressways which altered many urban neighborhoods and, of course, attracted even more cars to congested downtown

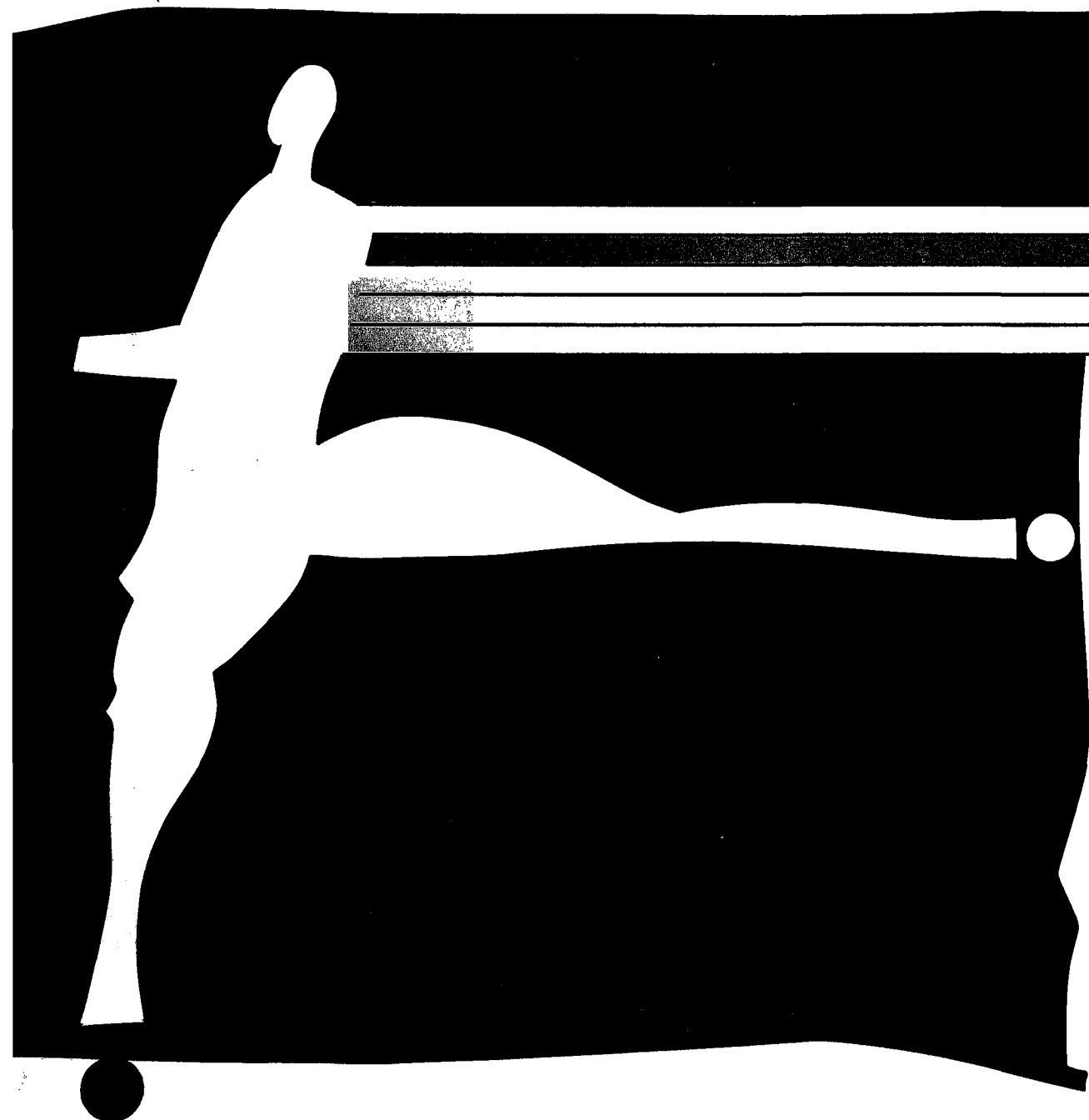
streets. It is only in recent years that we have begun to face the fact that we must plan our communities for people as well as for motor vehicles.

While automobiles became the "common carrier" for people, truck lines claimed an increasing share of freight tonnage between cities across the country. Construction of a national network of interstate highways accelerated the movement of all kinds of vehicular traffic. The awakening of America's environmental consciousness at the beginning of the past decade has led us to reassess national policies affecting transportation, land use, patterns of development, and the impact of all these upon the environment. While we cannot undo the decisions of the past, we can minimize their effects.

Emission limitations on cars, trucks, airplanes, and other means of transport have helped check the steady deterioration of the air. In some areas, air quality has been improved significantly. Stricter controls due to go into effect later in the 1980's should further improve air quality.

In areas that cannot meet air quality standards because of pollution caused by motor vehicles, State and local governments are obliged to establish plans which encourage the use of alternative transportation systems and other means of reducing automobile mileage. The need to lessen our dependence on imported oil has reinforced the movement toward more energy





efficient cars and trucks and the development of other forms of transportation.

The construction or improvement of subway and rapid rail systems and other forms of mass transit now receives increased Federal support. Preservation of a national rail network is accepted national policy. The expanded use of waterways for the movement of freight is also getting more attention.

Other problems associated with transportation have begun to catch the public eye, sometimes because of catastrophic headlines. The movement of hazardous chemical and radioactive materials sometimes creates major threats to health and the environment through accidents and spills. The need to move oil long distances has made our coastlines vulnerable to tanker accidents.

Air travel is not free of environmental consequences, either. Steadily increasing attention is being given to noise and air pollution problems, particularly in the immediate vicinity of major airports.

Belated though it may be, we are now beginning to recognize the connections between how we travel and move materials and the resulting impact upon the environment.



The Environment and Energy

Basic laws of physics govern the transformation of matter and the release of energy. In utilizing nature's stored energy, we change a balance of chemical and biological systems that has evolved over billions of years. Human societies, brief as their history has been, achieved a similar balance in earlier eras when hunting, fishing, and agriculture were the staples of survival.

People have been slow to understand how these systems—some of them quite vulnerable—have been weakened by surging production and consumption of energy in the contemporary world. But there is now widespread recognition, if not full knowledge, of these interworkings. A broadly accepted goal is that energy needs should be met without threats to environmental systems. Otherwise, major social disruption and economic and health problems can occur.

These problems are diverse. Facilities can disrupt both the social and economic stability of communities when air and noise pollution result from development. Mining and drilling for fossil fuels can contaminate

waters with pollutants. Radiation associated with uranium mining can threaten health. High dams for hydroelectric power can destroy agriculturally productive valleys, and drown entire ecosystems. Fuel spills can spoil fishing industries and tourism. In energy-poor nations, foraging for wood and brush as an essential fuel source causes untold human misery as the desert expands into stripped areas.

New attitudes toward energy have taken hold, largely due to these serious environmental effects, potential threats to our national security, and rapidly rising prices for traditional fuels.

The concept of "least-cost" energy, which concentrates on providing consumers with the benefits of energy—heat, light, and mechanical motion—at the least possible cost, is gaining adherents. To provide energy's services at minimum cost calls for new approaches, such as calculating the total energy and environmental costs of products—their raw materials, manufacturing processes, transportation and marketing, and ultimate usage, even to the recycling of certain materials, such as aluminum, to save energy.

Ultimately, energy conservation and more diverse and smaller scale energy sources will bring about profound changes in how we cope with new demands for

energy. Technologies based on water power, solar energy and biomass may become commonplace, thus easing the environmental pressures which accompany the exploration for and production of traditional fuels.

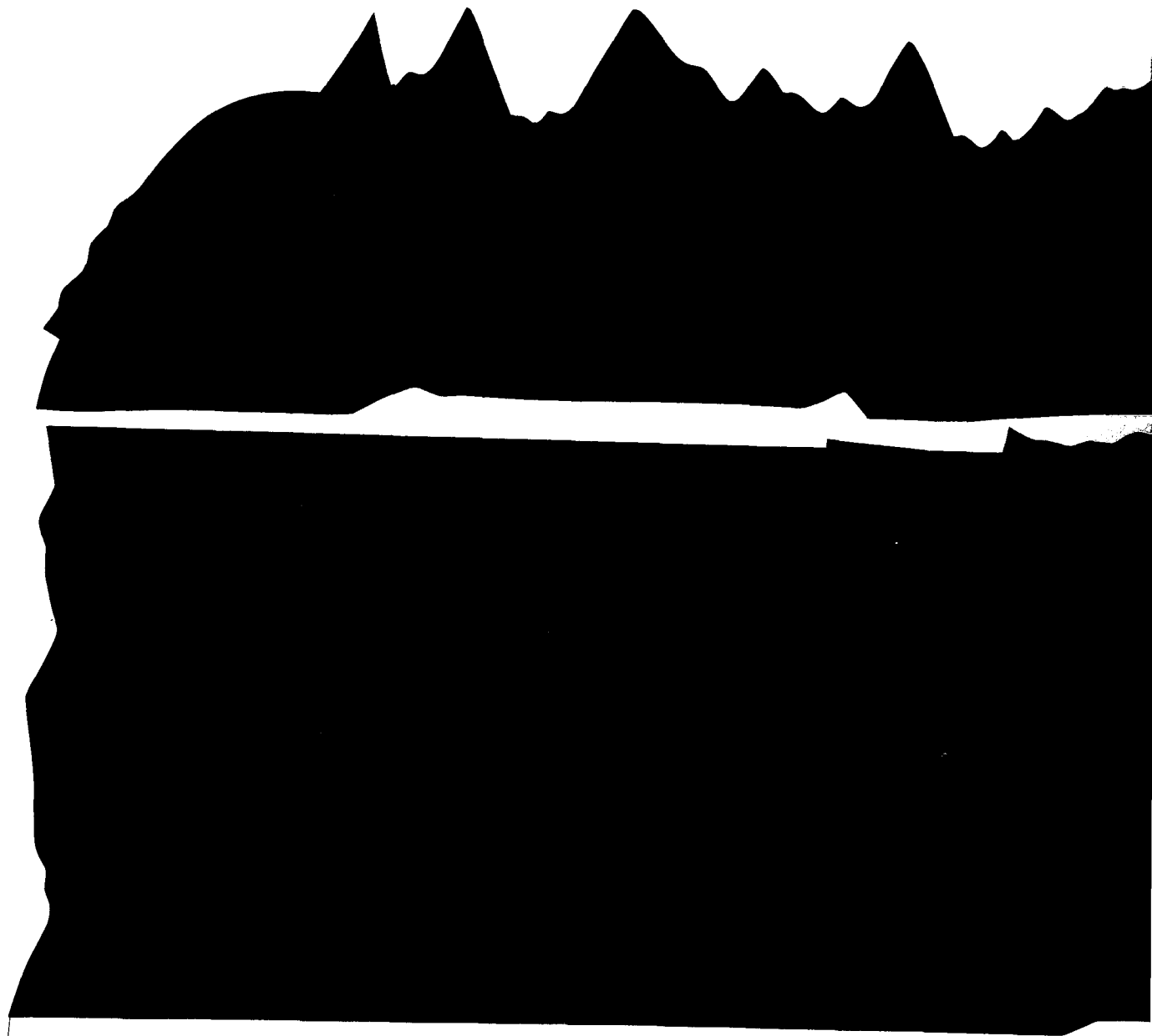
When we connect energy use with environmentally benign and renewable sources, nature becomes a partner in solving our energy problems, and we lower the levels of tension and noise which have characterized the energy-environment debate.

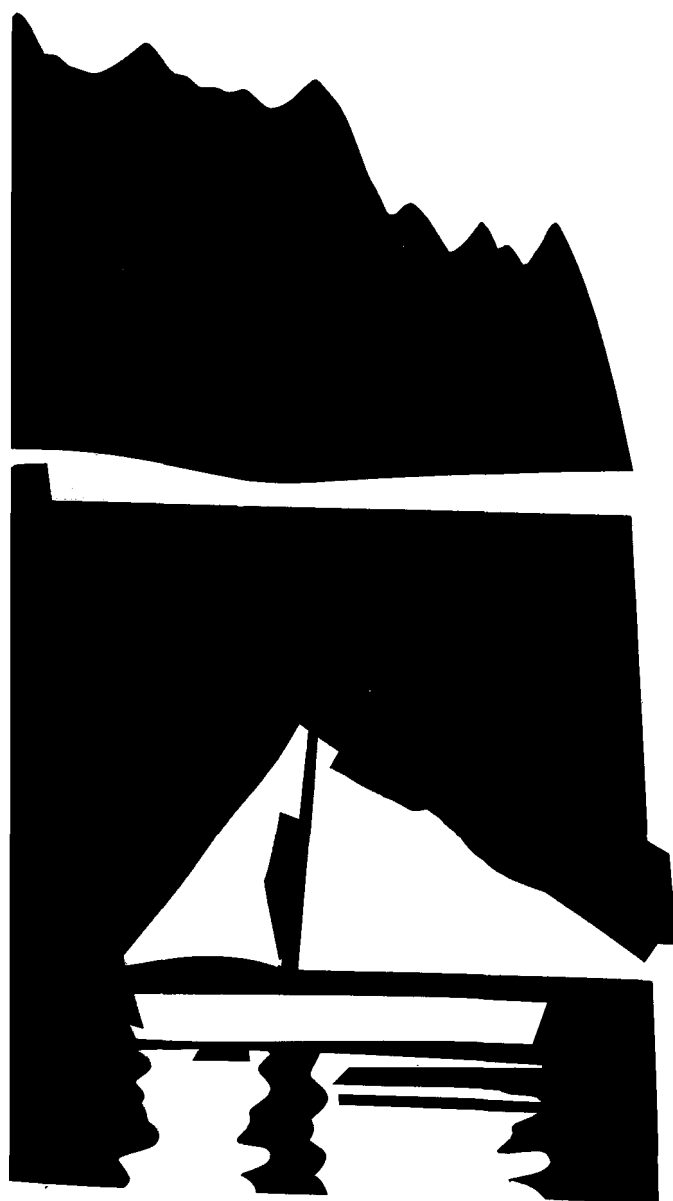
The challenge is to integrate energy development and use, economic planning, and environmental goals to assure fuller awareness, closer connections, and sound, timely public and private decisions on how, when and where to apply a multiplicity of energy resources.

Environment and Recreation

The link between environmental protection and recreation pursuits is easily perceived, yet variously defined for the eye of the beholder is all important. For some, primitive wilderness areas and sweeping scenic vistas provide in greatest measure the sense of renewal and fulfillment we expect to draw from vacations and other leisure-time activities. For others, a bicycle trail, a children's playground, or a patch of park in an inner city neighborhood may offer the most rewarding recreational return. Our tastes and opportunities may differ, but we should share the recognition that environmental degradation can, and has, adversely affected a broad range of recreational activities. We see streams and lakes closed to fishing and swimming. Noise is an intrusive neighbor in many areas. Open vistas are obscured by air pollution. In some parts of the country, air pollution is sometimes so severe that children must be restricted in active play and elderly people are urged to stay indoors.

Air and water pollution control laws give special protection to the still clean air and water of areas relatively untouched by pollution. Without these controls the





environmental quality of our national parks, forests, and wilderness areas would eventually be degraded.

But in urban as well as wilderness areas, maintaining the quality of the environment is a key element in enhancing recreational opportunities that can enrich the human spirit. Many communities also have found that innovative environmental improvement programs not only provide a better life for local residents but also draw visitors and tourists from other areas, providing a solid economic return on the investment in recreational development.

There is growing recognition of the recreational potential of America's urban waterfronts: 70 percent of our 415 cities having populations of 50,000 or more are located on rivers, lakes or an ocean shore. The recreational potential of these locations includes not only water-oriented activities such as boating, swimming, and fishing, but also water-enhanced activities such as picnic grounds, hiking paths, and playgrounds.

The billions of tax dollars being invested in the construction of wastewater treatment plants also offer tremendous potential for public recreation. Federal planning grants now require the identifica-

tion of recreational and open space opportunities these projects may offer. Construction grants can include money for facilities such as trails, bicycle paths, boat launches and the like. Another Federal program offers funds to help cities rehabilitate deteriorated parks and to develop innovative recreation programs.

Parks and other green open spaces in our cities not only provide recreational opportunities as varied as hiking trails and garden plots, but they also make a significant contribution to cleansing the air of pollutants and reducing the harshness of noise and the press of congestion. As an environmental bonus, creating more areas for recreational use in our large cities means urban residents need not always burn fuel traveling long distances to find clean air, unpolluted waters, or peace and quiet.

In contemporary society, access to recreational opportunities has become an essential resource for good health. And a healthful environment is a prerequisite for healthful recreational pursuits.

The Environment and Women

Today, women are found in many roles in our society. In steadily increasing numbers, women are taking jobs outside the home and moving into new occupations. Still, it is women who bear children. And women remain as the primary child rearers of our society. This responsibility for children carries with it a special concern for the connections between the quality of the environment and the health of the family.

Women know today that the threat of environment hazards is particularly acute in pregnancy because of the vulnerability of the fetus during the delicate process of cell development and growth. The fetus, for example, is highly sensitive to radiation. In 1956, Dr. Alice Stewart, a British physician researching the effects of abdominal x-rays during pregnancy, found that exposure of the fetus to ionizing radiation could cause leukemia and cancer during childhood.

Women, themselves, run a higher risk than men of developing cancer from exposure to ionizing radiation. A 1978 National Academy of Sciences report on the biological effects of ionizing radiation concluded that the risk for women was twice that of males for the same rate of exposure and that "the incidence of radiation-induced breast and thyroid cancer indicates that the total cancer risk is greater for women than for men."

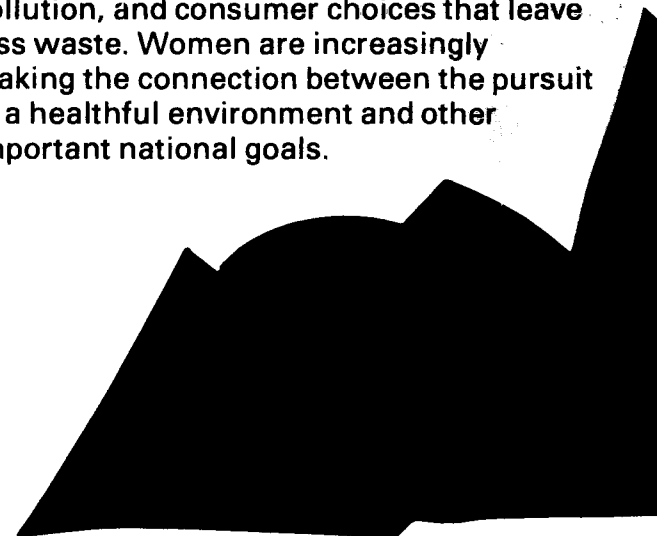
Toxic chemicals also pose a special threat. In Oregon, studies linked repeated use of a herbicide spray contaminating poisonous dioxin to a heavy incidence of miscarriages, birth abnormalities and cancers among women of the area. The potent pesticide DDT was banned from the market in this country after concentrations were discovered in mother's breast milk. Diethylstilbestrol (DES), medically prescribed to prevent miscarriages, was found to be implicated in cases of fibroid tumors and various forms of cancer.

Radiation and toxic substances can alter human cells and result in spontaneous abortions, stillbirths or severe physical abnormalities and deformities in newborn infants. Some effects may show up many years after prenatal or early childhood exposure in the form of cancer, sterility, or birth defects caused by altered genes. The changes can permanently affect the gene pool, the common supply of inherited characteristics which all humans ultimately share.

Women with children, including those who work outside the home, usually play the primary role in protecting the health of the family even in this era of shared parental responsibilities. This responsibility encompasses a broad range of environmental concerns. Is the community's drinking water free of

dangerous contaminants? Are pesticides used safely in the home, in the garden, on the farms that provide the produce available at the neighborhood supermarket? Are hazardous wastes from local industries properly disposed of? Questions such as these have drawn countless women into consumer advocacy, environmental activity, and similar volunteer roles.

Because of their special awareness of the effects on young children of environmental mismanagement, women are often at the forefront of those advocating changes needed to conserve and protect our resources and our environment. These options for the future may include modes of living that consume less energy, transportation alternatives that create less pollution, and consumer choices that leave less waste. Women are increasingly making the connection between the pursuit of a healthful environment and other important national goals.





The Environment, Youth and Senior Citizens

People of all ages are affected by environmental problems, but youngsters and senior citizens are particularly vulnerable.

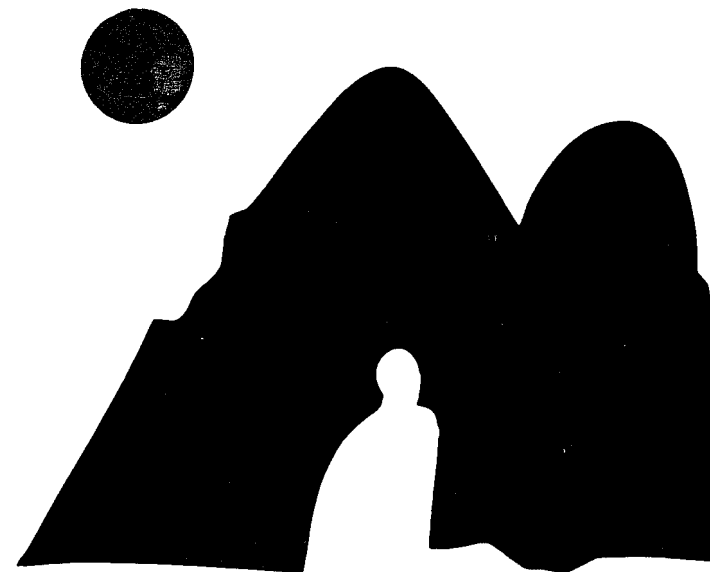
Children are more susceptible to certain hazardous substances and other environmental pollutants than are adults. Some of these can severely affect physical and mental development.

Excessive intake of lead, for example, can cause mental retardation or other permanent adverse effects in children, including neurological disorders and damage to vital organs. Other substances may produce illness decades after exposure occurs.

Products used in the home often contain toxic ingredients and these pose a particular hazard if they are accessible to children too young to be aware of the danger. Improper disposal of hazardous wastes can imperil the health of children, as Love Canal so tragically demonstrated.

Older people share with the young a heightened susceptibility to pollutants. Air pollution, for example, is a serious problem for many senior citizens because it can aggravate cardio-respiratory problems that so often occur in later years. Increasingly, older people are demonstrating concern

about environmental problems and, in many instances, are personally participating in efforts to develop and implement remedial action. In some communities, retired people are making an organized effort to teach young people about the environment. The past of older generations can only become the future for the young if the environment is maintained and protected.



The Environment and Consumers

The shopper selecting products from supermarket shelves is making choices that can have a significant effect upon the environment. So is the car buyer, the "do-it-yourselfer," the house hunter, the home gardener, and every other consumer. The incremental effect of all of our purchases, both large and small, ultimately affect the most basic of all consumer needs: the water, air, and soil that sustain life itself.

The connection between the products we use and the environment we share doesn't come naturally to American consumers. We grew up as a "consuming" country. Our forebears used land, water, forests, minerals, and fossil fuels as if there were no tomorrow. Until well into this century, the wealth of the Nation seemed limitless. The environmental consequences of wasteful helter-skelter habits of production and consumption were slow to dawn upon the public mind.

Now, however, there is growing recognition of the important energy, health and resource implications of production and consumption. We are learning to be foresighted and to understand that waste and wealth are not the same thing. Our new understanding is apparent in the increasing demand for energy-efficient

homes and automobiles, in the growing interest in recycling shown by industrialists and consumers alike, and in the conservation practices of modern farmers, to name but a few.

Even small consumer items can have large effects on the environment. Aerosol products, for example, were an instant success in the American marketplace as consumers eagerly took to the push-button application of hair sprays, deodorants, shaving cream, cleaning products, pesticides, and dozens of other misted materials. Years later, we learned that chlorofluorocarbons (CFC's), then the most common propellant used in aerosol products, could break down the ozone layer that protects the earth from the carcinogenic effects of the sun's ultraviolet rays. Now, the use of chlorofluorocarbons as an aerosol propellant is banned in this country, but the effects of CFC's still pose a problem that concerns environmentalists worldwide.

The consequences of other consumer decisions may be less dramatic but their cumulative effects are no less important. Excess or improper packaging contributes heavily to our solid waste disposal problem. Improper use of lawn and garden fertilizers, careless disposal of used motor oil, and use of high-phosphate detergents can lead to pollution of surface and groundwaters.

In this era of chemical abundance,

consumers are becoming more aware of the byproduct problems caused by some of the products they use. The manufacture of cars, paper, plastics, clothing, rubber, paint, pesticides, medicines and a host of other products generates wastes that are toxic, corrosive, explosive, or highly flammable. The safe recycling, treatment, or disposal of these hazardous wastes must be everyone's concern because we all depend on the same environment. If we make the connection between what we consume and how it may be consuming our life supporting environment, we may learn to become caretaking consumers.



The Environment and Education

Education has a special relevance to the title of this booklet: Consider the Connections. The preservation of a liveable environment may hinge upon our willingness to master the manifold connections between human activities and environmental consequences. Educational institutions can contribute to this broader understanding by forging their own connections among traditionally separate scientific and other academic disciplines.

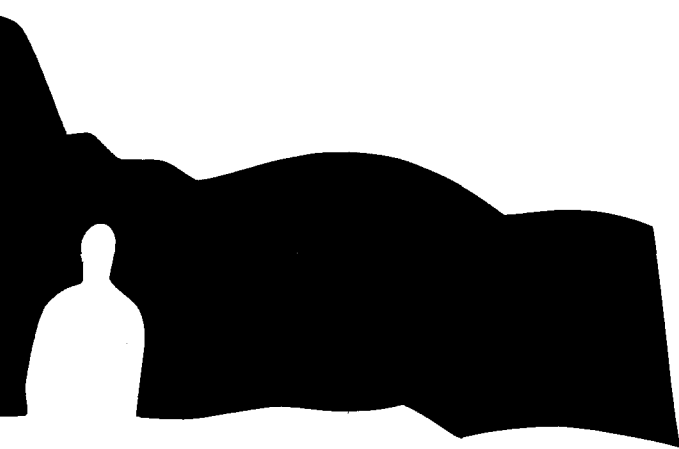
This is a large challenge. Knowledge multiplies. The more we learn, the more there is to learn. The expansion of knowledge contributes to the pressures for more, rather than less, specialization. While specialized knowledge is, of course, a prerequisite to any successful interdisciplinary activity, it should not be an end in itself.

We do not need engineers, no matter how brilliant, who can envision and build a beautiful dam and yet be blind to the environmental effects upon the valley beyond . . . or biologists who can pinpoint the factors that endanger a species but remain unaware of broader concerns that endanger our entire society . . . or corporate managers who can organize the manufacture of profitable products but fail to take account of the losses we all incur if the byproducts endanger human health.

Coping with the complex environmental issues that confront us today calls for a real consideration of the connections and an interdisciplinary effort capable of matching the growing magnitude of human-induced changes upon nature and the world.

In a more specific sense, an interdisciplinary approach is essential to successful environmental research and problem-solving. The effort to find out more about the causes and effects of acid rain, for example, involves atmospheric chemists, meteorologists, aquatic and terrestrial biologists, forest scientists, geologists, and economists, as well as experts in other fields.

The growth of environmental education programs for young people can be expected to increase the awareness of the need for interdisciplinary action. Almost every community offers examples, readily grasped by youngsters, of the complex interrelationships among land, air, water, and biological systems on the one hand, and human activities on the other. In a large city, planners and citizens may be seeking alternate modes of transportation to curb air pollution from automobiles. In a rural area, the challenge may be agricultural runoff that washes irreplaceable topsoil or hazardous pesticide residues into rivers and streams, endangering drinking water supplies and destroying recreational assets. The expertise that abounds in the world must be connected if environmental problems are to be solved. How we educate our young will determine how effectively these connections are made in the future.



The Environment: The Global Connection

Environmental pollution occurs as a result of the actions and choices of individuals. These individual decisions affecting the environment—whether they are made carefully or carelessly, whether they pertain to a single household or extend throughout a giant corporation—ultimately become part of the conglomerate of similar actions and choices by millions of other individuals around the globe. The environmental effects of these many decisions, naturally enough, are felt worldwide as well.

It is local governments, however, that are usually the first to learn about a pollution problem, and the first to try to solve it. But pollution knows no boundaries. One community's environmental problems may originate in an area quite apart, upstream or upwind, and beyond the regulatory reach of the jurisdiction that bears the burden of pollution.

Because of such jurisdictional limitations, local governments in our country of necessity sought State action to control the sources of pollution. But State boundaries do not inhibit the movement of pollutants any more than city or county lines. Many of the more serious environmental problems that arose in the United States were regional in nature; States could not act alone to deal with them. Moreover, conflicting State environmental demands posed special difficulties for many industries and underscored the need for national environmental laws. Recognition of the national implications of pollution control led to the major environmental legislation of the past two decades.

As we begin the decade of the 80's, we are confronted almost daily with evidence that even nation-wide pollution control programs cannot contain some environmental problems.

International measures are increasingly necessary so that we may cope with problems such as acid rain and the release of chlorofluorocarbons which deplete the atmosphere's ozone layer which protects us from excessive radiation from the sun.

To solve environmental problems it is necessary to "think globally, but act locally." If we do so we may better comprehend the global implications of local actions affecting such matters as the long-term storage or disposal of nuclear and other hazardous wastes and the types and degree of control placed on local sources of air or water pollution.

The better we see environmental problems in their global context, the more we appreciate the importance of remedial action in our own communities. The global commons are shared by the world's people and the universal need for clean air, potable water and fertile land connects us all.

