On the PLANET, EARTH, September. 1969

The unanimous Declaration of Interdependence

When in the course of evolution it becomes necessary for one species to denounce the notion of independence from all the rest, and to assume among the powers of the earth, the interdependent station to which the natural laws of the cosmos have placed them, a decent respect for the opinions of all mannd requires that they should declare the conditions which impel them to assert their interdependence.

We hold these truths to be self-evident that all species have evolved with equal and unalienable rights, that among these are Life, Liberty and pursuit of Happiness. That to insure these rights, nature has instituted certain principles from the capabilities of the planet's life-support system. That whenever any behavior by members of one species becomes destructive of these principles, it is the function of other members of that species to alter or abolish such behavior and to reestablish the theme of interdependence with all life, in such a form and in accordance with those natural principles, that will effect their safety and happiness. Prudence, indeed, will dictate that cultural values long established should not be altered for light and transient causes, that mankind is more disposed to suffer from asserting a vain notion of independence than to right themselves by abolishing that culture to which they are now accustomed. But when a long train of abuses and usurpations of these principles of interdependence, envinces a subtle design to reduce them, through absolute despoilation of the planet's fertility to a state of ill will, bad health, and great anxiety, it is their right, it is their duty, to throw off such notions of independence from other species and from the life support system, and to provide new guards for the re-establishment of the security and maintenance of these principles. Such has been the quiet and patient sufferage of all species, and such is now the necessity which constrains the species Homo Sapiens to reassert the principles of interdependence. The history of the present notion of independence is a history of repeated injuries and usurpations all having indirect effect the establishment of an absolute tyranny over life. To prove this let facts be submitted to a candid world.

1. People have refused torecognize the roles of other species and the import ance of natural principles for growth of the food they require. 2. People have refused to recognize that they are interacting with other species in an evolutionary process. 3. People have fouled the waters that all life partakes of. 4. People have transformed the face of the earth to enhance their notion of independence from it and in so doing have interrupted many natural processes that they are dependent upon. 5. People have contaminated the common household with substances that are foreign to the life processes which are causing many organisms great difficulties. 6. People have massacred and extincted fellow species for their feathers and furs, for their skins and tusks. 7. People have persecuted most persistantly those known as coyote, lion, wolf, and fox because of their dramatic role in the expression of interdependence. 8. People are proliferating in such an irresponsible manner as to threaten the survival of all species. 9. People have warred upon one another which has brought great sorrow to themselves and vast destruction to the homes and the food supplies of many living things. 10. People have denied others the right to live to completion their interdependencies to the full extent of their capabilities.

We therefore, among the mortal representatives of the eternal process of life and evolutionary principles, in mutual humbleness, explicitly stated, appealing to the ecological consciousness of the world for the rectitude of our intentions, do solemnly publish and declare that all species are interdependent; that they are all free to realize these relationships to the full extent of their capabilities; that each species is subservient to the requirements of the natural processes that sustain all life. And for the support of this declaration with a firm reliance on all other members of our species who understand their consciousness as a capability, to assist all of us and our brothers to interact in order to realize a life process that manifests its maximum potential of diversity, vitality and planetary fertility to ensure the continuity of life on earth.

Ecology Action

triton times

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You Are What You Eat

Alex Hinds
Palomar College Student

Today, virtually every bite of food you eat has been chemically treated and processed. Preservatives, dyes, bleaches, emulsifiers, artificial flavors, neutralizers, moisturizers, drying agents, hydrogenerators, artificial hormones, antibiotics, chemical fertilizers, pesticides, fungicides, and disenfectants are a partial list of the ever increasing chemicals added to our food supply.

Commercial interests use these chemical food additives for a variety of reasons, though basically food additives are used to make stale products appear fresh, and to disguise inferior quality products by substituting cheap, nutritionally inferior, or worthless chemicals for more costly natural ingredients.

For example, chemical fertilizers increase the size of many crops by "force feeding" the plants nitrogen. This results in larger sized products with less nutritional value. Also, artificial sex hormones are given to livestock to make them quickly and cheaply gain weight. One example, stilbestrol, a hormone given to cattle and other meat animals, chemically upsets their hormonal balance and results in their emasculation, sterility, and rapid weight gain. Minute doses several times smaller than what often appears in commercial meat has produced cancer in rats during laboratory tests. The dangerous implications for man, who is the next step in the food chain, seem obvious.

'each meal contains

Ranchers also are feeding livestock vast quantities of antibiotics in their effort to halt the spread of disease among unhealthy animals. Humans then eat the meat, often still containing high concentrations of antibiotics. It is a known fact that many strains of disease-producing bacteria, that were previously controlled by antibiotics, have, after repeated exposure to these drugs, developed into new strains, now immune to their effects. Thus, with each meat dish, we may be giving pathogenic bacteria a vaccination against the most successfully used drugs in combatting disease.

It is indeed a rarity for chemicals to become incorporated into our food supply because of the consumer's actual nutritional needs. Nevertheless, an examination of a typical meal would reveal a myriad of possibly dangerous chemical additives. For example, the white bread you eat has had the most valuable nutrients milled out and then was chemically bleached, aged, softened and preserved. Processed cheese is artificially stabilized, often with sodium carboxymeth, which is also used in rain emulsion paints and printer's ink; artifically thickened often with methyl celluose, which is also used in cosmetics and adhesives; as well as artificially preserved, flavored, and colored with various other synthetic chemicals.

Your meats contain the highest concentration of DDT and other related clorinated hydrocarbons, due to a process known as biological magnification. As you may have heard there are federal standards regulating the limit of DDT in milk transported across state lines. What you

probably didn't hear is that dairy animals that exceed the federal standards for DDT concentration are then oftentimes used for meat.

The ice cream you eat for desert may contain several cheap chemicals, including diethy glucol, used as an emulsifier, and also used in anti-freeze and paint removers. Flavor chemicals are also used, such as pipernal for vanilla flavoring, a chemical also used to kill lice; and for cherry flavoring, ethyle aldehyde C17, also used as a cleaner for leather and textiles, whose vapors have been linked to chronic lung, liver, and heart damage.

Refined white sugar, found in most all your deserts, packaged foods, and soups, is the result of a chemical process which has enabled man to strip natural sugar-producing crops of their original nutrients until there remains only isolated pure carbohydrate; empty calories devoid of vitamins, minerals, and protein. In fact a greater amount of body energy is required to digest and assimilate white sugar than what it produces. Experimental evidence by Dr. Russell Wilder, a Mayo Clinic physician, shows that the increased use of white sugar leads to a vitamin B deficiency. A diet ordinarily sufficient in vitamin B will become inadequate with an increased intake of white sugar.

The list goes on and on, becoming more and more frightening. Dr. Edward J. Ryan, editor of The Dental Digest states that "Everytime a natural substance is removed from a food, eve

The list goes on and on, becoming more and more frightening. Dr. Edward J. Ryan, editor of "The Dental Digest" states that "Every time a natural substance is removed from a food, every time an adulterant is added to a food, the balance in nature is disturbed . . . the chemical and cellular processes within the body cannot react to the passing whims of chemists without disturbance in function. It took thousands of years for the body to adjust itself to changing environmental conditions. When these conditions are suddenly altered by the actions of men, the cells cannot make the adjustment — disease is the result."

All of us have heard at sometime in our lives that the American way of life, our technology and food products, has provided us with the highest standard of healthful living. To the contrary, Americans get sick, visit doctors, and take medication more often than any other group of people at any time in history. Grnated, our life expectancy has increased 22 years since 1900, but the prime reasons for this increase were (1) decreases in infant and maternal mortalities, a result largely of improved sanitation, medical facilities, antibiotics; and (2) a reduction in the number of deaths from infectious diseases, again due largely to improved sanitation, antibiotics, and sulfa drugs. Statistics show that in the last 70 years we have not appreciably increased the life expectancy or health of adults 40 years or over. We have merely reduced the number of premature deaths from infectious diseases and infant mortality (which is incidentally beginning to increase) and have substituted prolonged, degenerative diseases in their stead. In many cases doctors keep patients alive and little else.

Biologists state that mammals should live 5-6 times longer than the length of time it takes them to reach maturity. By this formula, based on the life cycle of all other mammals, humans should live to be about 120. Where is man going wrong? The answers are certinly many and complex, but doctors, supposedly the guardians of our health, are too often entrenched in their own chemically biased medical culture, which is more oriented towards "curing" sickness (treating symptoms) than offering substantial advice on the maintenance of health.

Obviously the pollution of air, water, and food plays a large part in the increased occurences of such degenerative diseases as cancer, linked to some synthetic dyes, artificial hormones, preservatives, pesticides; emphysema, linked to air pollution and cigarette smoke; and coronary artery diseases, America's number one killer, linked to animal fat, cigarette smoke, and hydrogenated oils (which are found in many items, such as commercial peanut butter).

Unfortunately, big business interests, largely through ignorance and commercial expediency, are employing deceptive testing methods and political lobbyists to insure the continued use of their processed, adulterated products. Too often, the attitude is a little poison very dilluted won't do substantial harm. They completely ignore the cumulative effect of 3 meals per day containing a little poison, as well as the great variation in tolerance levels among different humans. Too often, the test researchers have an insufficient background in toxicology and biology, and succeed in proving only the specific function asked them by their industrial employers, who likewise may be unaware that their researchers are not qualified to judge the safety of one product or another.

What then can we as individuals do to limit our intake of chemical food additives and pesticides, better known as biocides, since most of them, in sufficient quantities, will kill all living organisms? The most obvious answer would be to grow our own food without using insecticides and the like. Many people, however, have neither the time, backyard, or inclination for home gardening. These people must then purchase unadulterated food from a private commercial source. Fortunately, "organic growers," farmers who don't spray, use compost and other natural fertilizers, putting more back into the soil than what they take out, are becoming more and more numerous. However, before the general public can be provided with wholesome high quality food on a large scale, the commercial interests that be (whose common denominator is cash) will have to be convinced that the market already exists.

a myriad of

dangerous chemicals'

Organically grown food is not pure magic, but it does taste better, and is of higher nutritional value than its plastic, adulterated counterpart. Proper organic agricultural methods do not disastrously upset ecological balances or reduce soil fertility like chemically oriented agriculture. Skillful organic growers substitute biological control methods for insecticides, relying upon such practices as the importation of natural predators for certain insect pests and plant a diversified crop including some flowers or herbs known to be deterents to specific pests, as well as many other techniques.

San Diego County, well known for its healthy climate, is doubly blessed by having numerous sources of organically grown produce. Reasons are few why college cafeterias and other public institutions could not add natural food sections featuring unsprayed fruits, vegetables, and whole grains (brown rice and whole wheat bread) to their facilities. Our age is in the midst of decadence and environmental crisis. Soil fertility and food poisoning are known factors in the rise and fall of past civilizations. It's high time we begin to define our needs with the needs of our health and the needs of the earth.

There Are Too Many...

Gary Worthington
San Diego Attorney

More and more experts are becoming convinced that the primary cause of air and water pollution, diminishing open spaces, and other forms of environmental deterioration is simply too many people.

Dr. Paul Ehrlich states: "The causal chain of the deterioration is easily followed to its source. Too many cars, too many factories, too much detergent, too much pesticide, multiplying contrails, inadequate sewage treatment plants, too little water, too much carbon dioxide—all can be traced easily to **too many people.**"

California now has a population of about 20 million. According to estimates of the State Department of Finance, by 1990—only 20 years away—there will be 75 per cent more people in California, or about 35 million persons. Some estimates of the population for the state go as high as 50 million by the year 2000.

"A million more people in San Diego county in 20 years"

San Diego County will get its full share of the state's population growth. There are now just under 1.5 million residents in the county. The County Planning Department estimates that there will be roughly a million more people in the county in another 20 years.

The present population density of San Diego County, even taking into consideration the mountain and desert areas, is slightly over 300 per square mile. This is five times as great as the density of the U.S. as a whole, and 50 per cent greater than in China.

What all these statistics mean is that in the future there will be less and less of everything for more and more people. According to Willard Johnson, Executive Director of the Planned Parenthood Association of San Diego County, we are already experiencing a "falling standard of living" due to population pressures. He cites as the most obvious proof of this the increasing smog alerts, the overcrowded hospitals and the short supply of doctors, the long lines at the airport, and, of course, the congestion on the freeways during the rush hour.

"One more person wanting to use the golf course the same time you do"

Mayor Curran, in his first news conference of the current year, publicly stated that increasing population is at the root of San Diego's problems. Nevertheless, the Chamber of Commerce is actively encouraging more people to move in.

And every person who moves into the county means one more person wanting to use the freeway the same time you do, or wanting hospital care the same time you do, or looking for privacy on the beach or using the golf course the same time you are.

Every additional person who moves into the county adds 120 gallons a day to the sewage system and disposes of four pounds of solid wastes and three pounds of air pollutants. He will also throw away about 250 cans and 135 bottles or jars per year. Remember that each of these figures will be multiplied in the county by a million in the next 20 years.

The population problem in San Diego and in California is, of course, only a part of the population problem in the United States as a whole. There are over 200 million people in the U.S. now, and a hundred million more are expected in the next 30 years.

Presidential Science Adviser Dr. Lee A. DuBridge is convinced that overpopulation is at the root of environmental problems. Among the nationally prominent people speaking out for population control are HEW Secretary Robert Finch and television personality Arthur Godfrey. To give added emphasis to a speech he was to give on environmental problems, Godfrey recently arrived at the University of Michigan driving an electric car.

In order to bring about a stabilized population in the U.S. it is essential to lower the birth rate, which is now about 16 per thousand, down to the death rate, which is about nine per thousand. To achieve a zero population growth rate most experts are advocating that all families limit themselves to two children or less.

One organization working to convince people of the need for smaller families is Zero Population Growth, which has Dr. Paul Ehrlich of Stanford, author of "The Population Bomb," as its national president. ZPG's goals are a stabilized population size in the U.S. by 1980 and in the world by 1990. The organization hopes to achieve this both by educating people to have no more than two natural children (any other children should be adopted) and by lobbying for new legislation in the population area.

"Abortions-- no restrictions!"

Two pieces of legislation in that area which have already been introduced are the bill in the U.S. Senate authored by Oregon's Sen. Packwood, which would limit deductions on federal income tax to three children, and a bill in the California legislature introduced by Sen. Anthony C. Beilenson of Beverly Hills to limit state income tax deductions to two children.

While tax considerations probably seldom, if ever, enter into a decision to have more children, the idea behind the bills is that the lease we can to is to stop actively rewarding unlimited childbearing and to make it clear that having large families is socially irresponsible.

Other bills introduced by Senator Beilenson would allow doctors to give birth control information to minors without their parents' permission, would set up a family planning unit in the State Department of Public Health to distribute birth control information and services, and would remove all restrictions on abortions.

Abortions are now legally obtainable in San Diego County for almost any woman, due in large part to the efforts of the local Abortion Counseling Service, but the procedure to qualify is an inconvenient and expensive one, requiring prior consultation with a psychiatrist and a physician. Sen. Beilenson's bill would mean that an abortion would be a matter between only a woman and her doctor, like any other medical problem. If abortions were freely available so that no woman would have to have an unwanted child we would be a long way toward stabilizing the population.

"But even a drastic reduction in the nation's birth rate would not solve our problem"

But even a drastic reduction in the nation's birth rate would not completely solve the overpopulation problem in San Diego, since about 73 per cent of the county's population growth is due to migration into the area.

What can be done about stopping this migration? One possibility is for the Chamber of Commerce to reverse its present policies and to begin actively discouraging people from coming into the area to settle.

William Thwaites, biology professor at San Diego State and coordinator of the local chapter of Zero Population Growth, suggests that a local group similar to the Chamber of Commerce, but with different goals, should make available statistics about air pollution levels in various areas of San Diego, and that we should "try to discourage people from retiring here, especially if they have respiratory diseases. We should take the position that we owe it to people to warn them about hazards to their health, so it would be immoral to mislead them into settling here."

He also suggests that we should stop encouraging high-employment and high-pollution industries to move into the county. Besides helping San Diego's overpopulation problem, such a policy has the added benefit of being altruistic, he says, as it lets other areas of the nation that really need the economic benefits of a new industry have it.

Still, so long as the nation as a whole has a rapidly increasing population, we are bound to have many people from elsewhere moving into Southern California and —even if unwittingly and unwillingly—adding to further environmental deterioration here.

What can you, as a concerned individual, do to help fight the overpopulation problem?

First, of course, limit your own family to one or two children, and adopt any others you may want.

Second, join an organization such as Zero Population and contribute your time and money to it.

Third, write to your representatives in government, telling them to support legislation such as the Beilenson bills and the Packwood bill.

Finally, be well-informed on the subject. Read books such as "The Population Bomb," by Paul Ehrlich, "Moment in the Sun," by the Rienows, and "Famine—1975," by the Paddock brothers.

...of You And Me

POLITICS OF ECOLOGY

BARRY WEISBERG

The critical importance of ecology as a developing source of opposition in America stems from the realization that politics in our age has acquired an absolute character. While political decision making and control is steadily concentrated in the hands of a very few—the arena of control is steadily expanding. Fewer and fewer people control more and more—so that the very conditions which support life on this planet: the land we walk upon, the air we breathe, and the water we drink—are now the subjects of political management on a scale beyond normal comprehension. The politics of ecology must start from the premise that present-day reality is increasingly the product of a structure of economic and political power that consolidates and sustains itself through the systematic destruction of man and his physical world. The exploitation of man by man and nature by man are merely two sides of the same coin.

It is, then, folly to think that the destruction of our global life support systems under advanced industrial capitalism or communism is merely a by-product of progress—a case of bad management, the result of insufficient esthetic sensibilities on the part of business and engineers, or simply a matter of who owns the means of production. In an historical sense, we have reached the point where we can totally violate the processes and structures of the natural world; hence our relationship to nature is no longer determined by the forces of nature but by the rule of political management. The deterioration of the natural environment all around us is therefore clearly a product of the nature of production and consumption, of cultural values and social relationships that today hold sway over industrial technological society—American or Soviet.

In short, our present technical manipulation of the life-support capacity of the planet now threatens the totality of physical conditions which nurture life itself. The oxygen content in the atmosphere, the metabolism of our own bodies, food chains and the relationship between populations and the resources needed to support them—conditions upon which the existence of all plant and animal life today depends—are the products of evolutionary processes extending over billions of years. Our industrial civilization is now destroying them in a matter of decades. We are talking about processes which may well have worked their irrevocable consequences within a decade or two—after which there will be nothing within the human potential to restore their life-giving capacity.

The culture itself is aware of the explosive potential of the imbalances between society and nature. Government and industry, through the media, have begun to manage these issues on a daily basis. Scientists speak out, reports are called for and committees created. In fact, the pattern of action and language emerging around pollution parallels exactly the failures of civil rights and poverty—"a war on pollution," the calling for a "pollution pentagon." Even new bureaucratic offices to replace the Department of Interior are suggested. What such proposals miss is that it is not the control of the land, air and water that is at stake, but the control of man.

The obvious question resulting from this brief survey is whether or not these are matters of bad management, disfunction or the like, as mentioned earlier. The origins of our present destruction of the life-support capacity of this planet are rooted in the very fabric of our civilization, reaching their most insane dimensions in the present corporate America. The Greek rationalism of Aristotle, the Roman Engineering mentality, the biblical anthropomorphic injunctions to "have dominion over the land and subdue every creeping thing," the post-Enlightenment notions of growth and progress, the present technical corporate economic systems motivated by competition—all dominate the Western mentality of man against nature. Where nature works toward harmony, cooperation and interdependence, advanced industrial society works toward growth, competition and independence. The advanced nation state works in direct opposition to those basic life-giving instincts which have nourished our billion-year evolution. To repeat: the domination of man by man and man over nature are two sides of the same coin. The precondition for our survival requires the most basic transformation of the cultural, social, political and economic mentalities and structures which dominate the developed nations and hang as a carrot over the never-to-be-developed nations.

In view of the sudden flurry of government-initiated programs (including the spate of officially endorsed campus "teach-ins" planned for next April), it is especially chilling to contemplate the performance of government, industry and their conservationist junior partners. Here's a rundown:

GOVERNMENT

The proportion of the National Budget spent on all natural resource programs has declined steadily since 1959:

1965	2.3%
1966	2.2%
1967	2.0%
1968	1.9%
1969	1.9% est.
1970	1.8% est.

In other words, for fiscal 1969, we spent only $3.6 billion on *all* natural resource programs, of some $202 billion, spending more ($4 billion) to reach outer space than to make the earth habitable. The gap between authorization and appropriation on programs such as air and water pollution has widened every year. This is merely to demonstrate the inability of the Congress to achieve its own stated objectives—not that those objectives would have successfully dealt with any major issue. In fact, there is every reason to believe that more spending would have produced merely more pollution. Add to this a government which at the same time subsidizes the supersonic transport, maintains the depletion allowance for continued off-shore drilling, undermines efforts at consumer protection—and one begins to understand the meaning of federal efforts. While there are more committees, more reports, more research and more attention, *less and less is actually done.* The frightening conclusion, however, is not that government should do more—for the more it does the worse our ecological systems get.

INDUSTRY

What are we to make of the flurry of industrial ads depicting everything from Standard Oil to Dow Chemical to the American Rifle Association as conservation-minded people? Of the recent Business of Pollution Control Technology of the investment of industry in conservation organization? The answer, I think, is to be found —for instance—in the words of Robert O'Anderson, chairman of the board of Atlantic Richfield. In a recent address before a State Department-sponsored conference on Man and His Environment, O'Anderson argued that the costs of pollution control should be passed on to the consumer and that oil should remain the base of energy supply. In short, industry has made of the environmental crisis a commodity. Recent financial reports indicate that the business of pollution control will in fact make a profit out of pollution while at the same time generating *more* pollution: more growth will be the remedy applied to the perils of growth. In short, that advertising will continue to cost more for business than research, that the consumers will be passed on any costs of "pollution control," and that federal agencies—new or old—will continue to operate as captives of the industry they are to regulate.

CONSERVATION

More than any single element of the present collage of conservation activity, the conservation organizations themselves—to varying degrees—lead the public to believe that the Emperor has no clothes when, in fact, they serve as clothes for the Emperor. Such organizations act in the most fragmentary ways, attacking isolated problems and not complex patterns of social and political behavior. They save a nature area and fail to address the entire land use patterns of that region. They save a seashore from development, when that seashore is threatened with the biological destruction of its wildlife. As such, their victories are, at best, stop gaps, always provisional. They foster the existence of centralized forms of authority through the support they lend to present elective procedures—"get the good guys in office." They have virtually no critical understanding of the governments of oil, agribusiness, public utilities or

(Please turn to next page)

chemicals. The conservationists frequently violence-bait the Left, or shun it as revolutionary. "The country is tired of SDS and ready to see someone like us come to the forefront," a young conservationist recently noted. Increasingly motivated and supported by various governmental machinations, these people work in total isolation to the civil rights and peace movements, with no relationship to the varied forces of opposition and liberation in the society today—the revolutionary young, women's liberation, labor, and oppressed minorities. They seek private solutions to what more correctly are public issues: picking up litter rather than attacking the production of junk; refusing to use autos rather than struggling against oil and the auto manufacturers—to be merely suggestive.

But most important, the "new breed of young conservationists" fails to see that the crisis of the environment truly is but a reflection of the crisis of this culture itself, of the values, institutions, and procedures which have for some 200 years systematically guided the slaughter of human and all other forms of life at home and abroad. These tendencies were demonstrated too well by a recent selection of "youth" hand-picked by the Department of State to participate in the U.S. Commission for UNESCO Conference on Man and His Environment in San Francisco last month. Virtually all "programs" suggested by these participants lent credence to the status quo by advocating "better" candidates, new ecology colleges, yet additional "research," and more jobs for conservation-minded college kids.

The barrage of petitions and letters to the President was greeted by the conference "adults" with adulation, for the kids turned out to be "reasonable men" just as their parents. The popular press billed their performance as revolutionary—defined as "non-violent," get-your-man-in-office, and increased student participation. But the role of our benign media goes much further.

By and large, the media have purposely obscured the political and social content of the environmental crisis by confining problems as well as solutions solely to the realm of science and technology. The result is that blind faith in the omnipotence of expertise and technocracy wholly dominates current thinking on ecological issues. Technological innovation and more reasonable methods of resource allocation cannot possibly reverse the present logic of the environment unless the overriding political, social and economic framework which has actually generated that trend is radically rebuilt. Such a transformation cannot reside solely in the realm of culture and values—as most often proposed by the youthful elites of conservation. The critical task today is to raise the issue of pollution/destruction, imperialistic styles of consumption and of over-population to a political status in order to reveal an arena of political opposition in America which the Left has hitherto ignored. That is not to say that the Left can simply absorb the ecological crisis into its own kind of "business as usual" behavior. For the patterns of life in which most of us partake are not much different than those of the ruling class. This is not to say that true solutions reside in private action, but that public transformation without an entirely different style of life is futile. Thus the development of an ecological politics on a practical level may provide the only framework in which the alienated and oppressed can achieve true liberation.

That potential for liberation doesn't lie in the Save the Bay campaigns, the protection of a redwood grove or planned parenthood. It does not reside alone in the culturally symbolic acts of many ecology action groups around the country. The true origin of what has yet to become an authentic movement is in the Peoples Park episode, in militant actions against corporate despoilers (including sabotage) and in the private as well as public attempts to create ecologically sound lives.

While the traditional conservationists have made no imaginative attempt to understand what our cities would look like without autos, with decentralized agriculture or power, with neighborhood control and rationed resources, save for a few scant efforts, the Left, with few exceptions, has been equally derelict. "Radical" economists still contemplate growth-motivated economies grounded in false notions of affluence and unlimited resources.

The New Left has at this point made little serious effort to understand or relate to the politics of ecology. While the battles in the streets appear more pressing and more direct, it ought to be understood that unless something very basic and very revolutionary is done about the continued destruction of our life support systems, there may well be no wind to weather in the near future.

Dismissing over-population as simply a matter of genocide, efforts to take back the land as bourgeois or the necessity for clean air and water as a luxury, completely fail to grasp what can only properly be understood as a matter of life or death.

The task of ecological radicals is to continually raise those issues which sort those which would seek to patch up the status quo from those who struggle for basic transformation. The polarization of the rulers and the ruled is the authentic growth of any true movement for liberation. When conservationists argue that everyone is in the same boat (or on the same raft), that everyone must work together, tempering their actions to suit the imperatives of coalition, they are in fact arguing for the further consolidation of power and profit in the hands of those responsible for the present dilemma.

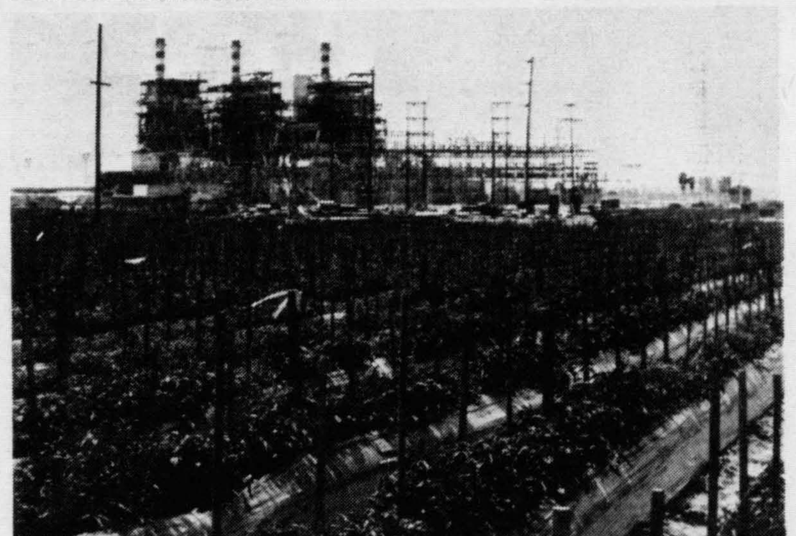
There is no easy way to summarize exactly how the Movement must respond to the growing politics of ecology. Publishing special magazine editions and flimsy attacks on "sewermen" will not do. Few models exist to lend direction to organizing efforts. Already throughout the country people have been organized around industrial accidents and health hazards, consumer boycotts, women's liberation and the nuclear family, the extinction of animal species or the struggle against a new highway. *This is just the beginning.* This winter and spring we can expect a series of radical ecological actions: the bombing of more corporate headquarters, sabotage to the industrial machinery that pollutes, and obstruction at airports and other transportation corridors.

It is safe to suggest that organizing around environmental issues that fails immediately to lead to the political causes and implications of that peril is misguided. For too long eco news and reports have begun and ended with nature—without understanding that nature itself is today the product of manipulation by man. We should have learned from the Peoples Park that the road ahead will be perilous and paved with a life-and-death struggle. If the State of California would defend a parking lot with the life of one person and the shooting of another 150, imagine the cost of taking back a forest, preventing an offshore drilling rig from being placed, blocking the construction of a nuclear power plant or tampering with the power/communication/food/transport systems which make America grow. *But the sooner this happens the better.* The sooner the spirit of the Peoples Park happens the better. The sooner the spirit of the Peoples Park infuses every ecological action, the brighter will be our chances to insure the conditions for our survival—and, beyond that, a decent society.

Educating "the people about the impending ecological disaster" without pointing to possible forms of action available is, at this point, a disservice to the Movement. As people engage in direct struggle against the Con edisons, the Standard Oils, the pollution control agencies and the United Fruit Companies of the world, more and more new insights for strategy will develop. What has been happening to poor whites and blacks for several hundred years, what America has done to the Vietnamese, America is now doing to its own population, *en masse.* The organizing implications of this single fact may be profound. In a world of total biological slavery, liberation is the very condition of Life itself. To fail does not mean growing up absurd—but not growing up at all.

—From *Liberation*

• • April Twenty-second, Nineteen Seventy--Earth Day • •



San Diego Politics

Arthur Jokela
Scripps Student

A collaboration between enlightened bureaucrats and outside organizations interested in good government is now developing in the county. Such a strong infusion of non-establishment thinking could have a very positive effect on this movement, and it is in fact being sought by both parties.

San Diego is already recognized by the national association of counties as an exemplary government. However, there is much room for improvement, and even a direct assault upon the aged County Charter will probably be greeted with thanks both from inside and outside the government.

The government agencies themselves have recently expressed in several ways an interest in involving students and other academics in government affairs. Mayor Curran now has a Social Sciences Advisory Committee, a group of academics whose chief assignment is to find ways of making city government more responsive and participatory.

The county government has recently discussed plans for an institute to involve academic prople in studies of the county environment, chiefly to set long range environmental goals. The regional Comprehensive Planning Organization has recently undertaken plans for a massive environmental conservation study, a systematic and detailed investigation of the interconnected effects of various types of pollution and development. This study could logically involve elements of the campus on a professional level, if any were interested. The CPO has considered the possibility of using this large and diverse project as a vehicle for establishing new contacts, and perhaps new groups. There may be many possible levels of input and participation as the project develops.

Eventually it would be desirable to establish a means by which government agencies could turn to outside groups—both official and unofficial—to handle or to help with problems they are aware of, but lack either the resources or the authority to deal with them. San Diego County government is currently undergoing a reorganization which will lead to the development of an agency responsible for brokering such contacts.

On the public side, the Citizens Coordinate has recently reformed itself into a general-purpose vehicle for public and professional involvement in public affairs relating to environmental quality. They are setting up and beginning to coordinate a number of committees and other organizations to monitor, support, and otherwise interact with the individuals and institutions making decisions for us. One of the committees is currently trying to promote a summer study institute to involve and inform students directly as interns in the various agencies. The project stands a fair chance of getting financial support from the county (call EDNA for details).

At present the means of student participation in all this appears to be through joining any of the existing organizations working on environmental issues, including Citizens Coordinate, the Sierra Club, Audubon Society, Del Mar Wildlife Association, etc., or by getting in touch with some of the ad hoc and ephemeral groups that appear from time to time. A current item of considerable long range implication is the preservation of coastal lagoons from development. All of the above groups are working on this, as are many people in agencies of the county government. New technical ideas and legal initiatives are needed on this item. Simple body support is sometimes useful, as, for example, in public hearings. The experience of dealing with the issues and people is interesting and the knowledge of how the system really operates can be valuable—particularly if you hope to improve on it without having to start over.

Perhaps the most important decisions this year of long term environmental importance will be made by the general public, voting in June and again in November. Students can have a significant impact by joining in the campaigns. A major item will be the choice of whether to raise the interest rate on bonds of the State Water Project. Turning this down would result in a delay in the development of much of Southern California, possibly including much of the local back country. Also on the State level, races for Governor and Senator scarcely need mention. In the County, the choice of Supervisors for the 4th and 5th Districts of the County will be significant. Two of the five supervisors have shown themselves to be very progressive in environmental matters. Since they are not up for re-election, the new men could swing the board either way. As a final item, if it ever comes to prosecuting polluters, the choice of District Attorney may also be important this year. All of the candidates for office this year are, of course, sounding like great environmentalists.

The Environmental Crisis Bulletin, that wonderful, non-partisan, non-profit publication dedicated to the ecological preservation of the world, is sent FREE to anyone who wants to know what can be done to help save what is left of our Earth. The bulletin needs money, clerical help, calendar entries, articles, letters, etc. Please mail your contributions and requests to be on the mailing list to:

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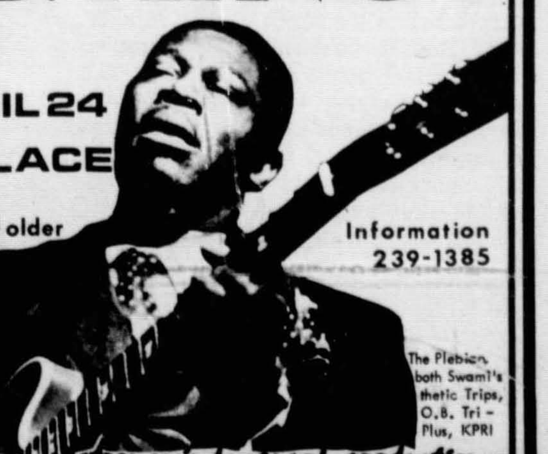
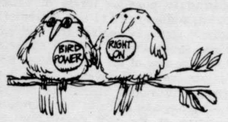


Take a Breath and Taste the Air

Clarke Gaulding
Air Pollution Control Board

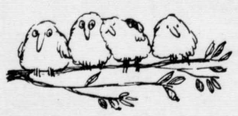
Smog is the product of people living in an industrial age. Almost all human activity produces waste in addition to the desired product, and when released to the atmosphere, that waste becomes air pollution, or smog. This by-product of our way of life becomes critical when people and their activities become concentrated and accelerated, as they are in every urban area. Some 2500 tons of pollutants pour into the air in San Diego County every day. Most of them, about 70 to 80 per cent, come from automobiles. The rest come from industrial and commercial operations, open burning, and various other activities. Of the 2500 tons of pollutants going into the air daily, about 1750 tons, or 70 per cent, are carbon monoxide (CO). Five hundred tons, or 20 per cent, are organic compounds called hydrocarbons (HC). Nitrogen oxides (NO_x) account for about 175 tons, or per cent of the total. The balance is particulate matter.



The ability of an urban air mass to assimilate and disperse pollutants is a function of several meteorological factors, the most important of which are wind speed and direction and the temperature profile of the air mass. Normally, the air gets colder with distance from the surface; this allows vertical mixing and dispersion of pollutants. This mixing becomes limited, however, when there is a "temperature inversion," which occurs when a ceiling of warm air forms above the cooler and heavier air nearer the ground.

Certain of the pollutants trapped beneath an inversion will undergo a complex series of chemical reactions triggered by the sun's rays. This reaction and the secondary pollutants resulting from it represent a special form of air pollution generally called "photochemical smog." With its sun and a persistent inversion condition, southern California is unfortunately the home of photochemical smog, though not to the exclusion of other parts of the country.

Smog stings the eyes, nose and throat, affects breathing, reduces visibility, makes rubber crack, and damages growing plants. Southern California smog can cut the yield of a citrus tree by 50 per cent.



Scientists are studying the relationships of air pollution to lung cancer, tissue damage and respiratory diseases such as bronchitis, emphysema and bronchial asthma. Critical levels of air pollution are determined as the result of such studies.

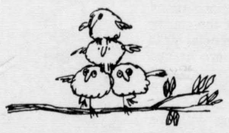
The State of California has preempted the control of mobile sources of air pollution. This decision was based upon the prevalence of autos as **THE** air pollution problem throughout the State, and the inefficiency that would result from fragmented local control efforts.

State emission standards are becoming more and more stringent. Standards from 1970 model cars and light trucks for the first time included evaporative losses from carburetor and gas tank. Standards for 1971 models will for the first time reduce nitrogen oxide emissions. Total emissions permitted from a 1970 model car are about 30 per cent of a comparable 1960 model. Those permitted from a 1975 model will be about 10 per cent of the emissions from a 1960 car. State standards are also being developed to deal with diesel emissions, and aircraft have been the subject of recent regulatory legislation.

The air pollution control regulations which became effective in San Diego County January 1, 1969, were approved by the Board of Supervisors on November 6, 1968. These rules apply in the San Diego County Air Basin, which is designated as the coastal slope of the county below an elevation of 2,000 feet. The regulations prohibit open burning, except under approved conditions, and control the emission of smoke, dust and odors from industrial and commercial operations. Under this program, open burning ended on July 1, 1969, and is now legal only in a multiple chamber incinerator of an approved type. The only exceptions are fires used in agricultural operations, fire fighting training and fire hazard prevention and, until June, 1970, in disposal of certain types of construction debris.

Permits are required for construction and operation of industrial or commercial equipment which could contribute to air pollution. The permit system makes it possible to require equipment that will reduce pollutants efficiently.

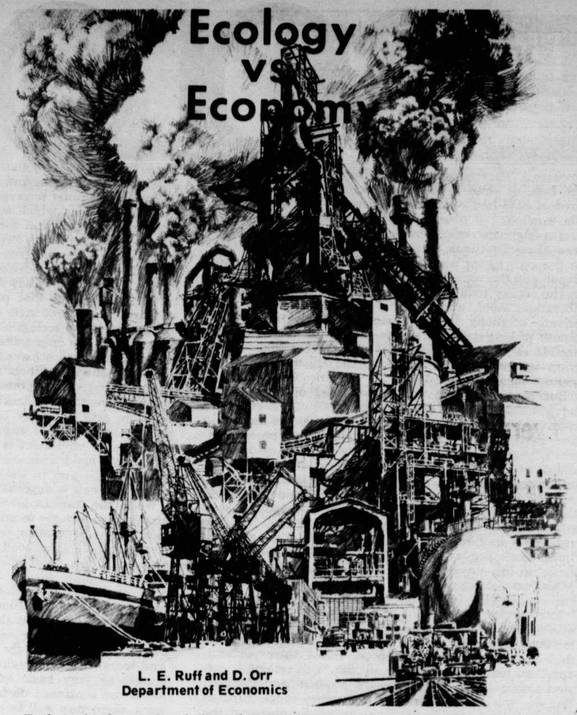
The Air Pollution Control District of San Diego County has kept continuous records of oxidant levels since 1956. Technical instruments, located at strategic points throughout the county, continuously measure the wind, sample the air, and record the levels of pollution related to the production of smog. This gives us a picture of our wind and air patterns and levels of air pollution. The records show that oxidant levels have increased. Since 1956, the average of the highest one-hour concentration each day during the year has risen from 0.052 parts per million to 0.077 ppm. The State Department of Public Health has set an oxidant standard of 0.10 ppm for one hour as the standard index of adverse air pollution. This standard is exceeded on many days of the year in San Diego County, most often in the summer and fall.



Every experience with the problem to date demonstrates that, unless measures are taken to prevent it, air pollution increases as people and their activities increase. Thus, a certain level of control is required just to keep the problems from getting any worse, and an even greater control effort is required to roll pollution levels back in the face of continuing growth. In California, the official objective is not just to hold the line but to reduce emissions to a level similar to that of about 1940, when air pollution was not a significant problem.

Much of the action required to meet such an objective can be accomplished by government (federal, state, and local) with present authority and present or likely technology, but more will be required. Every individual has an essential role to play and specific things he can do to help meet the goal. Almost everyone drives a car, and therefore has a responsibility to see that his car is in top operating condition, especially the air pollution control systems. An effort could be made to combine trips, to use a car with a smaller engine (and less emissions), etc.

No one really interested in clean air should dispose of any refuse by burning, no matter how insignificant the quantity. Everyone should assist the existing agencies by calling their attention to possible air pollution problems. Everyone must become an informed advocate for clean air and urge his acquaintances to do likewise. Finally, clean air advocates must recognize that air is no longer free if they want it clean; there is now a price attached, but one worth paying.



L. E. Ruff and D. Orr
Department of Economics

Ecology is the study of the relationships among living organisms in their environments; economy is the study of the way that mankind has organized to allocate scarce resources among competing uses. The two subjects have more than a misspelled Greek syllable in common — that ecology is today of wide concern is in no small part due to the poor job that man, in his political guise, has done of applying what has long been understood about economy. It will be possible in this short article to lay out, and (in oversimple form) to trace the implications of a few important ideas that activists have persistently ignored in their discussions of the polity, and will no doubt continue to ignore as they indulge their concern over the environment. The ideas, or as we will call them, principles, are:

Principle 1: Material gain is a dominant incentive to us humans.

Principle 2: There's no such thing as a free lunch. (The misperceptions of Walter Cronkite notwithstanding, this idea did not originate with Paul Ehrlich).

Principle 3: All good things can be indulged to excess, whereupon they cease being good.

Principle 1 has always been the despair of reformers. Clever theologians have understood principle 1 and put it to work, by depicting a heaven with streets paved with gold; those theologians have typically been more successful than their less clever brethren, who tried to change human nature by direct appeal. Clever social reformers can use principle 1 in the service of their goals too, as we will see presently.

Principle 2: This one can be amended to suit our purposes by the phrase "and there's no such thing as free refuse disposal, either."

Principle 3 can be illustrated by iodine in the human diet — too little means goiter, too much means even greater discomfort.

Crowding and wealth lead to ecological problems, we know — oil spills, campfire smog in the Yosemite Valley, pelican and osprey eggs thin-shelled from too much DDT in the fish oil. Closer to home, we may bewail the inevitability of smog from auto emissions, the ticky-tacky jungle enveloping Mt. Soledad and Torrey Pines Mesa, and the Del Mar outfall's implications for Scripps beach surfers.

Principle 2, in amended form, tells us that to use the air as a dumping ground for the waste products of locomotion only looks like a cheap way out. Up to a point, the benefits of this dumping strategy greatly exceed the costs: the benefits are measured in terms of the convenient and desired goods and services produced, and the small dollar outlays in producing them; the costs are the wastes which (up to a point) are hardly noticeable because of the phenomenal ability of the atmosphere to absorb and dissipate them. But there comes a point, according to principle 3, when the strategy of dumping is overdone.

'We want optimally dirty air— air that is used, but not abused...'

Thus, we explain the mess in L.A. by saying that a scarce resource (the waste disposal capacity of the atmosphere) is being overused, because it is being given away; and the consequences of this "gift" are dire — more dire than the sales pitch or the dull speech that are the price paid by the "free lunch" recipients. Why do we go on fouling the air? There are two reasons: (1) Any individual can unilaterally stop polluting, with negligible benefit in terms of reduced pollution, but at a great cost to himself. To get gratifying results "everyone" must respond. (2) Nobody is in charge of the air — nobody owns it and suffers the loss of its degradation. There are no **property rights** in air, as there are in land; no man would tolerate, or would have to tolerate, the kind of abuse we inflict on the air, if we were instead abusing his pasture, woodlot, garden or well. Economic incentive (principle 1) would move him to legal action; and the law, in its wisdom recognizing the broad social benefit deriving from principle 1 properly channeled, would sustain his action.

It is easy to define and administer property rights in land, and other thing to do so for the air. Hence, everybody, acting collectively through mechanisms of government, must protect all the air; no mechanism exists or can feasibly be constructed whereby each person, acting individually, protects his own defined air-space. Thus, the need for action is clear, and the basis for collective action is established. What do our principles tell us about the forms that the action should take? Principle 3 tells us that we can overdo pollution control just as we have overdone pollution. The goal is not "clean" air, defined as free of any ingredient traceable to human activity (the pantheistic nostalgia for a society of noble savages who pleased the namitou by conserving the environment is just so much romantic twaddle). Rather, principle 3 tells us that what we want **optimally** dirty air — air that is used, but not abused to the point of high cost to everyone; air that can serve the man who wants to breathe, and the man who wants to move quickly between Tarzana and Fullerton. Principle 2 tells us that it will be costly to restore that kind of air — costly to everyone. We must recognize at the outset that "everyone" will derive benefit from cleaner air, just as "everyone" is presently deriving benefit from the activities that lead to the pollution which we seek to eliminate. **continued on page 7**

ecology vs. economy...

It follows that the cost of restoring optimally dirty air will be borne by everyone: the occasional hand-wringings that we witness over the fact that the costs of pollution control will be passed on to the consumer are correct in their prediction, but misguided in their concern. There is no way that the spreading of the costs can be avoided. (We may eat too much candy, because it is cheap, and incur tooth rot; but having discovered the decayed teeth, we cannot expect Nestle or Peter Paul to foot our dental bills because we overindulged in their low-priced products. The problem of who pays for pollution reduction is equally simple, and if we seek to pin the blame for air pollution on a small filthy-capitalist-profiteer beneficiary class, and try to clear up air pollution by burning those witches, then we're just simply on the wrong track.)

The standard way to attack the problem of pollution is to limit, through direct regulation or some sort of subsidy, the amount of pollutant produced by various polluters. The difficulties with this approach will be discussed shortly. Of more immediate interest is the lack of imagination revealed by the approach. Stuffing a gadget into an exhaust pipe to reduce air pollution is on the same level of sophistication as pouring DDT on a bug to reduce crop damage, and it displays the same sort of unawareness of the complexity, subtlety and evolutionary nature of the system affected. It may have some effect on the problem in the short run, and may even have enough good effects to outweigh the bad, as is true of DDT. But legislation requiring gadgets in tail pipes cannot be the best solution to the problem, and reliance on such crude "solution" only postpones the day when the real solution will be found.

'Everyone...should pay the same price for each unit of pollution he produces.'

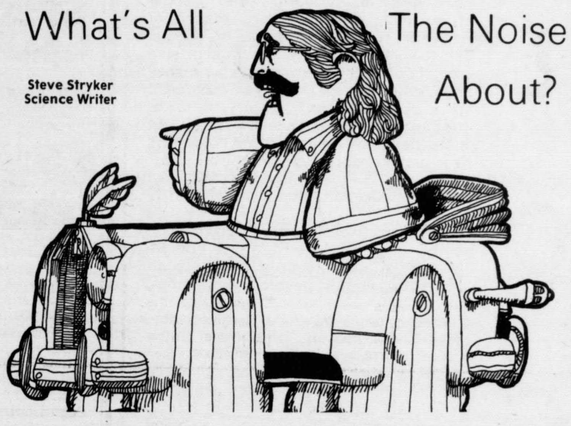
An effective program for controlling air pollution must necessarily go deeper, toward the real causes for pollution. Why are there too many automobiles burning too much gasoline in excessively dirty engines? Why is the electric generating plant located where it is and burning the fuel that it is? Why do tract housing developers install electric ranges instead of gas ranges, a move that increases the emissions from generating smokestacks? The list of questions of this type can be lengthened almost indefinitely, and since it is not feasible to undertake detailed answers for all the questions on the list, a more general line must be pursued. Why is it that people at every stage, from consumer to producer to designer, make the wrong decisions on these issues? What social control mechanisms usually act to keep these individual decisions in line with the social interest, and why have these mechanisms failed to do so in the case of air pollution in Los Angles? How can we supplement the deficient natural control mechanisms, so that the problem will take care of itself and so that the evolution of the system over time will ameliorate rather than exacerbate the problems? It is by asking and answering these questions that the real solution will be found.

Pursuing this line of questioning soon leads to the conclusion that the missing control mechanisms are **markets**, and the missing signals are **prices**. Individuals and firms pollute because the price of waste disposal in the environment is nominally zero; the price is zero becuase the resources involved are not owned by anyone who can exact a price for their use. The air is overused as a garbage dump for the same reason that the freeways are overcrowded and water supplies are always inadequate; **the users do not pay the full cost of the services they use.** The solution follows directly; **force individuals to pay for the services they use,** and the natural control mechanisms will do the rest. The precise manner in which individuals can be made to pay for their pollution depends on the particular problem involved. Since there are several types of pollution, each having a different effect, several different prices are needed. The operative principle that governs enforcement is that everyone pays in proportion to the amount of polluting that he does, and the seriousness of the effects of his polluting. There are obvious enforcement problems associated with this principle, particularly where the source of pollution is not stationary, like an automobile. Suffice it to say that approximation methods and compromises can easily be envisioned which will do a good job of approaching the ideal. Everyone, whether a corporation, a municipality, an airline, or an individual, should pay the same price for each unit of pollution that he produces.

As impressive as the short-term effects of such a system would be, the long-term effects would be even more important. For unlike most of the more traditional methods based on direct regulation of polluters, the price system, by providing the proper signals throughout the entire system, encourages the sort of evolutionary change which can reduce the pollution problem at low cost. The higher prices and lower profits of "pollution intensive" goods will encourage consumers to buy and investors to invest elsewhere. Demand for cleaner cars and for alternatives to automobile transportation, induced by high fuel taxes and registration fees, will force manufacturers to provide more "rational" cars, and will make mass transit a paying proposition. Higher commuting costs will force individuals and firms to relocate, shortening commuting distances. Higher prices for power will encourage the design of homes which use less heating and air conditioning, reducing the number of power plants "needed" in the future. And the tax revenues, which may be significant, can be used to provide public goods such as parks and schools, and to ameliorate the effects of economic dislocations, reducing the burden of more traditional and inefficient forms of taxation.

What's All The Noise About?

Steve Stryker
Science Writer



An environmental psychologist attending a symposium on noise pollution in Chicago last Fall told the meeting, "It might be a good thing if people's ears would bleed—then people might get aroused. It may take a disaster like the Santa Barbara oil slick to dramatize the situation."

According to many scientists, the "environmental din" has doubled in the last fifteen years, and may double again in the next decade and a half. Background noise alone, in the average community, has risen so sharply that it now exceeds the accepted standards of industry. Moreover, effective legislation and (of even more importance) effective noise regulation codes are in their respective infancies, while the "auditory crisis" is rapidly becoming a severe malady. Is it the case, then, that we should pathetically accept the conclusion of Leo L. Beranek, who says, "It is clear that the basic problem is essentially incurable; noise is an unavoidable price we must pay for a machine civilization"?

Noise—commonly defined as "unwanted sound"—works on humans in two ways. It first causes deafness through deterioration of the microscopic hair cells that transmit sound from the ear to the brain. A single, very loud blast from a cannon, for instance, can destroy the non-regenerating cells by the thousands. Constant exposure to noises commonplace in our society can cause slower deterioration, as the hair cells gradually rupture. In modern, "civilized" society, most people have lost a portion of hair cells used for the "fine-tuning" of sounds.

The proof of industrialized man's hair-cell loss lies in an experiment conducted by Dr. Samuel Rosen, a leading New York otologist, who showed that aborigines living in the stillness of isolated African villages can easily hear each other talking in low conversational tones at distances as great as 100 yards, and that their hearing ability diminishes little with age.

Dr. Rosen sums up the physiological reaction to noise in this way: "Adrenalin is shot into the blood stream. The heart rate increases, and the blood vessels constrict. There are reactions in the intestines. The acute symptoms persist. Actually, they outlast the noise. You may forgive the noise, but your body never will."

The second effect of noise upon humans is psychological, and therefore intensely personal. It relates not only to experience but also to mood. Fortune magazine illuminates this effect with an example indicative of the worsening auditory environment in our cities: In New York City one evening about a year ago, four boys were at play, shouting and racing in and out of an apartment building. Suddenly, from a second-story window came the crack of a pistol. One of the boys sprawled dead on the pavement. The victim happened to be Roy Innis Jr., 13, son of a prominent Negro leader, but there was no political implication in the tragedy. The killer, also a Negro, confessed to police that he was a nightworker who had lost control of himself because the noise from the boys prevented him from sleeping.

These events are enough to make anyone by a day's end a "distraught silence-pusher, strung-out by noise." Studies of sleep patterns have shown that people never "get used to" noise; on the contrary, the annoyance, and loss of sleep, worsen as the interruptions persist. This is the main reason why there is, rightly, such strong opposition to the exposure of overpopulated areas to the sonic booms of supersonic airliners, which would cause psychic havoc among millions.

This edition of the Triton Times is non-biodegradable and radioactive in addition.

ECOLOGY

EARTHLY PROBLEMS

In the beginning, it was very simple: each home had its own privy, a well, and a bucket on a rope. It was difficult to make the privy esthetically attractive, but it seldom bothered the neighbors. And the flies were shared by everyone. Then the march of progress brought a pump and inside piped water. This made possible the inside flush toilet, which did away with the privy, the odors and the flies.

The trouble was, a flush toilet must have some place to flow to. The answer was the deep cesspool, from which the water would gradually seep away and in which the solids would eventually decompose. But (and here we come across the first of many frustrations in environmental control), seepage from deep cesspools quickly contaminated the wells in the vicinity. People were made sick and many died in local epidemics of water-borne disease such as typhoid fever.

The demands of public health brought about another step in the march of progress: the community water supply. The town fathers, or some enterprising group of businessmen would raise money to go to the nearest stream or lake, or to drill a deep well that was safely isolated. The dangerous private wells were put out of business, and neighborhood epidemics were considerably reduced.

Population Growth A Problem

But (and here comes frustration number 2), the town with a nice climate and a good water supply naturally attracted some new people, new homes, new factories and businesses. All of this created more water-carried sewage. Soon the cesspools and their more scientific progeny, the septic tanks, were receiving more flow than the soil could take. Neighborhood squabbles grew into community disgraces. Sewage obviously belonged somewhere else; not running down the streets and ponding in back yards.

"In order to protect the health and welfare of the community," sewers would have to be constructed to some distant place where there was no one around to complain!

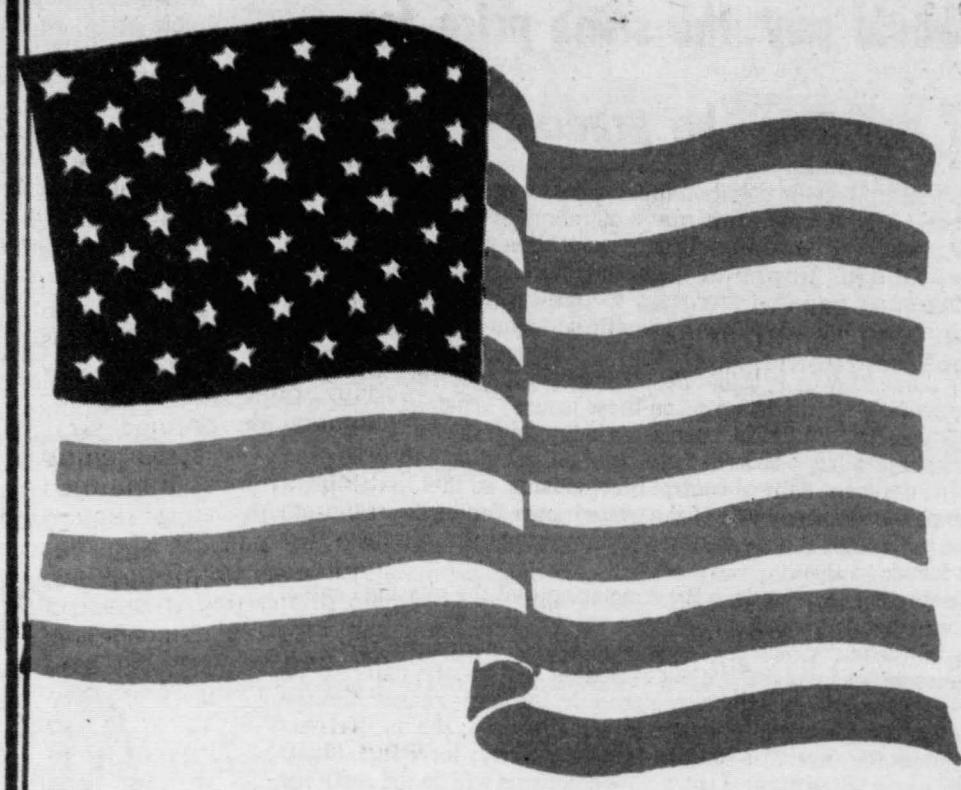
A river was the preferred place to go with a sewer, as the input would keep moving away from town. San Diego had no dependable rivers so the bays and isolated stips of beach were the obvious places to go with the early-day sewers. Each tide would pretty well "remove the evidence." This worked suprisingly well for over 50 years, with nature doing her usual efficient job. (It was during this era that the old time Sewer Engineers' creed was developed, "THE SOLUTION TO POLLUTION IS DILUTION".)

First Treatment Plant

Then came preparation for World War II, together with an exploding population and the stepped-up Navy activity in San Diego Bay. The great increase in sewage input to the bay and the increasing numbers of ships created an impossible situation. In 1940-43 the City, with Federal help, built an interceptor system stretching all the way from La Jolla Shores to National City, picking up the discharge from som 40 outfall sewers. The collected flow was delivered to a new, modern treatment plant next to the Navy Repair Base, and the treated effluent was discharged to the bay, where dilution was considered quite adequate for 14 million gallons a day. The Age of Engineered Solutions had arrived in San Diego!

San Diego's first treatment facilities worked beautifully, helped by nature and a nice, clean San Diego Bay; for all of 3 or 4 years, that is. By 1949 the treatment plant had to be expanded to handle 40 million gallons per day. Three short years later even that was outgrown, and poorly treated sewage was again entering the bay. The same thing was happening to all of the neighboring communities. It was the "overflowing cesspools" story of the old days, only on a massive and concentrated scale.

In 1960, all of the communities in the area finally got together and formed the



Communities Joined

Metropolitan Sewerage Project. Instead of establishing another independent layer of government with its attendant overhead, the communities decided to hire the City of San Diego to perform sewage disposal services for them. The citizens of San Diego voted to construct the $50 million Metropolitan System and the City agreed to operate it for the benefit of the entire area, charging other communities only their share of the actual costs.

As pointed out earlier, treatment of sewage is one thing; disposal is another. After exhaustive studies by marine scientists and engineers, extending over ten years, it was finally concluded that the safest, surest, and most economical solution was to combine the best of modern liquid-solid separation techniques with the age-old disposal technique of dilution. A remarkable set of conditions presented itself off Point Loma: deep, cold water relatively close to shore; a strong, dependable current, usually parallel to and seldom toward the coast; and a relatively isolated, controlled location on the shore itself. Seven years of experience and meticulous ocean monitoring have proven the excellence of this site, rated as the best and safest deep ocean outfall on either coast. And San Diego Bay? It now has a clean sparkle that hasn't been observed for at least 50 years.

Reuse a Possibility

"What about reuse?" is a logical question at this point. Considerable study was given to possible reclamation schemes during the planning of the Metro system. The consulting scientists and engineers concluded that any potential reclamation projects would not alter the necessary treatment and disposal works, but that the system as designed would lend itself to any feasible projects later on.

This brings us to a brief look at the future. San Diego is pursuing a multi-pronged program of laboratory research and plant-scale operations, all pointing to the best possible combination of sewage reclamation and safe disposal. This actually started nearly 15 years ago, when the first digested sewage sludge was hauled to barren, sandy islands which would some day be Mission Bay Park. The verdure that we see there today is due, in great measure, to the placement of the City's thoroughly treated sewage solids so as to create rich soil out of sand.

Sewage is being reclaimed by the City and used to irrigate ornamental plantings at the Gulf General Atomic Laboratories adjacent to the University, and to irrigate two 18-hole golf courses and street plantings at Rancho Bernardo. The latter case is the first and only one in San Diego County were the reclaimed water actually is sold to help defray the high cost of treatment. The community of Santee is famous for its pioneering in the complete renovation of sewage; and although Santee's project has required considerable financial subsidy, it has hopefully paved the way for more economical processes to follow.

New Idea Being Pursued

The City of San Diego is pursuing an entirely new concept in its laboratories at Point Loma. Well into its second year is a research project financed entirely by the Water Utilities Department, on the use of the reverse osmosis membrane technique to produce pure water from raw sewage. The goal of this project is to develop a simple "package" plant which would be totally enclosed (no odors, no noise, no flies); which would produce high quality water for any purpose, anywhere along a trunk sewer; and which would be fully automatic. The findings so far look very promising. The favorable economics of this technique would, for the first time, make sewage reclamation a practical scheme anywhere, not just in isolated, hand-picked instances.

We've Come A Long Way

From all this it may be concluded that "a community and its sewage" is not a simple relationship, nor do its problems have simple, black-and-white solutions. In any event, San Diego has come a long way from the backyard privy to the very successful Metropolitan sewerage system. It has cost many millions of dollars, but the monthly cost per person has been less than 75 cents. And the important thing is that the dommunity's environment is being protected from the dangers of sewage far better than it was 50 years ago. Once in awhile there is a happy ending after all!

Roy E. Dodson
Asst. Water Utilities Director

This issue coordinated by Rich Heimlich, feature editor. Additional copies available in TT office, NW corner Blake.