

Sierra Club Bulletin



April 1973

The Timber Industry
Finds Its Last Stand



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Sierra Club Bulletin

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Cover: Photographing the tropical rain forest is no easy matter from the inside. Martin Litton has captured the splendor of some of the species in an Hawaiian forest made up of exotics introduced from Southeast Asia.

Founded in 1892, the Sierra Club works in the United States and other countries to restore the quality of the natural environment and to maintain the integrity of ecosystems. Educating the public to understand and support these objectives is a basic part of the club's program. All are invited to participate in its activities, which include programs to "...study, explore, and enjoy wildlands."

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TROPICAL FORESTRY: The Timber Industry Finds



a New Last Stand

THE TROPICAL FORESTS of the world comprise perhaps the last great wilderness. Despite the age-old practice of slash-and-burn agriculture and more recent incursions in the form of highways, plantations, and logging operations, vast tracts of virtually untouched forests remain in South America, Africa, and Southeast Asia. Yet the pace of development in these regions, as the undeveloped countries strive to emulate the prosperity of the industrial nations, threatens the tropical forests with virtual annihilation by the end of this century unless steps are taken now to ensure the preservation of substantial reserves.

Of the various human activities affecting the tropical forests, shifting cultivation—a euphemism for slash-and-burn agriculture—is now the most destructive, not only in terms of the amount of forest destroyed, but also with respect to erosion and subsequent flooding, degradation of soils, and the destruction of wildlife habitat. Slash-and-burn agriculture is the traditional method of farming in tropical-forest regions and has been practiced by the indigenous peoples for centuries. Typically, they would fell all the trees on a several-acre plot and burn the timber in preparation for planting. The resulting ash enriched the soil and for a few years permitted subsistence farming. When the plot gave out, the people would move on to another and repeat the process, often not returning to the original plot for nearly a hundred years, by which time it once again was heavily forested. In this way, the forest was allowed to renew itself, and man was provided a living off the land.

Practiced on this small scale, slash-and-burn agriculture presents no problem, but when this method is pursued on a large scale, as in many tropical areas today, the results are disastrous. Shifting cultivation is a dead end because once the nutrients supplied by the ash run out, the land must be abandoned. A small plot can quickly recover, given the abundant tropical rains, but a large plot, where hundreds or thousands of acres are exposed to the sun, quickly dries out, forming a hard, almost impervious crust. Plants reestablish themselves only with great difficulty, and the parched, barren land, exposed to torrential rains, quickly erodes. Where slash-and-burn has been practiced on steep slopes, disastrous floods can result, such as those which occurred in the Philippines a few years ago. Where plants do manage to establish themselves, they are often undesirable species of grass or scrub, useless either as pasturage or wildlife habitat.



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The United Nations Food and Agriculture Organization (FAO) has estimated that in Latin America, "between five and ten million hectares of forests are being felled for agriculture each year and much of this land is being destroyed." In Southeast Asia, at least 103 million hectares are under shifting cultivation. Furthermore, the rate of clearing is increasing in response to population pressures in the undeveloped nations. One-quarter of the world's population lives in the tropics, but the average per-capita income is at most one-tenth that of the United States. Tropical countries are burdened by population growth rates that frequently exceed even substantial economic growth. The bulk of people in tropical countries are concentrated in a remarkably few areas. They need food and land, and in their understandable rush to get both, they are clearing the forest and destroying the land.

But slash-and-burn agriculture, while still the major factor in the destruction of the tropical forests, is not the only one. A potentially more serious threat—involving even larger tracts of land—is posed by an expanding international market for tropical hardwoods, which is attracting increasing numbers of foreign investors and large timber interests to the tropical forests. American, British, Scandinavian, Dutch, and especially Japanese companies have begun logging operations in many tropical countries, including Malaysia, Indonesia, the Philippines, and Brazil. Weyerhaeuser has exclusive cutting rights on 750,000 acres in the Philippines and Malaysia. The Sumitomo Forestry Company of Japan has a 1.2-million-acre concession in Kalimantan, Borneo. Georgia Pacific plans to spend \$8 million to develop 800,000 acres also in Kalimantan. Rayonier, a subsidiary of IT&T, has secured cutting rights on 525,000 acres in Sumatra. Misui Busshan, a Japanese firm, in cooperation with an Indonesian company, has begun operations in South Kalimantan and plans to dredge and "develop" the Kahajan River in order to make it suitable for shipping logs to the sea. Many other firms are moving into tropical-forest regions around the world, supported by international banks and encouraged by the United Nations and the undeveloped countries. Unfortunately, the science of forestry is in its infancy in most tropical countries, and the

problems peculiar to tropical forestry are little understood anywhere. In the absence of knowledge, sound forestry practices are unlikely, if not impossible, and in the rush to exploit the tropical forests, may be ignored.

Faced with growing populations and enormous economic problems, it is understandable that the undeveloped nations look to development of their forests—often their only commercially valuable natural resource—as the potential answer to their economic troubles. Unfortunately for the tropical countries, a natural resource becomes economically valuable only upon reaching its point of utilization, which in the case of tropical timber is invariably the industrial nations. Indonesian timber, for example, brings \$20 a cubic meter in world markets, but Indonesia sees only \$5 of this money. Even so, Indonesia expects to realize \$1.4 billion a year income from timber sales, although one expert observer has said that this estimate may be too optimistic. The fact is that foreign timber companies pay cheap and sell dear, and thus are still able to realize a substantial profit from tropical logging despite large cutting and even larger shipping costs. According to the April 15, 1971, issue of *Pacific Basin Reports*, "Even in forest areas which are or will be technically 'owned' by local or national interests, profits will continue to accrue to U.S., British, Canadian, and Japanese investors—from management and technical aid contracts, financing, supply

of equipment, and most importantly control of distribution channels and end-use markets (hence, prices)." Given this situation, the undeveloped nations might do well to consider the advisability of their present policies, which someday might result in their having neither forest nor income. By proceeding too rapidly, exercising too little control, and not insisting on sustained-yield forestry, many of these countries may find themselves 20 years from now with even greater problems than they face today, but with fewer resources to draw upon.

The high costs of tropical forestry result not only from the long distances logs must be transported, but from the very nature of the forest itself. Tropical environments, whether rain forest, savannah, or coral reef, typically contain an enormous diversity of species because the warm, moderate climate and ample rainfall provide conditions extremely tolerant to evolutionary experiments that would have never survived the rigors of so-called temperate environments. Thus while the total amount of living material—what ecologists call the "standing crop"—in temperate forest and tropical rain forest may be comparable, the temperate forest may have only five or six species of trees per acre, while the rain forest can have dozens. Despite the outward uniformity of a typical lowland rain forest—all the trees seem to have exquisite rib-like buttresses, smooth bark, long straight boles, and a heavy crown



laced with epiphytes and lianes—the trees are really quite distinct, each species occupying its own niche and differing from others in the characteristics and commercial value of its wood.

The commercial idea of a "pure stand" does not exist in tropical forests. Trees of the same species may be separated by hundreds of yards, and each tree must be treated individually, with particular sawing and curing methods necessary to realize its best qualities. Obviously, the costs of logging and marketing timber under such conditions are going to be much higher than in temperate forests, where—as we have learned to our dismay—timber may be harvested in enormous swaths, with little waste except to the forest and the land. The marvelously diverse and complex tropical forest, however, yields its lumber parsimoniously. In a given area of tropical forest, a large majority of the trees may not be amenable to the traditional logging techniques developed in the temperate forests and are often regarded as pests to be eradicated. Generally, only eight to ten trees per acre have commercial value. Unfortunately, they cannot simply be cut and removed from the forest without destroying adjacent trees in the process. The abundance of vines and woody climbers and the interlocking crowns of the trees is such that 75 percent of the forest canopy must be destroyed in order to get at the few commercially profitable species. Tropical forestry is at that pathetic first stage in the development of any resource, when the reserves appear to be limitless, and hence are subjected to immense waste. Techniques are crude and unrestrained. The clearing of the rain forest is particularly destructive. The marvelous diversity seems to haunt any and all attempts to change it.

After an area of tropical forest has been cleared, the prospects for regeneration depend on the type of area and the uses subsequently made of it. Where subsistence farming or plantations do not follow the logging operation, grasses, vines, and seedlings may eventually restore the forest, but in regions where precipitation is marginal for a rain forest, the dessication that often follows clearing may entirely prevent the growth of trees. The tropical sun is so intense that the exposed soil can quickly turn to dust

before the rapid growth of vegetation can cover and protect it. Repeated burning of the land for agricultural purposes and the grazing of domestic livestock further insure that grasses will replace the original forest. Under more ideal conditions, trees will eventually become established, but the resulting second-growth forest will little resemble the original.

Many countries are now experimenting with replacing tropical forests with plantations devoted to exotic species, particularly pines. One can only wonder at this misguided attempt to shed the tropical environments. The wild ecological gyrations produced by the elimination of diversity and the introduction of exotic species in less complex temperate environments is well-known. To do so in a tropical environment, where natural diversity reaches its most extreme expression, is to court disaster.

Borneo, one of the first tropical places to be significantly affected by commercial forestry, sits astride the equator along the north-south trade route between the ancient empires of China and Java. To the east are the Molucca Islands and the port of Ternate, which for centuries provided valuable spices for the tables of Europe. Yet in the midst of this commerce, Borneo, the world's third largest island, has been passed over and remains thinly populated. Borneo is also the crossroads for Asian and Australian flora and fauna, both of which are represented along with a large number of endemic species, which together have resulted in a biological extravaganza. Once connected to Asia, when the oceans were lower, Borneo received a transfusion of plants and animals from the continent, and then separated, free to let time work wonders.

Borneo is divided between two countries—Malaysia and Indonesia. North Borneo comprises roughly the northern third of the island and consists of the two Malaysian states of Sabah and Sarawak. Indonesian Borneo — Kalimantan — makes up the southern two-thirds of the island.

Malaysia exports more tropical hardwood than any other nation (9.4 million tons in 1969) and 60 percent of this timber comes from Sabah and Sarawak. Eighty percent of it goes to Japan, whose prodigious hunger for wood and pulp seems insatiable. (Japan is the world's largest importer

of wood and pulp, and its demand is expected to double between 1969 and 1975.) Most of the cutting in Sabah is done by British, American, and overseas Chinese firms, but the Japanese paper industry is beginning to expand throughout Southeast Asia, and a consortium of seven Japanese paper companies have planted conifers in cut-over forest areas of West Malaysia, Sarawak, Indonesia, and New Guinea.

The full extent of clearing in Borneo is not really known. Accurate figures regarding the size of the annual cut are very difficult to obtain. In many areas no records are kept. What data are collected appear in annual reports, typically three to five years late. Such delays are now particularly detrimental to sound forest management because of the greatly increased rate of clearing. Prior to 1969, approximately 70 square miles per year were being cut in the Malaysian state of Sabah in northeastern Borneo. Professional foresters familiar with the situation believe that the primary forest of Sabah will be gone within the next 15 years. The annual cut in Sarawak is less than in either Kalimantan or Sabah, but still very substantial and increasing each year.

Kalimantan, like Sabah, is rapidly being doled out to foreign logging and paper companies, particularly to Japanese and American firms. Other countries represented are France, Holland, Panama, Hong Cong, Singapore, Korea, and the Philippines—all intent on reaping profits from the lush forests of Indonesia. In all, 56 foreign companies have moved in, and the annual cut in Kalimantan is expected to rise from 400,000 cubic meters in 1967 to 38 million cubic meters by 1975. Most of the foreign concessionaires operate unrestricted, and the rate of cutting, as well as the methods employed, depend entirely on the company and the demand for hardwood. It is well known that the large orangutan preserve near Kutai, one of the two finest areas for protecting this animal, have been reduced by over 60 percent in the last three years. In all, over 15.6 million hectares (39 million acres) have been granted in concessions in Kalimantan and another 8.8 million hectares (22 million acres) in East Kalimantan.

Political pressure and national development plans seem to be the sole governing factors determining the size of the annual cut. Little or no con-



Peeling logs in Kalimantan.

sideration is given to future consequences or biological constraints. In 1969, Sabah changed from an officially acknowledged cutting cycle of 100 years to a 40-year cycle. In other words, one fortieth of the forest is to be cut every year instead of one hundredth. Sixty years is considered to be the absolute minimum age of commercial trees. Hence, any period less than sixty years really means that sustained yield will not be practiced. In time, the productive inventory will be consumed, and the proverbial golden goose will have been killed.

In many cases, the forest is never allowed to regenerate itself at all. After the commercially valuable species have been removed, the trees that remain are often cleared and burnt, just as in shifting agriculture. The land is then planted to single species such as conifers (for pulp and paper), oil palms, rubber trees, rice, and others. Thus deflected from its natural succession, the forest is gone forever, and with it the bounty of plants and animals that made it unique. Converting tropical forests to plantations or grasslands for purposes of raising livestock has become widespread in many tropical countries, including Brazil and various African countries, as well as Malaysia and Indonesia. Perhaps the most famous example of this practice is now found in the Jengka Triangle in the West Malaysian state of Pahang, where plans call for 93,000 acres of virgin forest to be cleared and replanted to

rubber trees and oil palms. Masterminded by the U.S.-controlled World Bank, the project has been criticized not only on environmental grounds, but also for political reasons. Ostensibly, the project is supposed to provide landless peasants with 10-acre plantations, but some critics suspect that the real function of the project is to clear out the area, which is near the

Thai border, as a counter-insurgency measure. Other critics have pointed out that the income the average peasant can realize from his 10-acre plantation is so low and the debts he must incur so high that the entire plan amounts to little more than a slave-labor program. The World Bank, however, disputes these criticisms and says that the Jengka plan is designed to provide jobs to relieve Malaysia's chronically high unemployment rate. In either case, the great Jengka forest is done for.

In all this, the abundant wildlife of the tropical forests suffers greatly. Habitat destruction is nearly the only way to drive an animal to extinction, for most animal populations are remarkably resilient. The extinction and reduction of species that have occurred in Borneo, for example, indicate how completely the natural landscape has been changed. Some species, like the elephant, wild cattle, and deer, have adapted to the secondary vegetation that follows logging operations, but frequently they become pests to cultivation or the objects of heavy hunting pressures because with the clearing of the forest they become increasingly accessible. Many other species, however, absolutely require the climax tropical forest. Orangutan,

Logs awaiting shipment to Japan



proboscis monkeys, gibbons, and the Sumatran rhinoceros cannot survive in secondary forests and will become extinct unless they are protected in forest reserves of substantial size. Already the rhinoceros in Borneo has been reduced to a few dozen scattered individuals, probably too few to constitute a viable breeding population. Other species will follow the rhinoceros' grim path unless steps are taken immediately to establish wildlife refuges and institute management.

Traditionally, foresters in Borneo have valued only the lowland rain forest, maintaining that upland species are of poor quality. Nevertheless, as lowland forest is exhausted, the cutting is extended to higher and higher elevations. The result could be extensive erosion and destructive flooding. Coastal mangrove trees were also once considered to be of low commercial value, except for making charcoal. The mangrove forest, however, contains a large stock of wood fiber of uniform quality, which is the necessary raw material for rayon manufacturing. The three large mangrove areas of North Borneo have already been sold to Japanese companies for this purpose. Very little foresight is required to see that the destruction of Borneo could well be complete within the next 20 years.

The saddest part of this story is knowing that Borneo is not the last, but rather one of the first tropical places to be sacked for its timber. Its high percentage of suitable trees and its proximity to Japanese mills have made Borneo the place to start. World demand for paper pulp and plywood is growing rapidly, and the pattern seems sure to be repeated in other tropical countries. Large timber concessions are being sold in Sumatra, New Guinea, and the Amazon region. The situation in New Guinea is particularly illustrative. The Trust Territory of Papua and New Guinea, soon to be independent, desperately desires a forest products industry. The region's trees, however, cannot match the quality of those in Borneo, and the timber markets are farther away. Hence, timber concessions are being given away to companies that agree to establish saw mills in New Guinea and to employ local people. One is reminded of the land given to the railroads as incentives to build into the American West a century ago. Regardless of what rationale there once



Forest growth in western Java.

may have been for such a practice, it seems inappropriate for the middle of the 20th century.

Cutting and clearing of the tropical forest is inevitable, but it need not destroy the resource. Sustained-yield forestry is possible while at the same time preserving substantial forest preserves and wildlife refuges. The pressing need is for tropical solutions to tropical problems. The unfortunate tendency is to import practices developed for temperate forests. The great reservoir of tropical diversity should be an asset, not a burden, but this goal will require new techniques. Active and informed groups are needed to pursue the wise use of the tropical forests. Borneo's forests potentially could provide a perpetual source of employment and income, but not so long as foreign lumber interests are given free rein to cut as they choose, and not so long as they

control the profit-making machinery by which logs and pulp are marketed. Clearly, the task of saving the world's tropical forests falls on the countries where the forests exist. Right now, they believe their interests lie with rapid resource development rather than with long-term management and conservation, and in aspiring to the economic standards of the industrial nations they seem anxious to shrug off their tropical environment. But the rains and sun and soils will persist even when the forest is gone, and the likelihood of successfully replacing nature's chosen vegetation with that of the temperate regions of the world seems slight. Serious and unforeseen social and environmental problems will surely follow the destruction of the tropical forest, which may be inevitable unless convincing alternatives to present policies and methods are found soon.

On the Limits to Growth, the Human Condition, and the Meaning of Overshoot and Collapse

OWEN ULPH

WITHIN DECADES, the human race could resemble a colony of marooned ants scurrying frantically on a burning log. A year has passed since the first detachment of scholars sponsored by The Club of Rome published its preliminary report on the Predicament of Mankind, *The Limits to Growth*. In this study, a team of MIT scientists contends that if the unregulated exponential growth rate of population, capital investment, and pollution (with the concomitant depletion of limited resources and reduction of global food supply) is not decisively controlled by 1975, our present affluent civilization will collapse. Their central argument is elegant in the flawless clarity and simplicity of its logic, the unpretentious nature of its evidence, and the modesty of its conclusions. Nevertheless, many critics have responded to both the results and the methods of the study with fury, scorn, and snobbish indifference—reactions undoubtedly dis-

played by the contemporaries of Noah as they looked on while the far-sighted shipwright patiently constructed a seaworthy ark from his first ribbed skeleton. The announced intent of the Club of Rome team is to proceed to test and perfect their basic model with further research and analysis. But even without such buttressing, the initial hypothesis is substantially so obvious, and the authors' answers to anticipated objections in advance of their hostile critics so convincing, that it is tempting to attribute stubborn opposition to intellectual senescence, or to the customary obtuse perversity of entrenched mandarins.

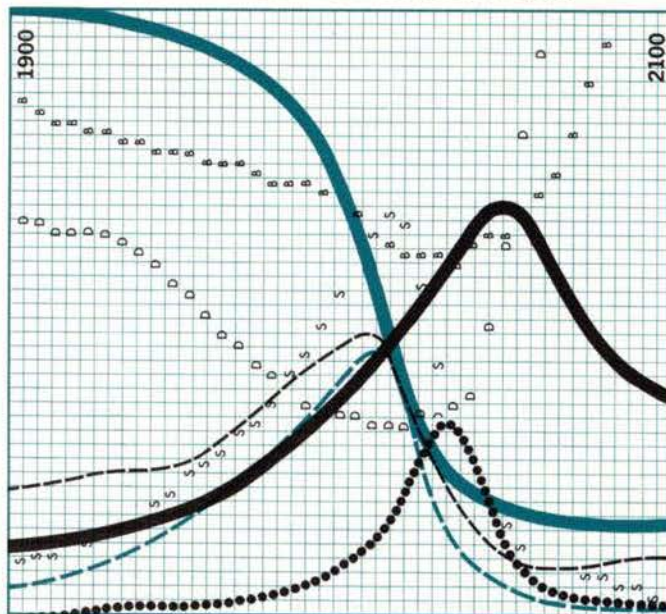
The fatuous quality of much of the adverse criticism has had the beneficial effect of strengthening rather than weakening the arguments advanced in *Limits to Growth*.

Indeed, a survey of the attacks upon the thesis of the Club of Rome scholars does not reveal a single one that undermines the basic assumptions

tentatively validated by their study: (1) that exponential growth can produce sudden and catastrophic consequences defying all previous experience and precedent; (2) that as a method for providing insight into the dynamics of the social process, systems analysis, employing interdependent variables, is superior to reliance on specialized techniques inadequate for understanding the complexity of a living organism; and (3) that favorable modifications in the behavior of one or more of eight interdependent variables may grant man a temporary reprieve from eventual disaster, but will not assure him worldly salvation.

Exponential growth, as distinct from linear growth, has altered the environment so harshly during the past century, and threatens to alter it so much more drastically in the century to come, that why the issue is so often brushed under the rug is a question

WORLD MODEL: Standard Run

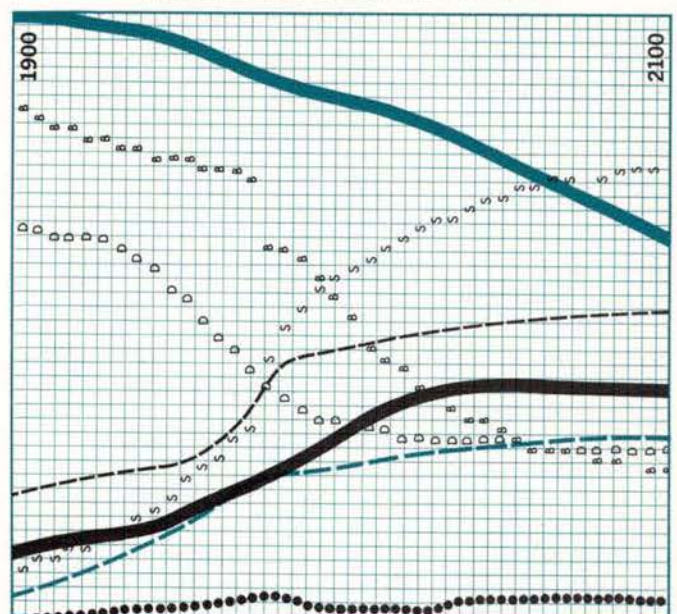


The "standard" world model run is based on the exponential growth curves in population, industrial output, and food production since 1900. Not long after the year 2000, the rapidly diminishing resource base leads to plummeting industrial production per capita; population continues to grow for some time, with the result that food intake per capita drops steeply; rising pollution and declining food reverse the original downward trend in the death rate. While the birth rate again soars in the 21st century, it is outstripped by the death rate. Pollution, of course, falls off with declining industrial output. By the

KEY:

- Population
- - - Industrial output per capita
- Food per capita
- Pollution
- Non-renewable resources
- B Crude birth rate
- D Crude death rate
- S Services per capita

WORLD MODEL: Stabilized



year 2100, glimmerings of a new stability are evident—but with values far less favorable than those of 1900, when there was food enough to feed the world population and the resource base was huge. It is almost unthinkable that the "standard" run should come to pass, but the modest tinkering with birth control, recycling, and pollution control which we practice today, even combined with new resource discoveries and unforeseen food production improvements, produces runs that are still unacceptable by present world standards. The swift introduction of stabilizing policies, including stabilization of capital investment and reinvestment in industrial growth (a factor almost totally ignored by traditional advocates of the need for stabilizing policies), will still not give us that brave new tomorrow that has been the cultural myth of western civilization in this century. It is an acceptable tomorrow, however, to anyone who has seen the disaster that seems inevitable in any reasonable variation on the "standard" run. The hitch in the acceptable stabilized model is that it implies perfectly effective world birth control as well as strong stabilization policies in other areas by the year 1975!

requiring elucidation.

Catastrophic interpretations of history have lacked respectability since scientific theories began to replace romantic ones. Modern scholars reject dramatic explanations almost by rote. That social change is a slow, evolutionary process has become dogma. Catastrophes, if they occur at all, are only short-run phenomena that time and history digest with bovine serenity. Most of the opponents of *Limits to Growth* are unable to shake off the complacency inspired by this viewpoint, and the frontal attack made upon it by Donella and Dennis Meadows, the husband-wife team that headed the study group, and their associates at MIT, has become a burr under a once comfortable blanket.

What exponential growth curves demonstrate is that simply because an excessive increase in population, industrialization, and pollution has not yet brought civilization to an end does not prove it may not do so in the

future. If the maximum population our planet can comfortably support is X billions, and if population doubles every 30 years, Parson Malthus combined with a computer calculating retroactively can easily explain why we have been spared the catastrophic effect of human fertility for so many centuries. It is only the final 30 years we have to worry about—this type of catastrophe only happens once. The same logic applies to the various productive capacities expanded to satisfy the market demand of this exploding population. How many automobiles creeping bumper-to-bumper along how many exhaust-choked freeways; how many mines, factories, and nuclear power stations; how many Havasu Cities and Spring Creeks; how many four-wheel-drive pickups, snowmobiles, and dune buggies, together with the endless stream of goods and services gushing forth to fill insatiable consumer appetites before an intolerable saturation point is reached? How

long until algae-blooming Lake Tahoe shares the fate of Lake Erie? Lake Erie survived a century of exponentially increasing pollution, then almost before we took heed of the problem, died. What little time may be left for effective action in the face of exponential growth, depletion, or pollution, the MIT team illustrates with an old riddle about a water lily in a Frenchman's pond: If the lily, small as it is, doubles in size each day, and the farmer decides to get to work and clean it out when half the pond is covered, how much time will he have to save his pond? One day, of course. This is what can be catastrophic about exponential growth.

Those who deny the dismal implications of exponential growth are simply incapable of conceiving the

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probable reality of this vision of hell. So bewitched are they by blind faith in blind progress that they take refuge in the feeble *non sequitur* that exponential growth is something economists have been familiar with ever since Malthus, whose theories were supposedly proved erroneous by advances in science and technology. Blandly, they assert that exponential corrections will spontaneously appear as a natural response to environmental challenges. These critics, so eager to condemn the MIT scientists for the scantiness of their evidence, have little proof that the saving miracle is happening. Birth control and anti-pollution measures are appearing neither rapidly enough nor in sufficiently effective form to be of world-wide significance. Anyone over 50 has enough experience in his own lifetime to confound the claims of the "natural adjustment" school of true believers. I remember walking to school through an undulating sea of wild oats, through solid masses of glorious golden poppies, purple lupine, and yellow mustard. I can remember drinking water from the stream that flowed through Mills College without contracting dysentery. This multi-colored countryside is now a desert of concrete and macadam, littered with service stations, drive-ins, car lots, and junkyards. And I am not yet 60. Pessimists may exaggerate, but it seems safer and saner to heed their warnings than to be lulled into apathy by optimists who ignore what is occurring directly before their eyes.

Even if it is conceded that catastrophes are short-run phenomena, the MIT scientists contend that those who sanction toleration of present growth patterns on the fallacious theory that balances will be restored in the long run—as they seem to have been in the past—are inviting unnecessary and avoidable trouble for the world. The Third Reich was a short-run catastrophe for millions of people, and the economic and political recovery of Western Europe did not put flesh back on the bones of those who perished. "In the long run," wrote the economist Keynes, "we'll all be dead." The time factor is crucial in checking the undesirable consequences of exponential growth. Whether the deadline year for instituting radical measures for environmental control is 1975 or some later date is less significant than that while we delay action, we are

allowing the situation to grow worse. It is a race between remedial action and disaster—and disaster already has a frightening lead.

A writer in *Science* quoted a senior colleague of the MIT group as saying, "What they're doing is providing simple-minded answers for simple-minded people who are scared to death." In one respect, the savant responsible for this statement displayed sagacity. He asked to remain anonymous.

There are some people too simple-minded to be scared.

The second basic element in the MIT study that remains incontrovertibly sound, despite heavy bombardment by critics, is its method of computer-augmented systems analysis. This approach singles out the principal variables previously noted, and demonstrates their interdependency through a series of ingenious graphs and models, culminating in an impressive World Model that intricately links a variety of contemporary social and industrial phenomena by feed-back loops. Interdependent variables and feed-back loops are not innovations of the authors, but the way in which they are used is both illuminating and stimulating to creative thinking. The World Model inspires one to reveal and describe each connective loop in convincing detail, and indeed it has been the absence of such detail that has called forth so much of the criticism of the study. The technique employed has been condemned for over-simplification. How, the critics ask, can a single model serve for the entire globe? How can meaningful relationships be obtained with such a high level of aggregation? Such questions, asked by Kneese, Ridke, Maddox, and others, express the objection to lumping together diverse phenomena under a single rubric. For example, discarded beer cans, used-car carcasses, radioactive isotopes, sewage, and depreciated capital are—for purposes of computerization—all assigned a common numerical coefficient. Such a nonsensical method, critics assert, cannot yield significant results. Predictions, in other words, will be inaccurate.

One wonders if these pundits read the book in a trance. The authors specifically state that their "graphs are not exact predictions . . . they are indications of the systems' behavioral

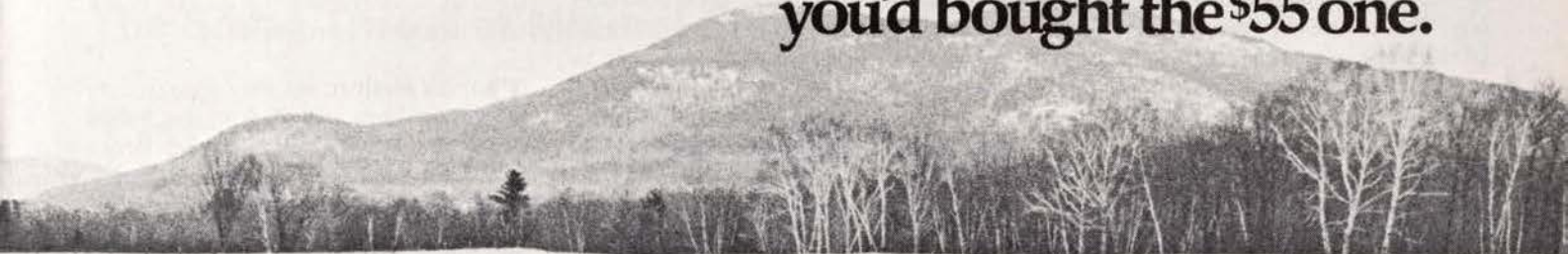
tendencies only." If a ball is thrown into the air, they point out, it can be reasonably assumed that it will come down. To plot its trajectory in space and time admittedly requires precise information, but this is precisely what the MIT study makes no attempt to do.

Writing in *Contemporary Psychology*, Dudley Kirk, no enthusiast for the work of the MIT scientists, acknowledges that many of the objections to their procedures and conclusions "may with some justice be regarded as quibbles," and that substituting the more optimistic statistical assumptions about growth suggested by their critics will "simply postpone the evil day." He concludes his own review of *Limits to Growth* by stating, "The message is a vital one; it is a pity that it is presented in a form so lacking in credibility."

At best, Kirk's verdict is only a grudging concession and is patently unfair, considering the announced objective of the authors. Since time is of the essence in deciding our future fate, the authors sensibly refused to delay publication of their preliminary results until half the human race has starved to death. The task of improving the "form" of the "message" by providing the impressive scholarly window-dressing apparently necessary to increase its "credibility" is one to which they and perhaps others will dedicate themselves in the immediate future. Confronted by the concern of the MIT scientists for the relevance of their study, many critics become shocked and confounded. In the best mandarin tradition, scholarship must be disinterested to be sound. "They want to save the world," one befuddled, anonymous colleague complained; "this messianic impulse is what disturbs me."

Perhaps this messianic impulse is something for which we will someday be thankful. Whether the authors of *Limits to Growth* are damned as purveyors of hope or as prophets of doom, they are unquestionably engaged in their subject, but in an intelligently healthy manner. Far from examining "the entrails of a computer" in the way "older prophets . . . examined the entrails of sheep," they recognize knowledge as a factor in shaping man's destiny. If these scholars are to be criticised at all, it should not be for their pessimism, but for their naive optimism. They seem only dimly aware of the persistence of cul-

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tural traits, entrenched interests, collective habit, human lethargy, and man's too-frequent inability to learn any way but the hard way. The Club of Rome was not founded by defeatists. The members seem to have faith in the belief that they will be listened to and that their findings will initiate some sort of remedial action.

The third basic conclusion of *Limits to Growth*, and the one most objectionable to the boy-scout *weltanschauung* of the critics, is that tinkering with the variables in order to present a rosier future will merely postpone, but not prevent, the inevitable breakdown of technological civilization.

The MIT scientists first feed the computer statistics that produce the "standard run," a term used to designate the results obtained when assuming exponential growth rates will continue on the scale that has prevailed during the past 70 years. Operating on this assumption, population, industrial output, and food production will increase exponentially until diminishing resources retard industrial growth. But because of the time-lag factor before feed-back loops manifest full effects, population and pollution will continue to increase, finally overshooting the limits within which the environment can maintain a socially desirable survival equilibrium. The death rate will then rise because of food shortages and deterioration of health services. Ultimately, population will plunge downward until a new equilibrium is reached. "The behavior mode of the system displayed by the *standard run* is clearly that of overshoot and collapse."

Use of the computer in this fashion has been termed a "gimmick." The best computer model, writes John Maddox in the *Saturday Review of Society*, "is no better than the assumptions about the real world with which it is programmed." Dudley Kirk adds, "It does not take a computer to tell us that *any* monotonic geometric rate of growth in population, in industrial production, in crime, in the number of automobiles, even in the production of artichokes, ultimately leads to disaster."

These comments miss the mark. Naturally, the computer is still only a tool dependent upon its operators, despite the nightmare fantasies of science-fiction writers. It enables in-

dividuals to accomplish herculean feats of calculation with minimal expenditure of time and labor. What else is a computer for? In anticipation of indignant challenges to their statistics by enraged, the MIT scientists with the aid of the computer were able to make a number of "comparative runs," endowing each of their variables with more favorable values. The estimate of the reserve supply of available resources is doubled—and in one run is even treated as "unlimited," within the limits of reason. Curtailment of pollutants is conceded. Agricultural yield is increased. Perfect birth control is assumed. A shock to believers in the efficacy of progress is that not even all these sometimes wild concessions to possibility make the world model "work": that is, project a rising or at least stable standard of living for the world. For exponential reinvestment of industrial capital, increased output per capita, and inevitable consumption of nonrenewable resources brings about collapse. Only by conserving and recycling resources, improving agricultural land, achieving a zero population growth, controlling pollution, and also restricting capital growth (thus industrial output)—and doing it quickly—can we seem to assure a stable world. What the authors are emphasizing with mathematical certainty is that so long as no brakes are placed on the system other than those nature alone imposes, great imbalances will occur, producing a surfeit of human misery. Man will be a victim of catastrophic upheavals, much as he was the victim of those alternating waves of prosperity and depression, the booms and busts of *laissez-faire* capitalism to which classical economists discreetly applied the term, "business cycles."

Economist Robert L. Heilbroner, one of the more judicious critics of the MIT group, is another who recognizes that modification of the growth patterns of the principal variables would not stave off calamity. "We have only the haziest knowledge of the full extent of the resources of the world," Heilbroner writes, contesting the reliability of the statistics of the U.S. Bureau of Mines on which the MIT scientists based their projections; "An optimistic estimate of the availability of resources may in reality not be five times the present estimates but ten or 50 times. This does not rescue the world from the problems of

exponential growth per capita, but it defers the day of reckoning by another generation or two." Since this was precisely the point made by *Limits of Growth*, it is reasonable to ask if the criticism was worth making.

Robert Heilbroner may consciously have been reinforcing the thesis of *Limits of Growth* by confronting flaws that do it no serious damage. He distinctly exposes the complacency of those who, like John Maddox, attempt to brush off the conclusions of the MIT group by derisively referring to them as "The Doomsday Syndrome." With respect to containing within a finite system an ever-mounting volume of contaminants, Heilbroner states, "Here, the scientists are right. However alarmist the data on which their models are based, however naive their call for social change on a scale that is beyond reach and by means they do not make explicit, one cannot fault their assertion that the exponential curves of growth, human and industrial, will sooner or later overtake the finite capabilities of the biosphere, bringing dreadful declines in population and in the quality of life. The period of grace before that time of catastrophe and collapse may be considerably longer than they project, but it is not an indefinite period. Sooner or later the problem must be faced."

Heilbroner's fundamental question, "But how is it to be faced?" is the same one raised earlier, and about which we deferred consideration pending discussion of the MIT team's objective diagnosis of the Predicament of Mankind. It is the question with which it is now essential to come to grips.

"The problem evaded by the anti-growth school," says Heilbroner, "is how to mobilize the social will—how to induce us to apply *existing* technologies against the resistance of entrenched interests and ordinary people alike."

It is unfair to hold natural scientists responsible for solutions to social problems that social scientists thus far have been unable to solve. Heilbroner, himself, is far from inspired. For him, the situation must grow worse before it gets better—"by the ghastly appearance of the initial stages of ecological disaster," which might then evoke a response in the

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The Smog Threat at Mineral King

The Way the Wind Blows

The prototypical photochemical smog of Los Angeles has become the common heritage of a generation of urban Americans, a new generation that has shown some evidence of rejecting the cultural values that have produced the smog but does not seem to have rejected the mechanical marvels and energy thirst that are more directly responsible. After all, one can always get away to the mountains. Or can one?

Fourth of July smog in Yosemite Valley came as a shock—but if Walt Disney Productions gets its way, you will also be able to enjoy the smog at remote Mineral King. That is, if you can believe the Forest Service's own experts.

"The general structure of Mineral King has been described by eminent geologists as having only one known counterpart in the world, that being in the Alps," says the Disney Productions prospectus for its Mineral King development. Apparently another of the unusual features of the valley is that it is a trap for the effluvium of Fresno and other Central Valley cities.

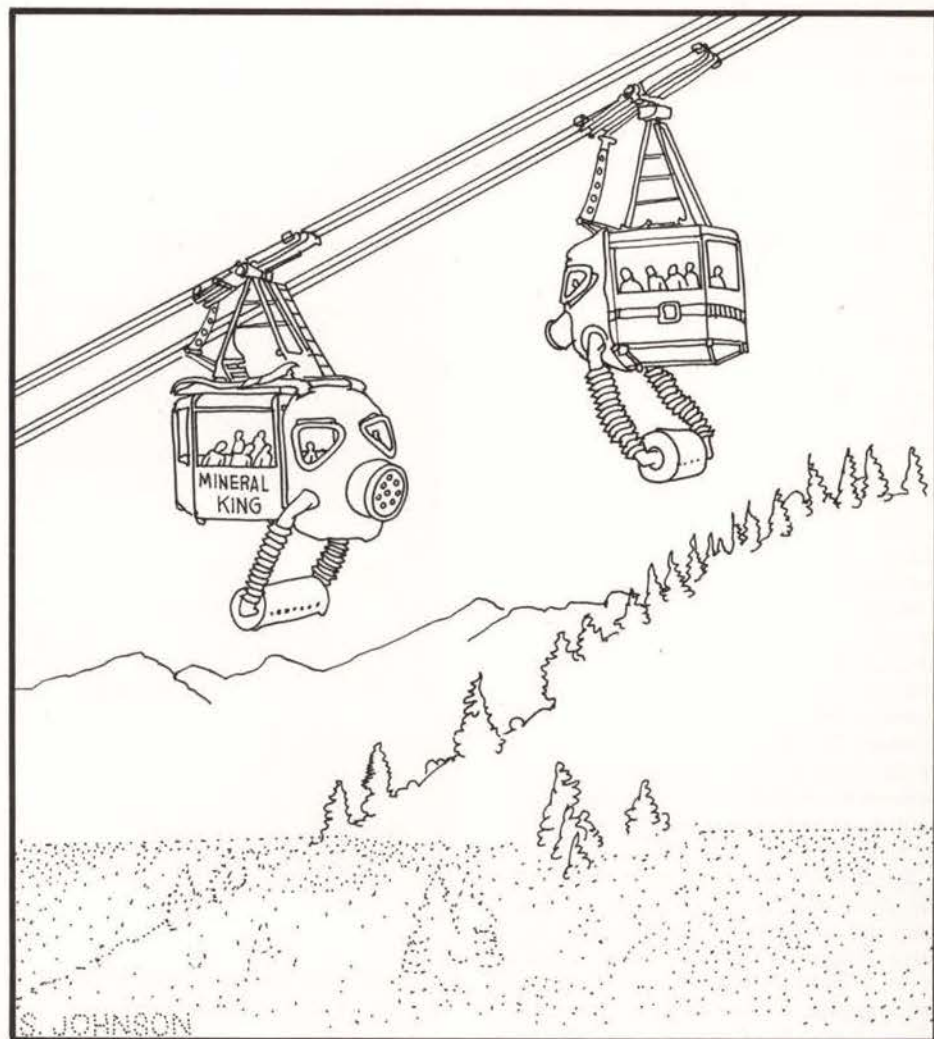
Along with such claptrap as the idea that the Disney proposal would "actually enhance the beauty of the area," a 1969 Forest Service puff for the project says that "Air pollution prevention has been given more meaningful attention at Mineral King than of any other place in the world!" (Diction and exclamation are original.) Furthermore, "Meteorological studies have indicated that natural air drainage will ordinarily move clean air from Mineral King Valley down-slope to the San Joaquin Valley floor. Even when an inversion layer holds pollutants in the San Joaquin Valley, visitors will savor the crisp, clean air of Mineral King."

The Forest Service added that it would monitor pollution during 1969, in order to "provide background information for future management." It would appear that the significant monitoring took place during August of 1970; in any event, "Oxidant Air Pollution in the Central Valley, Sierra Nevada Foothills, and Mineral King Valley of California" was published in 1972 in England. This article, in a volume of *Atmospheric Environment*, was the work of P. R. Miller, M. H. McCutchan, and H. P. Milligan, of the Pacific Southwest Forest and Range Experiment Station of the U.S. Forest Service. It details an atmospheric

pollution system at Mineral King which is exactly the opposite of the sanguine predictions of Forest Service resort promoters. The fact is that noxious oxidants produced in the Central Valley flow upward into the foothills of the Sierra—until they are wafted under the inversion layer common at Mineral King. Peak pollution at Fresno Court House and at Mineral King were about the same during the test period, but at Fresno there was a dramatic drop in oxidant concentrations late in the evening through mid-morning. Not so at Mineral King, where the inversion layer can hold down about 70 percent of the smog all through the night.

Summing up the situation at Mineral King, the experts concluded, "The morning *in situ* and afternoon 'transported' oxidant peaks observed at Mineral King distinguished it from other locations in the study and suggested a greater potential air pollution hazard in a high mountain valley of this type. If sizable sources of gaseous pollutants, such as automobiles and space heaters, were present in the mountain valley, their emissions would also contribute to the photochemical production and concentration of ozone, other oxidants, and visibility limiting aerosol."

The work of Miller, *et al.* shows that the



Disney cog-railroad scheme (to be accomplished by the public—but that is another story) by no means obviates that pollution hazard: the smog generated by all those cars will just drift right on up the gulch to Mineral King, where it will join the oxidants produced by the space heaters, restaurants, and who knows what else.

Though the facts are here for us to see, it is still hard to believe that Mineral King could become a smog trap that nobody but

a hardened Los Angeleno could stand to visit. The entire threat to Mineral King is easy for all of us to see: not just air pollution, but people pollution, building pollution, ski-run pollution, and lift pollution. If Mineral King in its natural state is all that Disney Productions tells us it is, then it is unthinkable that it should be turned into a synthetic entertainment area dedicated to that ultimate philosophical concept of affluent America: "eat and buy."

Roger Olmsted

Pipeline and Politics in America's Last Frontier

As the pipeline fight shifts to Congress, following the Circuit Court of Appeals decision in Washington, Alaska conservationists are busy staying one dog-team length ahead of "necktie" parties called by enraged local political and business interests. Resolutions have just been introduced in the state legislature demanding a billion-dollar lawsuit against the Sierra Club and "other outside interests" who stand in the way of expeditiously skinning the land. And in Fairbanks, near which the Valdez pipeline would pass, a secession movement has been launched.

An atmosphere of panic and hate has been fostered by the present state administration. Unless pipeline construction begins soon, Governor William Egan has warned, the state faces bankruptcy once the \$900 million (now down to approximately \$700 million) from a 1969 North Slope oil lease sale is spent. Egan used this theme at Senate Interior Committee pipeline hearings recently, in an obvious bid to gain sympathy for his administration's case.

But a recent economic analysis of the state's economy by the National Bank of Alaska disagrees with the governor's doomsday forecast. A yearly spending cut of \$25 million (about seven percent of current levels) for the next five years would forestall the "bankruptcy" predicted by the governor. "Therefore," the bank's report says, "although we might very well experience almost no economic growth over the next four or five years because we would have no increasing state expenditures buoying up the economy, in the final outcome the absence of the proposed trans-Alaska oil pipeline or its indefinite delay would not have a prolonged or major negative impact on the state's economy."

A major new economic study of the pipeline issue by Charles J. Cicchetti, of Resources for the Future (*Alaskan Oil, Alternative Routes and Markets*, Johns Hopkins Press, \$5), has also undermined the state's fiscal arguments in favor of the trans-Alaska route. Dr. Cicchetti concludes that

a trans-Canada line would be superior both environmentally and economically to the proposed trans-Alaska line from the North Slope to tidewater at Valdez, Alaska. This conclusion is true "... for the nation, for Alaska, and—except under certain interesting schemes for the ultimate delivery of oil—for the oil companies themselves." As analyzed by Cicchetti, one of those interesting schemes involves exporting surplus North Slope oil to Japan and importing on

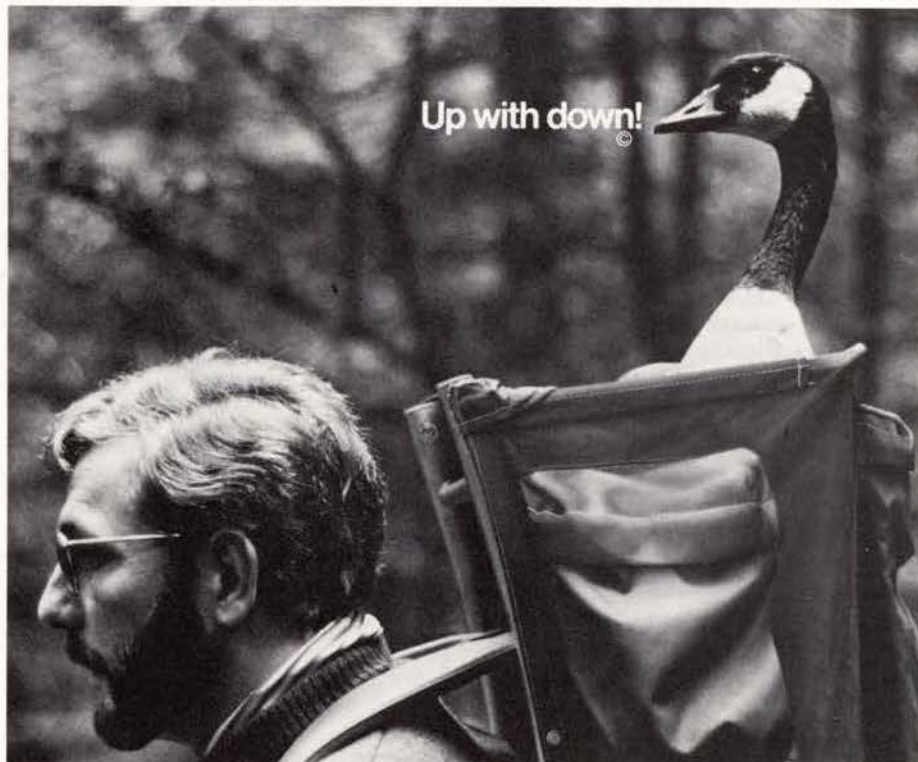
the East Coast an equal amount of Mid-East crude, taking advantage of price differentials and thereby realizing enormous windfall profits. The other entails piping the oil across Central America for refining in the Virgin Islands before shipment north. Extensive use of foreign tankers—"rust-buckets" not subject to federal control—is essential to both schemes.

Yet the Egan administration remains welded to the Valdez pipeline, despite the evidence that it is being gulled by Alyeska, the oil consortium attempting to build it. Environmental considerations aside, the state would realize higher tax revenues if Alaska oil were pumped through a Canadian pipeline to the Midwest, where the per-barrel price is higher than in West Coast markets. It would be statesmanlike on the part of the Egan administration to begin laying the political groundwork for public acceptance of a Canadian alternative, but to do so would also be a tacit admission of past errors. Thus Bill Egan, hoping for reelection to a fourth term next year, is a voluntary prisoner of his past commitment.

Meanwhile, Alaska Natives are understandably impatient to see the oil move south. Half of their \$962-million land claims settlement is tied to a two-percent override

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WASHINGTON REPORT

Right-of-Way to Disaster

The months of February and March have been extremely busy for the Washington office because Congress seems to have scheduled hearings on almost every conceivable subject of any interest to environmentalists—from toxic substances to wilderness and everything in between. The list is far too extensive to enumerate in detail here; and many important and far-reaching pieces of legislation have been worked on by Sierra Club spokesmen and leaders from around the country, including the Washington office. But throughout all this, one environmental issue dominates all the others—energy. The Sierra Club, of course, has pointed out on many different occasions that the so-called “energy crisis” is not really a crisis at all and that there are numerous things we can do right now—with a minimal change in life styles—to reduce excessive energy consumption. For example, a simple placement of new office buildings to take advantage of climate and topography, or more attention to insulation and less to glass, could immensely reduce electric power demands from this major source. As Club director Larry Moss and others have pointed out, much of the increasing energy “demand” can be attributed directly to great inequities in the present pricing structure, by which major users, such as industry, pay far less per kilowatt-hour than small users. If we priced energy fairly, the alleged “demand” would soon become much lower than it is now. But the cry “energy crisis” still goes on, and Congress definitely seems intent on doing something this year.

Another of our most critical issues—the Alaska Pipeline—is closely tied to the so-called energy crisis, and events are moving in a direction where the pipeline issue may represent the first real test of strength between environmentalists and the energy establishment over the whole energy question. After the court decision in February that permanently enjoined pipeline construction on the grounds that the Mineral Leasing Act of 1920 permitted a lesser right-of-way than the pipeline required, an enormous furor arose from the oil industry and its supporters in Congress. “This was just a technicality,” they said, “and we are going to amend that technicality [in the Mineral Leasing Act] so that the courts can decide the other question, the Environmental Policy Act issue.”

As a result, a number of bills that would somehow authorize the construction of the pipeline has been recently introduced in both houses of Congress. Some would amend the Mineral Leasing Act; others

would simply make a statutory exception for the Alaska Pipeline. Still others would authorize studies of possibly rerouting the pipeline through Canada. But the most ominous bill to appear as a result of the recent court decision, and the only one likely to be seriously considered during this session of Congress, is Senator Henry Jackson’s all-purpose right-of-way bill, which would give the Secretary of the Interior a blank check to issue permits for *any* kind of right-of-way over federal lands, from cow paths and transmission lines to aqueducts and—of course—pipelines. The sponsors of the bill claim something like this is necessary because the court decision “has cast a cloud over the whole right-of-way situation on federal lands.” They further claim the bill has nothing to do—directly—with the Alaska Pipeline. In fact, Senator Jackson, who is chairman of the Senate Interior Committee, announced on March 9 at a committee hearing on the subject that he would not even hear any testimony on the Alaska Pipeline. Despite such gestures, his bill remains, in effect, the “Trans-Alaska Pipeline Authorization Act.” That is its intent, and everyone in Washington, D.C., knows it.

CAPITOL NEWS

Auto industry tries to delay exhaust emission deadlines

Auto manufacturers intensified lobbying efforts to delay pollution reductions required on 1975 vehicles under the 1970 Clean Air Act. Reports warning against “the prospect of an unreasonable risk of business catastrophe and massive difficulties with these vehicles in the hands of the public” have appeared in newspapers across the country. Top Nixon aide John Ehrlichman indicated the White House may side with the auto companies in this fight, and the Environmental Protection Agency opened new court-ordered hearings on the deadline.

Four cars using a variety of emission-control equipment have already passed the EPA’s required 50,000-mile endurance test: a small Honda, a Mazda with a Wankel rotary engine, and more conventional prototypes from General Motors and Chrysler using catalytic converters. A diesel-powered Mercedes, after 8,000 miles, had pollution emissions 30 percent lower than 1975 standards and didn’t seem to get dirtier with addi-

That is the only reason it is being sponsored and pushed at the present time.

Congress should critically examine the right-of-way question, but it should do so slowly and carefully to avoid the same kind of give-away of public lands—at the discretion of the Secretary of the Interior—that occurred in the infamous “Railroad Land Grant Era” of the 19th century. In 1920 Congress put strict restrictions on right-of-ways precisely to avoid future give-aways. The so-called “right-of-way” legislation would give it all away again.

We want Congress to consider the pipeline on its merits and to enact specific legislation that talks about the pipeline and all its alternatives. All the oil that is now proven to exist on the North Slope amounts to about three years worth of American consumption. The only purpose for rushing authorization legislation through now is to bail out a few oil companies who made a large investment in public lands.

Several members of Congress are approaching the situation more calmly and know that we have time to work out a rational energy policy, without succumbing to the false cries of energy crisis, and they are proposing legislation which environmentalists can generally support, legislation which would call for a careful study by the Office of Technology Assessment, an arm of Congress, to determine the real need for Alaskan oil at this time and the best method for getting it out.

Brock Evans

tional mileage. No test results so far revealed have shown any engine tested that can meet 1976 standards, which limit hard-to-control nitrogen oxides. A recent National Academy of Sciences report suggests the 1976 standards might be met by further development of such engines as Honda’s compound vortex-controlled combustion system.

General Motors, testifying before the EPA, released a report that undercuts the argument of some auto and petroleum companies that new catalytic converters will hurt gasoline mileage. Their report showed

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EDITORIAL

A Broader Look at the Environment

ON MARCH 3, 1973, the Executive Committee of the Sierra Club voted unanimously to support the environmental goals of Shell Oil Company refinery workers in their collective bargaining with Shell management.

The action was given wide publicity in the California press, generating a predominantly critical response from a few dozen members that suggests a need to clarify the resolution and delineates the issues for the full membership.

The Committee endorsed the right of workers to a safe, healthful workplace and the principle of worker participation in the establishment of such conditions with the following wording:

"The Sierra Club supports the Oil, Chemical, and Atomic Workers Union and other workers in their efforts to obtain working conditions which are environmentally safe, through provisions in their collective bargaining agreements that provide data to workers on health hazards, appropriate physical examinations, access to records on illness and deaths, and paid time to pursue these objectives. The President is authorized to write to the president of the union and make known that we share the views expressed in the alternative resolution."

The item was placed on the agenda at the union's request, and, in fairness, we invited Shell management representatives to present their case. Both sides were heard and a longer, less precise statement of support that had been signed by ten respected organizations (Wilderness Society and National Parks and Conservation Association included) was considered, but rejected as too broad. After thorough examination and deliberation of the facts, we were persuaded that the union position, which already had been accepted by virtually all the petroleum giants, was a sound one.

Such trade-union objectives merit the vocal support of the Sierra Club and allied organizations, for the very basic reason that an unhealthy micro-environment anywhere reduces the overall vitality of our natural world. The two are inseparable. While the degenerative effects of a Trans-Alaska Pipeline on that entire state are more obvious, and while we are all aware of the potential for far-reaching damage from a nuclear power plant, the relationship between an unsafe refinery or steel mill and their surrounding communities is equally close. The cornerstone of current ecological understanding is the concept of interrelationships. A blight on the land anywhere deserves correction as much for its adverse effect on its neighboring surroundings as for its immediate local ramifications. Indeed the Sierra Club cannot and perhaps should not initiate or actively participate in the correction of all environmental afflictions. But is it not in the best interests of the Club and its broad goals to lend our vocal influence in support of whoever would undertake improvements outside our direct sphere of interest?

The press widely reported that our resolution was based on a need to demonstrate Sierra Club's concern for people. As much as we do need to generate a widespread public understanding of that truth, it was not our motive here, but merely a very beneficial side-effect. But this point relates directly to much of the written member disapproval of the resolution: viz., that we should not in any way become involved in labor-management disputes. Our willingness to endorse the working environmental goals of a labor union cannot be construed as an intrusion on labor-management bargaining. But it can be instrumental in rallying strong support for our basic conservation programs, such as the recent condemnation by the United Mine Workers of strip-mining. Wherever we find a common environmental interest with another group, no matter what its primary objectives may be, we strengthen our cause by lending our support.

It seems curious that our Club's extension of its activities beyond traditional wilderness and resource conservation should still cause some worry over a diminishing Club credibility. We have been fighting for a clean and healthy environment for several years without reducing the effectiveness of our efforts to protect wildlife and wild places. Our scope of concern must continue to broaden just to keep pace with the country's exponentially expanding environmental threats. Wild places and natural beauty do not stand in splendid isolation from the perils of urban pollution. They are as directly related to refineries and power plants as our ability to conserve them is to our interest in protecting populated areas. The danger

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gasoline-consumption rates in experimental models about equal to 1973 cars that don't use catalysts. Moreover, with further development, GM believes catalyst systems can achieve gas-consumption rates even better than those of this year's new cars.

Despite this testimony, GM argued for a delay. The corporation suggested—as has Ford—that interim exhaust-emission ceilings be established for 1975 automobiles, which would be stricter than those for 1973-74, but still not in compliance with Clean Air Act standards. GM and Ford offered to achieve emission outputs even lower than these interim ceilings by 1975, but only for cars made for sale in California, which accounts for only about seven percent of GM's total output.

White House aide John Ehrlichman, commenting on the 1975 standards required by the 1970 Clean Air Act, said, "There are a lot of things about the law that we just don't think [are] common sense." He declined to elaborate.

The EPA announced that land-use regulations to restrict construction that stimulates increased car-exhaust pollution would soon be issued. States will be required to review the location of facilities such as shopping centers, sports complexes, drive-in theaters, parking lots and garages, and residential, commercial, or institutional developments that "may cause an increase in air pollution because of associated activities."

The EPA was taken to task, though, in a letter from Sierra Club Executive Director Michael McCloskey, who pointed out that the EPA's proposed regulations for lead additives in gasoline weaken earlier proposals by extending phased reduction of lead for an additional year—until 1978—and by substituting "average" for "maximum" in defining how much lead should be allowed per gallon of gasoline. "It is the carefully considered opinion of the Sierra Club," wrote McCloskey, "after an exhaustive review of all the arguments which have been presented on this subject, that exposures to airborne lead are preventable through the elimination of lead additives in gasoline and that no substantive technical or economic reasons exist for not promulgating a regulation to this effect."

Senate uses highway fund to finance rapid transit

Money from the Federal Highway Trust Fund, earmarked for highway expenditures only, was appropriated by the Senate for both road-building and big-city mass-transit systems. The Senate-passed bill would provide \$850 million of Highway Trust Fund money in each of the next three fiscal years for ground passenger transportation in urban areas.

Local officials would have the options of building arterial city streets, providing spe-

cial bus lanes and fringe parking lots for commuters, buying buses, or building subways and other rail transit lines. In cities facing auto-traffic restrictions because of federal air-pollution standards, local authorities would get extra trust-fund money for mass-transit projects.

The Senate bill was a victory for environmentalists over road-building interests. However, the bill faces a tough challenge in the House, which last year rejected a similar Senate proposal. Since 1956, Highway Trust Fund money—primarily from gasoline-tax revenues—has been channeled exclusively into road-building.

New bills permit lobbying by tax-deductible groups

Companion bills were introduced in the House and Senate to permit certain tax-exempt nonprofit, charitable, religious, and environmental organizations to actively work to influence legislation without losing their tax-deductible status.

Under the proposals, an organization could receive tax-deductible contributions so long as its spending to influence legislation normally did not exceed 20 percent of total expenditures on tax-exempt activities. Also, no more than five percent of expenditures could be used to finance grassroots activities that attempt to affect the opinion of all or part of the general public.

Packwood moves to ban US log exports

Oregon Senator Robert Packwood recently introduced a bill to phase out log exports and impose a total ban by January 1, 1977. Except for specific quantities of timber found to be surplus, the export of all logs from federal lands would be prohibited on January 1, 1974. A quota system would then go into effect for the export of logs from private lands, and limits would decrease each year by 25 percent until the 1977 total ban.

Packwood countered the argument that restrictions on log exports—more than three billion board feet in 1972—would further unbalance the U.S. trade deficit. "By continuing to export raw logs to other countries—principally Japan—and to import higher-valued finished lumber—principally from Canada—to meet domestic demand, our overall balance of trade in 1972 was

worse than it would have been had my proposal been in effect and we used those logs to meet our own domestic needs."

Japanese timber interests anticipating the export ban are attempting to buy up Pacific Northwest sawmills, a Western Forest Industries spokesman said. Lumber manufactured from foreign-owned mills would be exempt from the export restrictions.

NEWS VIEW

Club says environmentalists not to blame for timber shortage

Charges by the timber industry that environmentalists are responsible for high lumber prices were branded as sheer propaganda by Sierra Club forestry consultant Gordon Robinson.

"They say 253 million of the U.S. forest total of 753 million acres are withdrawn from commercial use for parks and wilderness," Robinson said, "but this is just not true."

Robinson pointed out that only 17 million acres are now in parks and wilderness and that only three million acres are classified as "deferred" for future consideration for inclusion in the wilderness system. The remaining 234 million acres, Robinson said, are unproductive and although not included in present parks or wilderness areas are of no value for timber whatsoever.

Robinson also pointed out that 20 million of the remaining 500 million acres were wrongly classified as "commercial" in the Forest Service's 1970 figures cited above. He said that these lands were too steep, too scattered, or otherwise unsuited to logging and should rightfully be added to the 234 "unproductive" acres. This means that only 480 million acres—rather than 500 million—are suitable for commercial logging, and of these, 407 million acres are mostly privately owned, with a small portion belonging to states, counties, or other federal agencies.

What this all means is that only four per-

cent of the forest lands suitable for commercial logging are reserved in parks or wilderness while almost 85 percent are subject to little public control. These figures, Robinson said, demonstrate the falseness of the timber industry's claim that wilderness is responsible for high lumber prices. Earlier, Robinson had pointed out that high prices can largely be blamed on log exports that create a lumber shortage at home.

Robinson also said that the timber industry was misrepresenting the impact of the Club's de facto (roadless area) wilderness suit on commercial logging operations. He said that most of the 15 million acres of roadless lands were included in the 20 million acres misclassified as potential commercial forest land. "They're by nature the least desirable, the most remote, and located at the highest elevations of any land remaining undeveloped in the national forests," Robinson said. He added that such misclassification is one of the reasons why the annual allowable cut in the national forests is too high.

"I therefore believe," Robinson said,

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"that the big argument about the roadless areas and wilderness areas at the present time is merely a holding action by the timber industry to prevent correction of allowable-cut determinations on the national forests, while industry cashes in on the excessive logging presently authorized."

Club offers alternative to LA gas rationing

The controversial Southern California gas rationing plan need not be implemented under a new proposal submitted to the Environmental Protection Agency by Sierra Club spokesman Larry Moss.

The plan calls for zoning controls to stabilize urban growth in the basin, highway-user taxes for rapid-transit development, establishment of a state or regional air-pollution control agency, a graduated emissions tax, and increased use of buses. The emissions tax would be imposed in two forms. There would be a base tax of about one cent per gallon of gasoline, and thereafter the tax would rise according to miles traveled (as computed from information supplied by filling stations in the basin).

A person driving about 15,000 miles a year would pay roughly \$200 in emission taxes, while a motorist running up a total of 20,000 miles a year would pay around \$700. This disincentive to automobile use, plus the increased use of buses and other forms of mass transit, would reduce travel mileage in the basin by 30 percent, according to Moss.

He said the tax could cost motorists anywhere from \$70 to several hundred dollars a year, depending on how much they drive. However, if his strategy is used, Moss continued, air pollution in the basin could be reduced to the minimum required by law for 1975—160 tons of emission per day—without gas rationing.

Club supports labor move to improve environment for factory workers

Sierra Club officials expressed support for two labor positions recently, and United Mine Workers President Arnold Miller backed environmental legislation to regulate strip mining.

"The Sierra Club supports the Oil, Chemical, and Atomic Workers Union and other workers in their efforts to obtain working conditions that are environmentally safe, through provisions in their collective bargaining agreements that provide data to workers on health hazards, appropriate physical examinations, access to records on illness and deaths, and paid time to pursue these objectives," said the Club's executive committee after a lengthy presen-

tation by Shell Oil officials arguing that the Club should not concern itself with long-term pollution hazards including dust, fumes, gas, noise, and poisonous chemicals in workers' environments. Shell employees have struck nine refineries and chemical plants over these issues. Shell denounced the executive committee's action. Labor groups praised it.

Sierra Club Vice President Will Siri told delegates to the California Labor Federation's conference on "Jobs and the Environment" that "We're engaging in an unnecessary war." He said that the Club will join labor in backing a bill to require "economic impact statements" on all major construction projects in California. He also promised to ask the Sierra Club's board of directors to create a "labor advisory council."

Canadian oil spill blackens inside passage

"You can never undo the effects of an oil spill. All you can do is minimize the consequences." So said a Canadian government spokesman as oil from British Columbia's worst spill oozed through the waters of the Inside Passage at Alert Bay, near Vancouver, in late January.

The oil—450 tons of Bunker C—spread for about 50 miles in the channels and inlets between northern Vancouver Island and the mainland after the 19,000-ton tanker *Irish Stardust* ran aground in Blackfish Sound.

After the accident, the vessel continued on its voyage south. Canadian government officials said they didn't know why the incident was not reported until people at Alert Bay found their beaches fouled.

Ecological considerations involved in the clean-up operation were enumerated by the government spokesman: "When an oil slick comes ashore it kills everything it hits. It smothers all surface marine life. But if you sterilize it, you would kill everything in a ten-foot swath instead of a one-foot swath.

"We tried to clean up all the free oil and polluted debris so it would not contaminate other areas. But we left oil on rocks because sometimes it does more harm than good to steam them clean. And sea life can only tolerate small amounts of emulsifier, so it must be very carefully used.

"It is better, from an environmental point of view, to do as little as possible. The sea will do the same thing anyway. It acts just like a steam cleaner, only it takes longer."

The spokesman termed the beach "clean" four weeks after the spill, even though oil still covered many areas. He said leaching was to blame for the residual mess. This, he explained, is a process whereby oil leaks down into the sand and is later churned up at high tide.

New signs appear of future gas shortage

Indications of a gasoline shortage are beginning to appear. The Senate Banking Committee voted to give President Nixon authority to establish rationing for gasoline if an emergency arose, and one congressman said he understood the government was already printing ration cards for use this summer. The Office of Emergency Planning said, however, that rationing is but one of several alternatives in a contingency plan not yet complete, and "would be our last resort."

Gasoline supplies in all areas east of the Rockies as of March 2 stood at 191 million barrels, down 24 million barrels from 215 million on the same date last year. An emergency level was considered to be around 175 million barrels. Petroleum prices have been rising at an annual rate of 12.5 percent.

The Wall Street Journal reported that some independent distributors in the Midwest are already having difficulty obtaining gasoline. It is unclear whether this indicates an actual shortage or just the unwillingness of companies to meet demands in low-profit areas.

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REGIONAL REPS REPORT

Southern California: Towards a Channel Islands National Park

"The northern group of the Channel Islands of California presents one of the finest opportunities in America to preserve a combination of island, seashore, and related marine values in a reservation suitable for park use." This quotation is from a study of the Channel Islands prepared by the National Park Service and, if anything, is an understatement of the natural values of the islands.

The Santa Monica Mountains rise in downtown Los Angeles and extend westward until they plunge into the ocean at Point Mugu 50 miles distant. The four northern Channel Islands—Anacapa, Santa Cruz, Santa Rosa, and San Miguel—are exposed peaks of the submerged extension of the Santa Monica Mountains, which continue offshore for many miles. The islands present spectacular seascapes, with steep bluffs and rocky headlands rising from the all-encompassing sea, and are a treasure house for the archeologist. Spring presents a landscape alive with the strong colors of wild poppies and giant coreopsis. The birds and animals exhibit interesting contrasts—sometimes subtle, sometimes dramatic—when compared to their counterparts on the mainland. But the dense and varied marine life is perhaps the islands' most compelling value. The rich hues of the shoreline, the profuse tidal life, the lush canopy of giant kelp offshore, the bonito and swordfish, the pelicans and petrels, but most of all the elephant seal and other sea mammals present a profusion and variety of sea life almost unique in America.

The two small islands of Anacapa and Santa Barbara presently comprise the Channel Islands National Monument, and San Miguel Island is in government ownership, but the large islands, Santa Cruz and Santa Rosa, are in private ownership and are the key to any substantial preservation program for the Channel Islands. The list of immediate threats to Santa Cruz and Santa Rosa include a large second-home playland and resort proposed for the eastern end of Santa Rosa. But the long-term threats loom even larger and will soon be upon us if permanent protection for Santa Cruz and Santa Rosa is not soon achieved. How long will it be until rising property taxes force development of Santa Cruz and Santa Rosa, or until the oil industry becomes sufficiently entrenched in the Santa Barbara Channel and will be willing to pay handsomely for an adequate base of operations out there? Or how long until someone decides that

Santa Rosa Island is the ideal place to locate a supertanker port? It is obvious that private custodianship won't be adequate to stand up under that kind of financial pressure.

The proposal to create a five-unit Channel Islands National Park of Santa Barbara, Anacapa, San Miguel, Santa Rosa, and Santa Cruz gathered momentum in the late 1950's and early 1960's, but hostility to the concept by the owners of Santa Cruz and Santa Rosa, and indifference by the congressman from the area, Charles Teague, has effectively stopped any legislation that has been introduced.

Southwest: Stemming the Flood at Lake Powell

In late 1970, Friends of the Earth, the Wasatch Mountain Club, and river guide Ken Sleight filed suit against the Secretary of the Interior and the Commissioner of Reclamation to prevent the rising waters of Lake Powell from invading Rainbow Bridge National Monument. Amidst predictions of dire consequences to the water users of the upper Colorado River Basin, the states of Utah and Colorado, along with several water conservation districts and power consumers, intervened on the side of the defendants. The suit was based on the provision in the law authorizing Glen Canyon Dam that specifies, "It is the intention of Congress that no dam or reservoir constructed under the authorization of this act shall be within any national park or monument." This provision, which was inserted in the law at the request of environmental groups who feared that allowing dams or reservoirs to be constructed within national parks and monuments would establish a very undesirable precedent, was the result of one of the first major conservation battles of the past 20 years.


A decision handed down by District Court Judge Willis W. Ritter on February 27, 1973, ordered the defendants "to take forthwith such actions as are necessary to prevent any waters of Lake Powell and the Glen Canyon unit from entering within the boundaries of Rainbow Bridge National Monument" and permanently enjoined and restrained them from "permitting or allowing the waters of Lake Powell and the Glen

Canion unit to enter or remain within the boundaries of the Rainbow Bridge National Monument." The following day, February 28, Utah Senator Frank Moss introduced legislation in Congress to amend the law and thus bypass the court decision. With above-average runoff expected in the Colorado River this year, Lake Powell was expected to invade the monument in late April. Opponents of the decision have argued that Congress in effect repealed the law by refusing to appropriate funds for a barrier dam that would prevent Lake Powell from backing water up into the national monument. Although a barrier dam was considered at one time, virtually everyone is agreed today that it would not be an acceptable solution. Its construction would cost at least \$25 million and would deface

Larry E. Moss

Continued on page 30

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It's the Public's Turn at Tahoe

STEVEN C. BRANDT

IN DECEMBER 1971, the ten-man governing body of the Tahoe Regional Planning Agency adopted a comprehensive regional plan to guide land use in the 500-square-mile area. The plan reduced the potential population from the approximately 700,000 previously allowed by the six local jurisdictions to around 250,000. This new figure is still three times greater than the current population at Tahoe, but the adopted plan is a long, first step along the path away from urbanization.

Today, 15 months later, implementation of the regional plan is running into serious difficulty. The local jurisdictions, which by law share responsibility with the planning agency for implementing the plan, are dragging their feet on both enforcement and zoning. The two states that share Tahoe have yet to make a move to support the plan, and Washington's limited support has lacked money and muscle. Despite government's poor showing, the planning agency's governing body has so far resisted attempts to weaken or sidestep the plan, but is finding it increasingly difficult to maintain this stand. Real estate and development interests are nibbling away at the plan, avoiding an outright attack in order not to attract attention. The governing body is getting cold feet and, lacking tangible public sup-

port, may soon succumb to these subtle though substantial pressures. It is reasonable to predict that many of the gains of the last three years in preserving the natural character of Tahoe will melt like the spring snow unless the public puts some money on the line in 1973.

When the governing body adopted the regional plan, the opportunity to develop certain lands in the region was either reduced or eliminated altogether. Such land-use restrictions were deemed necessary because much of the land in the Tahoe Basin was found to be either too fragile to withstand construction or so inaccessible that the construction of such services as roads and sewage lines was obviously impractical. Furthermore, certain other lands, particularly those with beach frontage or unusual esthetic value, were considered more suitable for public, rather than private, use. When the plan was adopted, the expectation was that public funds would be forthcoming to buy at least some of the lands in this latter category.

Since December, 1971, however, not one cent has been spent by any level of government for land acquisition. The Tahoe Regional Planning Agency does not have taxing authority, and therefore is dependent for funds on the largesse and commitment of other governmental jurisdictions, which so far have shown little interest in supporting the plan. The small, scattered, divided group of citizens who live permanently and vote in the six local jurisdictions seem little inclined to consider the passage of bond measures in order to purchase

historic or strategic parcels around the lake. As a result of this dollar vacuum, the entire regional government and conservation effort at Tahoe is in danger of becoming a toothless tiger. It's now the public's turn to have a voice at Tahoe.

Several factors explain the current lack of action that threatens the Tahoe plan. First, four of the six local jurisdictions are counties headquartered far from Tahoe—both geographically and culturally—which find land development at Tahoe very beneficial to the county coffers. The property-tax dollars from high-density development at Tahoe roll down the mountains (Lake Tahoe is at 6,200 feet elevation) to distant county seats in Auburn, Minden, Placerville, and Reno, but few have to be pushed back up for schools and other services because most of the taxpayers are non-voting, second-home owners (a modern version of taxation without representation). Estimates suggest that some of the counties are netting well over a million dollars a year from their pieces of Tahoe. So there is little wonder that these four counties are lax in carrying out their legal responsibilities under the bi-state compact that established the planning agency. Those who oppose uncontrolled development at Tahoe, whether local residents or seasonal visitors, have virtually no leverage on the ruling county governments except, perhaps, through the courts. Neither a wilderness nor a community, divided between two states and several local governments, the Tahoe region presents unique and complex problems to conservationists and has so far con-

Steven C. Brandt is president of the League to Save Lake Tahoe and is a member of the faculty of the Graduate School of Business at Stanford University.



founded well-meaning efforts to save it.

A second factor, cousin to the first, has to do with the City of South Lake Tahoe, which apparently desires to become a high-altitude, high-density suburb with all the amenities of downtown Burbank. For example, the city council has seen fit in the last few months to approve a mammoth motel on a key remaining parcel of unwalled beach, despite a request from the planning agency to hold the land as a recreation outlet for some of the thousands of people who will be housed in the continuing flow of 15-units-per-acre condominium projects the city

has also approved. Here again, those who would like to control development at Tahoe have little, if any, leverage with the elected city council, which has historically split four-to-one in favor of local business interests. It would be well for the "let's-incorporate-to-save-the-area" faction on the north shore (Tahoe City to Kings Beach and Incline Village) to reconsider the wisdom of this move in light of what's happening at the other end of the lake.

A third factor holding up implementation of the plan is that Tahoe is off the beaten path for most prominent, public, political figures. With

the exception of John Tunney of California, the U.S. senators from the two states have been strangely silent about Tahoe, and Congressman Johnson (California) apparently has chosen to remain neutral in deference to the balance of development and preservationist interests in his district. Governors O'Callahan and Reagan have both voiced strong support for the agency and the adopted plan, but during this period when bold steps and leadership are sorely needed, little action is coming from the state capitols.

A final factor delaying implementation of the Tahoe plan is that neither

the press nor the national conservation organizations rank Tahoe very high on their priority lists. None of the San Francisco Bay Area newspapers do more than a minor paragraph a week on Tahoe, yet probably well over half the Tahoe population emanates from this area. Only the *Sacramento Bee* and the *Nevada State Journal* have a reporter regularly on the scene. Most of the national environmental groups have not been heard from since the spring of 1970, when the planning agency was inaugurated. The result has been that the public is generally uninformed about Tahoe matters.

There is still time to purchase many of the key parcels of land recommended by the Tahoe Regional Planning Agency. But time is running out for much of this land for lack of interest or financial support from the governments and agencies in a position to do something. The parcels that should be purchased *now* include:

- Kings Beach—a beautiful sandy beach in the planned, major population center on the north shore. The beach has been slated to become a public beach for years, but a developer now has an option on it.

- The proposed Dollar State Park—a combination of parcels extending from the lake near Star Harbor up Burton Creek and across a broad plateau to the foot of Mt. Watson behind Tahoe City. The area was shown as a proposed park on a State of California planning map in 1965, but development interests financed by the Firestone Tire and Rubber Company are now preparing a plan for a key part of the Dollar property.

- The Truckee River—the outlet of Lake Tahoe. The planning agency has classified the banks of the Truckee as recreational, but most of the Placer County supervisors—as well as commercial interests—would prefer to see this land developed. Placer County and the State of California had an opportunity in 1971 to save the outlet of the Truckee, but did not. Now, a fenced tennis court sits only 25 feet from this once beautiful spot.

- Ward Valley—a broad graceful valley rising in a bowl to the Sierra crest on the west and opening out to the blue of Lake Tahoe and the mountains of Nevada to the east. Ward Valley is everything Squaw Valley once was, despite the 297 lots along one of Ward's outer flanks. The only

thing that so far has kept the valley from subdivision is that the first developer to get all the pieces together went bankrupt before he could implement his dream. Now the Southern Pacific and Dillingham corporations have teamed up to build 100 units in the valley. Close behind them will come the owners of the 480 acres on the valley floor who are determined to build on every one of their zoned 1,863 units.

- Blackwood Creek, Eagle Rock, McKinney Creek, Meeks Bay, and Cascade Lake—vital areas on the west side of Tahoe that need to be tied up for eventual public ownership. While there are no immediate development pressures on these parcels, the price only gets higher as time passes. The Forest Service has been toying with Southern Pacific's checkerboard ownership in Blackwood Canyon for years, but has taken no firm action. Nor has it yet fulfilled its promise to purchase Meeks Bay from the League to Save Lake Tahoe, which bought the land two years ago to keep it and the entire west shore from the weight of 1,900 condominiums. Cascade Lake and its environs have been well cared for and only lightly touched by the present owners, but they may not always be there either.

- Upper Truckee River—an area comprising almost 1,000 acres that is one of the few remaining excellent wildlife habitat areas in the Tahoe Basin. A development project totaling 2,868 residential units was approved for this area by El Dorado County in 1971, but was denied by the planning agency in late 1972. Unless El Dorado and other layers of government (or one of the national wildlife societies) act soon, this unique, wetland area will be lost.

- Marla Bay and Zephyr Cove—located in Douglas County, Nevada, these parcels have prime lakeside recreational-use potential. The county currently has agency land-use classifications that allow a maximum population of 40,000 people. There are roughly 9,000 now. Last summer the Kaiser-Aetna land development company bought 20 acres on Marla Bay and was able to get its project approved despite strong opposition to the urban-like density of the design.

- Glenbrook—a serene historic place that deserves to be protected from all development, either public or private. Public ownership is no panacea, particularly for an area like Glenwood

where overuse even by an appreciative public would destroy the quiet beauty of the place. Perhaps Glenwood deserves a new, more creative approach to land preservation than we have yet discovered. In any case, steps should be taken to preserve the area before the inevitable march of property taxes and time destroy the opportunity.

- King's Castle at Incline Village—a grotesque monument to bad taste, an artifact left over from those careless days in the sixties when so much of Tahoe was destroyed for commercial reasons. This one-time pleasure spa turned premature ruin provides a marvelous philanthropic opportunity for a well-meaning wrecking company who could purchase it from the Teamsters Union and reduce it to rubble.

Though the Tahoe Regional Planning Agency has a fairly tight regional plan, this plan needs to be strengthened, particularly with regard to population densities allowed. At present, not even the basic plan is being implemented by the responsible counties, states, and federal agencies. A kind of paralysis exists because non-voting property owners cannot take direct action at the polls, because prominent public figures are looking the other way, and because the press and most national conservation groups are not tuned in to the action.

Unless the simple acquisition program outlined above can be achieved in the coming months, what hope is there for really imaginative action to save this national treasure for future generations? As the issue stands today, there is the risk that the future values of Tahoe will slip into the cracks between the overlapping and sometimes bickering jurisdictions before a finally aroused public will demand dramatic and decisive action to reverse the population and development trends.

Even now a Sierra Club task force is hammering out the outlines of a plan for Tahoe through the end of this century, a plan that will probably go much further in its recommendations than does the present regional plan. Yet right now we need not only a plan, whether an old one or a new one, but some substantial action that proves that the public is serious in its intent to save Tahoe. This action can come in the form of public demand that we buy these few key parcels of Tahoe basin property right now.

The Doubtful Future of Galveston Bay

JAMES NOEL SMITH

AS I GREW UP in a small community in the western Rockies, remote in those days from the reach of the TV transmitter, one of my chief amusements was pouring over maps and fantasizing about visits to places that seemed, from name and location, full of natural wonderment, romance, and adventure. In these cartographic wanderings, one place that held my fascination was Galveston Bay. Hard by the Gulf of Mexico, it appeared in my mind's eye as a tropical paradise of azure water, sparkling sands, and palm-rimmed shores, lush with exotic plant and fish life.

Some 20 years later, a little wiser in the essentials of climate and geography and with a mind relieved of some of its wilder romantic illusions, I finally made it to Galveston Bay.

Knowing something of the natural circumstances of the bay and the conditions threatening its survival, I didn't really expect to find my boyhood idyll. Even so, I was quite unprepared for the unassuming appearance of that magnificent estuary. Spread over 533 square miles of the flat, alluvial surface of southeast Texas, Galveston Bay, which is really four distinct bay areas—Galveston, Trinity, East Bay, and West Bay—is the largest estuary on the Texas coast. With a depth that seldom exceeds ten feet, flat untimbered shorelines, and a color, in most places, strongly reminiscent of *café au lait*, it lacks eye-catching appeal. Consequently, the casual visitor is not likely to leave his heart there or to even consider it, on visual evidence alone, a resource worth much consideration.

But to those who know the bay and who understand the vital role played by estuaries in the ecologies of both marine and terrestrial environments, Galveston Bay is a place of enormous natural value. Its marshy shores and murky waters may not be attractive to many people, but they attract enormous numbers of birds all year round. Shorebirds, herons and egrets, ducks and geese—they depend on the teeming marine life of Galveston Bay. Thousands of waterfowl winter in

the area each year, returning to the northern states and Canada in the spring, so that decisions affecting the future of Galveston Bay will have repercussions on ecosystems as far away as the Canadian Arctic. So too, the marine nurseries of Galveston Bay provide the basic link in a food chain that finally ends with whales, seals, and the other major predators of the sea. Whether of land or sea, literally thousands of organisms, from mites and microbes to peregrine falcons and sperm whales, ultimately depend on coastal estuaries for survival. Thus man's interest in Galveston Bay lies not merely in its recreational value or in its \$190-million annual sport and commercial fishing industry, but in that he too is a part of the living chain that begins there.

One might think, then, that such an important, even crucial, resource would get better treatment than it does. Yet, instead of being carefully protected and nurtured for its environmental and economic values, Galveston Bay has been fair game for the polluter and the developer. Like many of our other coastal estuarine areas, the bay has become a dumping ground for the sewage of cities and industries, the happy hunting ground for private entrepreneurs and public agencies intent upon dredging, fill-



ing, and altering its natural courses and contours to facilitate commerce and aggrandize real estate values.

Municipal and industrial pollution is threatening the existence of the bay's old and thriving shellfish industry. About one-half to two-thirds of the Galveston Bay estuary has been closed to the harvesting of shellfish for at least 20 years because of bacterial pollution from raw, unchlorinated sewage. In 1971, the Environmental Protection Agency recommended that consideration be given to totally closing the bay to shellfishing because of the possible damage to human health from bacteriological pollution and from concentrations of oil and hydrocarbon residues in oysters taken even from so-called approved areas. Oysters, the federal agency claimed, had been found in unrestricted parts of the bay with oil and hydrocarbon residues ranging from 23 to 26 parts per million. Such concentrations, EPA pointed out, were two to six times greater than those found in oysters in West Falmouth, Massachusetts, where the beds were closed for over a year following a 1969 oil spill.

In addition to the danger that such pollution presents to human health, the ecological survival of the bay itself is seriously threatened. Raw or inadequately treated sewage and industrial wastes place an excessive biochemical oxygen demand (BOD) on the estuary, depleting the dissolved oxygen in the water and killing fish and other marine life. Tests run by EPA found that the BOD in the infamously polluted Houston Ship Channel, which empties into the bay, often exceeds by twice the amount of loading permitted under the Texas water-quality specifications. As a result, fish kills are common. There is evidence, too, that the low oxygen content of the waters may be affecting the fish genetically. In recent years, fish have been taken from the upper bay with apparent physical deformities, including misshapen dorsal fins and sight-destroying calcified formations over the eyes.

Most of the problems that beset the bay really begin some 25 miles above on a stream called Buffalo Bayou. Rising west of Houston and flowing through the downtown area and on to Galveston Bay, this body of water—scraped and straightened into the 52-mile Houston Ship Channel by the

Corps of Engineers—has really put Houston on the map. Thanks in large part to the contrived navigability of this stream, Houston is one of the refining, manufacturing, and shipping capitals of the world—the third largest port in the United States (surpassed only by New York and New Orleans).

But Buffalo Bayou, *cum* the Houston Ship Channel, has been more than just a cheap and convenient conveyor of transport for Houston's industrial products. It has been an equally cheap and accessible receptacle for the disposal of wastes. Houston's municipal sewage-treatment facilities, like those of many cities, are not what they should be. Much of the waste the city should be treating ends up in Buffalo Bayou, either raw or only partially treated.

In 1967, Dr. Joseph L. Melnick of the Baylor University Medical School, an expert on virology and epidemiology, tested the bayou water and found in it a whole array of bacteria and viruses, ranging from those that cause the common cold to those causing encephalitis and meningitis. At Main Street, Houston, he found that bayou water carried enough viruses to infect 77 million people every hour. Today, the situation isn't markedly improved, although the City of Houston has at least begun to chlorinate its raw sewage before dumping quantities of it, otherwise untreated, into the bayou.

There are about 100 industries along the ship channel that also dump their wastes into its waters, as do the thousands of ships that have brought prosperity to Houston. As a result, the channel carries an astonishing load of chemical, mineral, and organic properties so concentrated, in some locations, that the water has become completely anaerobic. The impact this pollution has on the bay is disastrous, especially when heavy rains, common in Gulf Coast areas, flush out the channel and carry its toxic load to the bay.

Until very recently, federal and state pollution-control and enforcement efforts to bring the City of Houston and the industries along the ship channel into compliance with water-pollution control laws have been a sad parody on how the nation's water-pollution control program works. The tangle of jurisdictional responsibilities comprising the pollution-control program, and the bureaucratic timidity with which they are applied provide

an excellent, if somewhat depressing, profile of America's struggle to restore the quality of its water. Yet, if the federal pollution fighters' presence in the bay area has been reluctant and dilatory, not so the federal government's all-purpose water development agency—the Army Corps of Engineers.

Regional folklore to the contrary, the rapid growth of Houston has not been purely the result of local resources, energy, and ingenuity. Much of the phenomenal growth and development of the Houston area can be attributed to the work of Uncle Sam in the form of the Corps of Engineers. The corps has been active in the area for close to a century. Its navigation program has made Houston a port city, and its flood-control work has stabilized the flood-prone lands on which the metropolis spreads.

Over the years, the corps has spent over \$288 million on public works in the Houston-Galveston area. The major portion of this, \$250 million, has come as a direct contribution from the federal Treasury—a subsidy, in effect, to the economy of the area. Most of the money has been devoted to construction of ship channel facilities within the bay and its estuarine area. About 290 miles of facilities have been built (and maintained) by the corps. The largest and most costly of these is the Houston Ship Channel itself, which has done so much to facilitate the growth and development of the City of Houston from a community of a little over 50,000 in 1915, the year the ship channel opened, to a metropolis of nearly two million in 1970. (An interesting sidelight on how the corps serves as handmaiden to industry is the annual cost it incurs in dredging out the ship channel. Nearly \$3 million is spent each year by the corps just to keep the channel from getting clogged up with the sludge of industrial and municipal origin which has sunk to the bottom.)

Next to advancing navigation in the interests of commerce and industry, the corps turns its considerable resources of money and engineering skill toward the protection of land from periodic flooding. Here, again, the corps' operation in the Houston-Galveston area has been an active one. Approximately \$110 million has been spent by the corps in the construction of flood-control projects in the eight-county Houston-Galveston area, and still another \$56 million in flood-



The Houston Ship Channel is an industrial sewer fouling Galveston Bay.

control work has been authorized by Congress.

A lot of this money—both spent and authorized—has been dedicated to channelization work. Structurally, channelization amounts to little more than the transformation of meandering streams into concrete-lined sluiceways. The engineering objective is to move the flood waters as expeditiously as possible to larger receiving waters—in this case, Galveston Bay—in order to “protect” lands that would otherwise be prone to flooding.

Devised originally with a fundamentally humanitarian interest in preventing the disasters periodically visited upon the populations of low-lying areas, federal flood control has evolved over the years into a rather handsome subsidy to landowners. By stabilizing a floodplain against occasional dousing, the corps also stabilizes the investment of the land speculator and opens the way to major real estate development. The landowner and the real estate developer (not infrequently

the same party) can thereby turn a tidy profit with a generous assist from Uncle Sam.

Yet even without industrial and municipal pollution from Houston and the ship channel, the ecology of Galveston Bay would still be endangered. Private development and public-works projects—some under way and others still in the planning stage—will, if accomplished, destroy most of the tidal estuary and completely alter the ecology of the bay. Prospects for the future growth and development of the area look toward filling the wetlands around the edge of the bay, bulkheading the shoreline, inhibiting the tidal flow from the gulf into the bay, channelizing the remaining unstraightened streambeds, building a navigational channel from the bay to Dallas-Fort Worth, increasing the overall temperature of the bay by several degrees through thermal enhancement, and reducing the flow of fresh water into the bay by several million acre-feet per year.

Thermal pollution from new electric plants will significantly raise water temperatures in portions of the bay. One of these plants, a six-unit, 5,000-megawatt installation of the Houston Lighting and Power Company, is already under construction on Trinity Bay in the northern portion of Galveston Bay. The project, with three units completed, has been a major source of contention between EPA and the state. EPA has claimed that the plant would raise the temperature of a large portion of Trinity Bay, increase salinity, and release polluted water into a relatively clean portion of the bay. The state, which has already licensed the project, has claimed environmental impact would be inconsequential. In January of this year, EPA won a consent decree from the U.S. Court that will effectively enjoin the power company from building the additional three units.

Other industrial sites are planned for the shores of the bay. The Army Corps of Engineers, under its Alpha

Plan, would stabilize lands along the bay perimeter against hurricane flooding by constructing a series of dikes and levees at a cost of about \$600 million, which would have the effect of cutting off much of the natural tidal flow from the Gulf of Mexico, with the probable result of turning the bay into a fresh-water lake.

Up the Trinity River, another project already under way could be one of the most disastrous of all for the bay's ecology. Fort Worth and Dallas want to be seaports like Houston is, and the Corps of Engineers and Congress have decided to help them. The Trinity River, which flows from Fort Worth south to Galveston Bay, is to be converted to a 370-mile channel, a proposal only slightly less outlandish than the Navy's onetime plan to wire Wisconsin for sound. Environmentalists rightly assert that this project, authorized by Congress in 1962 at a cost of \$911 million, would turn the Trinity River into a 370-mile version of the Houston Ship Channel and fill Galveston Bay with enormous new loads of pollution. The first portion of the project, the Wallisville Dam, is already under construction. It will inundate prime marshlands and slow the flow of the Trinity, the principal source of fresh water entering the bay, thus increasing salinity and possibly eradicating the bay's highly productive marine nursery. The state itself estimates that the project will mean a loss in commercial salt-water fish

catch of over seven million pounds per year.

Still in the wings, ready to emerge when the political climate seems propitious, is the super-spectacular, multibillion-dollar proposed irrigation project put together by the Texas Water Development Board and the U.S. Bureau of Reclamation. The effects of this project (called the Texas Water Plan) on the bays of Texas are not fully comprehended, but the overall impact would be a drastic reduction in the flow of fresh water into major coastal bays and estuaries.

So, even if the Houston Ship Channel were to be turned into a pristine stream, the environmental health of Galveston Bay would still be severely threatened. The problem is that a great sector of economic and political interests in the area, the state, and to some extent the nation find little immediate value in sustaining a healthy and productive estuarine system. In the short run, the bay's deterioration is a direct benefit to many, but its protection is a recognizable value to relatively few. And these few, for various reasons, have not been heard frequently in the halls of influence and power in Houston, Austin, or Washington.

Yet recent incidents of organized citizen resistance to public-works development projects affecting the bay are hopeful harbingers. A coalition of environmentalists and property owners successfully held off the corps'

plan to channelize a remaining natural stretch of Buffalo Bayou. On another front, environmentalists, sportsmen, and shrimp-fishing interests have joined in a suit to halt construction of the Wallisville Dam on the grounds that its full environmental effects have not been assessed. Since the dam project has a multitude of purposes, including the assurance of water supply to Houston industry and the advancement of the Trinity River navigation scheme, the group, by entering the suit, has taken on some of the strongest interests in the state—the corps, the City of Houston, the Trinity River Basin Authority, and the commercial-industrial interests of Houston, Dallas, and Fort Worth.

These signs of citizen initiative, coupled with recent promising signs that EPA, armed now with stronger and more effective federal water-pollution control laws, is ready to "get tough" with the state and the municipal and corporate polluters of the area, give reason for some hope. They are indicators, however faint or unstable, that this great estuarine resource—Galveston Bay—may not ultimately succumb to the voracious appetite of America's quest for growth and development, regardless of the environmental costs and consequences.

James Noel Smith is a senior associate of the Conservation Foundation and was director of the foundation's recently completed study, The Decline of Galveston Bay.

Limits to Growth (Continued)

form of "the extension of public control far beyond anything yet experienced anywhere in the West, socialist or capitalist." Thus, in addition to determining the nature and quantity of industrial and agricultural output, government would also enter areas formerly considered the private domain of the citizen—his consumption habits, his personal tastes, his reproductive desires, and so forth. Ecological control could be realized, in short, only by "a vast increase in the scope and penetration of regulatory authority designed to enforce at the micro level the necessary zero-growth behavior on which our collective safety will depend on the macro level."

With Heilbroner, "The Domsday Syndrome" thus acquires an additional dimension.

It is true that the MIT scientists do not make explicit the means by which their recommended policies are to be imposed on society. They are not, however, unaware of the problem. Systems analysis, in fact, contains methodological assumptions (clues) which implicitly indicate the directions social engineering should take. Diagnosis, prognosis, and medication are also *interdependent* variables. The authors quote biologist Garrett Hardin's definition of side effects as "effects which I hadn't foreseen and don't want to think about." Such side effects are actually inseparable from immediately discernible effects and "should not be labeled *side* effects at all." What is essential is that one should begin to think about them. Side effects may be computer-resistant, interdependent variables unsuited

to quantification and difficult to incorporate into a model, but "these side effects are often the most important in terms of the influence of a technology on people's lives."

As an historian, I am a traditionalist who has retained respect for the wisdom of the past—much of which has relevance for both the present and the future. Modern liberals suffer from too much reverence for contemporaneity. In 1922, R. H. Tawney wrote, "Between the attitude which appeals to a religious standard to repress economic appetites, and that which regards expediency as the final criterion—there is a chasm which no theory of the permanence and ubiquity of economic interests can bridge." Tawney was tracing the silent and unmistakable way in which Christian ethics was being replaced through the cen-

tures following the waning of the Middle Ages by a secularized, naturalistic morality—a morality which in contemporary society has perhaps reached its apex. This observation should not be regarded as a plea for a return to religion, but as a reminder that the growth of civilization was identical with the growth of an ethical system, as well as with the growth of technological power, and that any politico-economic order that tolerates a silent conspiracy between producers incited by the profit motive alone and socially irresponsible consumers gratifying infantile desires will ultimately send mankind on a return flight to the Stone Age.

Professor Graham Wallas, another "outmoded" sociologist, demonstrated that civilization depended less on the transmission of physical qualities than on "a complex structure of habits, knowledge, and beliefs, the destruction of which would be followed by the death of half the human race." Furthermore, Thomas Henry Huxley pointed out that an altruistic ethical system was consistent with the theory of evolution, that it was a part of human history. Despite constant reminders from institutional economists like Mills, Marx, Weber, Sombart, Veblen, and others, "objective" materialists have tended to ignore or deny these facts in favor of some bastardized Darwinian theory of society according to which all imbalances are expected to right themselves. Equally absurd are arguments advanced by lugubrious humanitarians who believe unrestricted growth to be nature's way of providing every human being on the face of the earth with the standard of living of suburban Americans—with no unpleasant side effects. John Maynard Keynes' advocacy of the application of science, technology, and government to achieving the optimum in civilized (as distinct from gluttonous) living is a social aspiration that has also been ignored.

Keynes was no totalitarian. With respect to the nature and function of the state, terms such as *liberal*, *conservative*, and *radical* have become barren. Whether we love or loathe Hobbes' *Leviathan* is irrelevant. Government is the only instrument in the contemporary world by which problems common to all nations, classes, and peoples can be resolved. While we should never cease to be suspicious of governmental power, we should

remember the distinction between *gubernaculum* and *jurisdictio*. The former acknowledges authority; the latter defines the limits of that authority. *Jurisdictio* is the sphere within which power can be legitimately exercised. No matter how many powers are granted to government, there remain things government cannot do. Government is the servant, not the master of the citizenry. So long as this theory remains in practice, constitutional government continues to survive even if powers are extended into areas heretofore conceivable only in political nightmares.

An old Chinese proverb defines freedom as living in a prison equidistant from all walls. If the prevailing social ethic coincides with governmental legislation, no real sense of oppression will be felt by society at large. The social ethic necessary to environmental preservation is not yet sufficiently vigorous. The average citizen feels he has a right to acquire and operate whatever environmentally destructive monstrosity his purchasing power will allow. "For example," Heilbroner asks, "how many of the 100-odd signers of the *Blueprint* and the *Limits* have sold their automobiles or never taken a taxi? I wonder how many have dispensed with all unnecessary gadgets in their homes, use both sides of the page when they type a manuscript, flush their toilets but once a day, and generally conduct themselves with the Spartan restraint integral to a program of economic limitations such as they urge?"

Heilbroner's questions could have been more prudently selected, but the grim point they make justifies his apprehensiveness: "I do not feel it so easy to be sanguine with respect to our near-term ability to bring about the needed social and institutional changes." Nevertheless, the effort must be made to create a social ethic that will serve as a foundation for the society of the future. This cannot be done by decree. Crusades for moral rearmament are always horrifying to cultivated minds. Spare us such movements as "Strength Through Joy" and the antics of anti-saloon leaguers. But perhaps the growing awareness of the gravity of the predicament of mankind is already a symptom that a tempered ethical revolution is in the making. Many intellectuals and articulate sectors of the youthful generation are demonstrating active concern for the

environment. Such alarm is healthy. The contention of John Maddox that "too much preoccupation with the threat of distant calamity [will] divert attention from good works that might be done" is nonsense. No sane person concerned with limited growth argues that the struggle against poverty and disease and for "freedom" in Calcutta should be abandoned. But stamping out a cigarette in a burning forest probably contributes very little to conservation.

In summation, this article has attempted to assess the major arguments raised by *Limits to Growth* and to place the issues in a larger context than one confined to technology and methodology. The following conclusions seem clear:

- The MIT scholars' diagnosis of the problem confronting man in a world dominated by uncontrolled exponential growth remains considerably more convincing than the reassuring counter-claims of their critics. No substantial case was made against their methods or results.

- If the malignant consequences of uncontrolled growth are to be avoided, it must be through decisive common action. Appropriate legislation can be enacted within the framework of the constitutional process without threatening the individual's right to life, liberty, and pursuit of happiness so much as it would be threatened by leaving him a victim of his own unrestricted appetites.

- Legislation must be supported by informed, enlightened, active public morality. Public morality, however, is a variable that should be left to natural forces. Shaping the value system of society is the task of educators, writers, artists, and all individuals with sufficient initiative to exercise the freedom to think and express themselves.

The economic order should be subordinate to the political order, and the political order should be subordinate to the moral order. The moral order should be a product of reason and experience. The State is a moral institution. It is not a law unto itself, transcending the ethical principles which, in theory, govern the conduct of individuals. Machiavelli was wrong. Of course, he was talking about the *is*. We are talking about the *ought*. And that is the difference between naturalistic extinction and civilized survival.



Parson's Lodge: New Club Policy at Tuolumne Meadows

IN THE COURSE of its 80 years, the Sierra Club has acquired various properties, including wild lands, lodges, and wilderness huts and shelters. Some parcels of land have been received as gifts; others have been purchased in order to preserve them in their natural state. The various facilities serve as recreation centers for members and guests, as centers of mountaineering information, as emergency shelters, and as public service centers.

Among the better-known properties are the 160 acres in Yosemite National Park's Tuolumne Meadows. Located just west of the prominent Lembert Dome, the land was purchased by the Club in 1912, and the Parsons Memorial Lodge was built on it in 1915. Since then, it has served as a campground and meeting place for Club members and their families and as an emergency shelter when needed. In 1971, this facility was given by the Sierra Club to the Sierra Club Foundation.

When the Club purchased this property, it was one of the remaining parcels of privately owned land within the then young Yosemite National Park. The idea was to hold this property until the park service could acquire it, and then to use the proceeds of the sale to purchase yet another inholding, which would also even-

tually be sold to the park service. For various reasons, this arrangement did not work as planned.

In the past few years, however, growing problems connected with managing the campground, Parsons Lodge, and the nearby Soda Springs have made it clear that the original plan to sell the property to the National Park Service should be pursued. Neither the Club nor the Foundation are equipped or prepared to adequately meet the problems of running a campground within a public park, with all the problems—overuse, sanitation, policing—that attend such an operation.

Therefore, the board of trustees of the Sierra Club Foundation and officials of the National Park Service have agreed in principle to the early transfer of the Tuolumne Meadows property to the federal government and negotiations are active at this time. In accord with this, the superintendent of Yosemite National Park has expressed his willingness to assume responsibility for managing and policing the operation. The new policy will begin as of summer 1973. At this time, the precise conditions under which the park service will operate the campground are undetermined, but fees and related policies will most likely be comparable to those of other facilities in the area.

Southwest Report (Continued)

the landscape. Since such a barrier dam is highly improbable, what are the alternatives? The decision has been appealed and might be reversed. Congress might change the law as Senator Moss proposes. Most environmentalists hope that the decision will stand and that Congress will not tamper with the law. This would hold Lake Powell to a maximum elevation of 3,600 feet, about 100 feet below its maximum design elevation.

Although the legal question has focused on Rainbow Bridge, the consequences of Judge Ritter's decision are far more widespread. Considering the bridge alone, experts appear divided as to whether or not the presence of a reservoir lapping its foundations threatens the physical integrity of the bridge—but why take a chance? Everyone agrees that the fluctuating waters of Lake Powell would leave unsightly mudflats and a "bathtub ring" under the bridge when the lake is drawn down, as would frequently be the case. More importantly, the decision would save from a similar fate miles of side canyons containing some of the most unusual and spectacular scenery in the United States. It would prevent the flooding of a significant portion of the proposed Escalante Wilderness, the Dark Canyon Primitive Area, some major rapids in Cataract Canyon, and hundreds of other similar areas.

Because half of Lake Powell's storage capacity is in the top 100 feet—which cannot be used under the terms of the court order—opponents of the decision have argued that it would have disastrous effects on water and power users. While no doubt there will be some effect on these users, they are not so serious and widespread as many would have us believe. First, the additional storage capacity would not be needed to regulate the Colorado River if it weren't for a piece of paper known as the Colorado River Compact. Changing this compact to allow the upper basin states to have some storage rights in Lake Mead would virtually eliminate any adverse effects on water supply. One attorney specializing in water law said that "pigs will fly" before the compact is tampered with, but nevertheless, changing the compact must be considered a viable alternative.

Even if the compact were not changed, the decision would seriously affect only projects planned for the future, not existing water uses. It is not obvious that these planned projects are truly desirable or that they will ever be constructed. Limiting the level of Lake Powell as required by the court decision will also have the beneficial effect of reducing evaporation losses, which in turn will aid in solving the salinity problem that has been of serious concern, particularly in regard to our relations with Mexico.

Any diminished power production at Glen Canyon cannot be viewed as significantly contributing to an energy shortage.

The lost generating potential is very small compared to the power needs of the Southwest. The power production lost at Glen Canyon will in part be made up at Hoover Dam. Finally, this generating capacity cannot be counted on due to the erratic flow of the Colorado River. Just when the power is most needed, the river could be experiencing one of its many dry periods, and the power would not be available. On balance, Judge Ritter's decision appears not only to be following the letter of the law, but to have substantial benefits for all those concerned with the Southwest.

John McComb

Editorial (Continued)

of reducing Sierra Club strength and vitality would more likely stem from ignoring environmental threats to the human condition than from fighting them.

It is each member's right to know the names of the Executive Committee members

ANNUAL BANQUET

"We have come to the end of three billion years of evolution by natural selection— . . . we are now entering the era of evolution by human selection." Sounds interesting? Come and hear more from Dr. John Platt, the keynote speaker at The Sierra Club Annual Banquet, Saturday, May 5, at 7:30 p.m.

Dr. Platt, a member of the prestigious Club of Rome, is presently with The Center for Advanced Studies in the Behavioral Sciences, Stanford, California. All of us who are familiar with John Platt greatly look forward to having him as our banquet speaker.

The Annual Banquet, a feature of the yearly organization meeting of The Sierra Club Board of Directors will, by popular demand, again be held at the Empress of China Restaurant located at 838 Grant Avenue in San Francisco's Chinatown. The gourmet Chinese meal will be preceded by a no-host cocktail party starting at 6:00 p.m. All members and friends are cordially invited to attend.

Tickets for this year's banquet will cost \$7.50 per person. These will be on a first-come, first-served basis, so if you plan a group party (tables of ten will be available), it's advisable to get your reservations in early! No tickets will be sold at the door. Mail your check or money order to Sierra Club Annual Banquet, 1050 Mills Tower, 220 Bush St., San Francisco, CA. 94104, before Friday, April 27. In keeping with the usual policy, no refunds of ticket payments will be made after that date.

who unanimously carried the resolution in question: Laurence I. Moss, Raymond Sherwin, William Siri, Paul Swotek, and June Viviant.

We and our fellow members of the Board of Directors have been elected by and represent the collective voice of 140,000 of you. We cannot hope to reflect the individual thinking of each member on every issue (I know loyal, long-time members who do not agree with our Mineral King position). But it is your directors' responsibility to pursue our common goals with vigor and resourcefulness, to act with conviction against environmental degradation anywhere, to join with ad hoc allies in legitimate causes today, and to welcome their support for our programs tomorrow.

When the Sierra Club acts on behalf of health and safety in the workplace or against urban freeway expansion or for clean energy sources, we do not depart from our established priorities. Rather we extend our efforts to combat whatever insidious conditions may threaten the survival of natural beauty, wilderness, open space and the quality of life for all.

RAYMOND SHERWIN, President

Pipeline and Politics (Continued)

on state mineral royalties and revenues, and hence to the pipeline. Delay in the completion of a pipeline means a further reduction in the real value of that \$481 million.

If Congress could find a formula separating the settlement payments from the pipeline, the Natives, many of whom are fishermen, would take a hard look at the Valdez line. At Senate Interior Committee hearings in March on the right-of-way question, the president of the Alaska Federation of Natives asked Congress for protection of subsistence resources. (Last year a state unlimited-liability bill for oil spills, patterned along the lines of Washington's, was skillfully gutted by the oil lobby and its supporters, including a legislator mentioned as a potential Republican gubernatorial candidate next year.)

But it is extremely unlikely that the Egan administration and the national oil lobby would agree in Congress to a revised settlement untying the Native revenues from the Valdez pipeline, which could be built sooner than other routes. For the Natives could then evaluate the alternative routings primarily on environmental, economic, and social grounds.

Jack Hession

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