

Sierra Club Bulletin

\$1.00



April 1976

Project Seafarer
Success at Hells Canyon

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FOR 83 YEARS the Sierra Club has defended wilderness and the integrity of nature. To protect and conserve the natural resources of this planet; to preserve the quality of our environment; to restore what has already been needlessly spoiled: these are the ends toward which the Sierra Club applies its strength.

INFORMATION/EDUCATION. Through its books and periodicals, films and exhibits, the Club points out the challenge we dare not fail to meet: to formulate a sane and tenable relationship between the human race and the fragile world that sustains us. Sierra Club outings have taken on new meaning as lessons in "walking lightly" on our vulnerable land. Rock climbing, winter camping, ski touring, kayaking, scuba diving, mountaineering; Sierra Club classes, formal and informal, teach these and other skills. The themes are safety and respect for the land.

SERVICE TRIPS. Wilderness survey trips to endangered areas gather the data the Club must have to lobby for preservation. Trail maintenance trips and clean-up trips combine fun and service. "Inner City Outings" conducts first-time wilderness trips for the urban young. For some participants, these experiences may be the start of lifelong friendships with the land. We hope that all will come away with at least a little more awareness of what a gift the natural world is—and how greatly it deserves our care.

RESEARCH. The Club's office of environmental research surveys the work of experts in many countries and carries out its investigations in such fields as geology and forestry. This scientific back-up helps the Club define its policies and state its case to the public, to legislators, and to courts.

SIERRA CLUB LEGAL. In recent years the Club has found it increasingly necessary to turn to the courts to force compliance with environmental protection laws. This is the task of the Sierra Club Legal Defense Fund. Without this legal pressure, many of our best statutes would be empty pronouncements of good intent.

LOBBYING. The Club's essential work is to promote sound laws and policies and, more fundamentally, the climate of opinion that allows these laws and policies to succeed. The Club's small hired staff spends most of its time in this field. The real momentum, however, comes from thousands of active Club members offering uncountable thousands of hours of volunteer service, backed by the dues and contributions of the entire membership.

There is everything to be done, most of it at chapter and group levels: complex issues to study and understand, policy to debate, meetings and hearings to attend, news to spread, letters to compose.

In the search for solutions that are long-lasting, the Club must constantly communicate: with legislators, leaders in business, labor, minority groups, and many others. The lack of such contact could be crippling.

CONTRIBUTIONS TO THE SIERRA CLUB. The effort we make is costly, but the stakes are huge. Gifts made directly to the Club are applied largely toward lobbying efforts, and can no longer be deducted from the donor's taxes. If a deduction is important to you, we invite you to consider a gift to the Sierra Club Foundation, which funds educational, legal, scientific and literary projects. Consider also a bequest to the Sierra Club: such a gift is a strong personal statement, and a legacy that will live.

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Sierra Club



Sierra Club Bulletin

APRIL 1976 / VOLUME 61 / NUMBER 4



Cover: April traditionally inaugurates the season of flowers, and photographer Tom Myers helps us celebrate with this close-up of two widespread species of California wildflowers, Tidy Tips and Goldfield.

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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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Editorial correspondence should be addressed to Sierra Club Bulletin, 530 Bush St., San Francisco, CA 94108. Manuscripts must be submitted in duplicate and accompanied by a stamped, self-addressed envelope.

The Sierra Club Bulletin, published monthly, with combined issues for July-August and November-December, is the official magazine of the Sierra Club, 530 Bush St., San Francisco, California 94108, (415) 981-8634. Annual dues are \$15 (first year \$20) of which \$3.00 is for subscription to the Bulletin. (Non-member subscriptions: one year \$8.00; three years \$20; foreign \$10; single copy \$1.00) Second class postage paid at San Francisco, California and additional mailing offices. Copyright © 1976 by the Sierra Club. No part of the contents of this magazine may be reproduced by any means without the written consent of Sierra Club Bulletin.

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AMERICANS' ENDLESS MIG



PETER A. MORRISON

ABOUT THE time of the migratory excess known as the California Gold Rush, the superintendent of the 1850 census was moved to comment with some disapproval on "the roving tendency of our people." He attributed Americans' restlessness to "the peculiar condition of their country" and took comfort in his prediction that they would eventually settle down:

When men of scanty means cannot by a mere change of location acquire a homestead, the inhabitants of each State will become comparatively stationary; and our countrymen will exhibit that attachment to the homes of their childhood, the want of which is sometimes cited as an unfavorable trait in our national character.

History did not repay Superintendent Kennedy's confidence. Today citizens everywhere are again pondering the implications of our "roving tendency" which, combined with the nearly ten-fold increase in the population since the 1850 census, has produced some even more peculiar conditions than he could have imagined. The recent considerable decline in the nation's birth rate has been hailed as a salutary development, but it is not likely to ameliorate the kinds of troubles that shifts in migration patterns are now causing.

Americans' lack of attachment to the homes of their childhood has become more than ever before a matter of public concern, not because it is considered a weakness in the national character, but because it is an underlying source of conflict between environmental and economic interests in society. There is a dawning awareness throughout the country that people who migrate from one community to another are not only making adjustments in their own lives but also setting in motion economic and social readjustments that impinge on society as a whole, giving rise to numerous political issues nationally and locally.

Americans continue to migrate for reasons connected with the workings

George Rose

RATION

of the national economic and social systems. One characteristic of modern economies is the quick exploitation of newly developed resources or knowledge, a process that requires the abandonment of old enterprises along with development of the new. Such economies depend on migration to adjust the labor supply away from dwindling opportunities toward multiplying ones—ostensibly to the benefit of both migrant and employer. Thus, the way the population arranges and rearranges itself in space reflects the changing economic priorities of both the people and the nation. But today, economic efficiency by itself is recognized as a shortsighted criterion. Many of the advantages of population redistribution to the national economy—higher GNP, lower unemployment, ready exploitation of new technologies and resources, and so on—mean trouble for people and places at the local level.

Several new and quite remarkable trends in population movements may hold special significance for Sierra Club members concerned with the local environmental impact of national migration patterns.

An already highly urbanized nation, the United States continues to grow more urbanized—but the pattern has changed. Over the last few decades, developments in technology and economics—especially in transportation—along with rising affluence, fostered industrial decentralization and permitted large numbers of people to indulge their taste for detached single-family homes with yards. The ages-old pattern of migration from country to city shifted to movement from city to suburb (or metropolitan area to metropolitan area). These trends were bolstered by federal policies that were not meant to influence population distribution, but nevertheless did so to a powerful degree. National mortgage-insurance programs and tax laws encouraged

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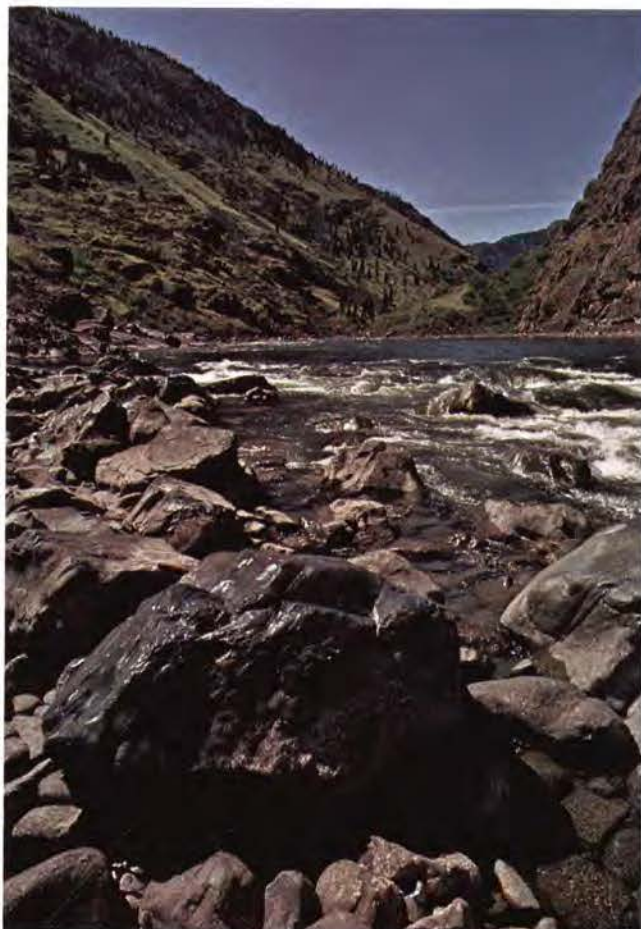
Tom Myers

SUCCESS AT HELLS CANYON

SO OFTEN IN THESE PAGES we must forego the pleasures of celebrating our environmental victories for the more urgent, if less enjoyable, task of alerting readers to critical problems requiring their immediate attention. Nevertheless, it is also important for members to realize that their efforts do bear fruit—occasionally, as in this case, a bumper crop. We have saved Hells Canyon, one of the deepest river gorges in America, from a series of dams that would have turned it into yet one more placid, muddy reservoir. It is appropriate that we pause long enough to savor this victory. It is a big one.

On December 31, 1975, President Ford signed into law a bill creating a 662,000-acre Hells Canyon National Recreation Area, on the Oregon-Idaho border embracing the famous gorge of the Snake River and the surrounding wild country. We did not accomplish this feat overnight, or by ourselves. It required a tremendous outpouring of devotion and energy on the part of thousands of dedicated people in the Northwest and, indeed, across the nation. Though the name "Hells Canyon" has become widely known now, the place itself is still unfamiliar to most people. I believe when people come to know the place and understand what was at stake here, the Hells Canyon victory will be recognized as one of the greatest in the history of American environmentalism.

Although the battle began twenty years ago, when a combine of private power companies applied to the Federal Power Commission (FPC) for a license to build dams in Hells Canyon, the only issue for many years was *which* dam to build. It was not until



David Sumner

1967, after the case had gone all the way to the Supreme Court, that Justice William O. Douglas issued the decision giving environmentalists a new chance to prevent the damming of the canyon. He wrote: "The commission must hold more hearings on the subject of *whether* any dams should be built at all, not just on which one."

I had just come on the job as the Sierra Club's Northwest Representative. Idaho was still an unfamiliar part of my territory, but I had heard about Hells Canyon, so I wrote the FPC a letter: "Now that you are taking more evidence, can the Sierra Club also intervene in the case?" A reluctant "yes" came back a month or so later.

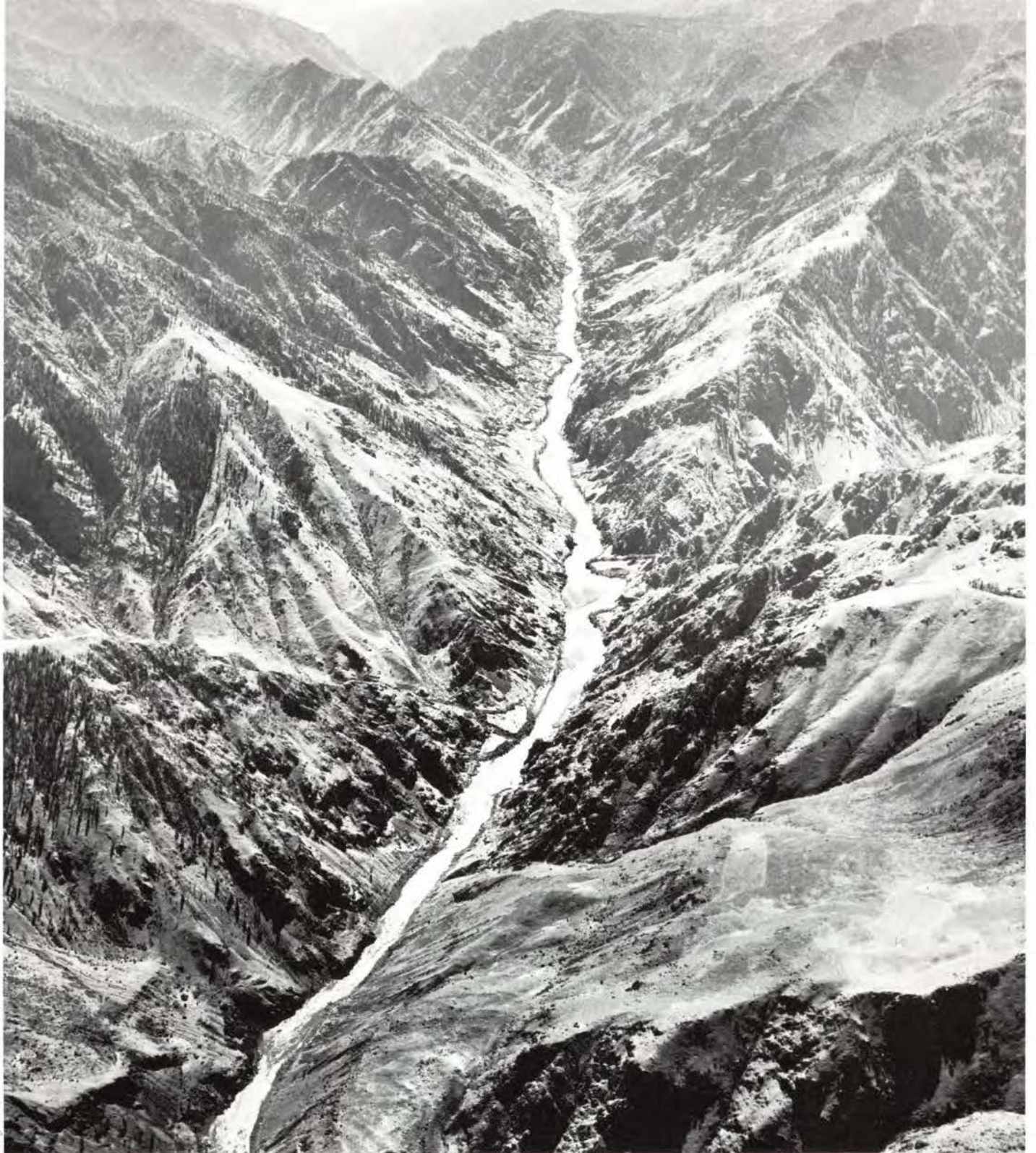
There was not much time: it was already August, and the deadline for

intervention was September first. I went into the law library and prepared what seemed like an appropriate petition of intervention. This was one of the first legal actions the club was ever involved in, and it was necessary to secure approval from board members who were scattered about the country. Finally, on the night of August 31, all the papers were assembled, rushed to the Seattle airport and mailed special delivery to Washington. Our intervention was greeted with contempt and disbelief by the power companies, who viewed environmentalists as mere fly-specks to be brushed away while perfunctory hearings were held according to the Supreme Court directive.

But subsequent events did not quite turn out that way. The new proceeding went on for about three years, and the club and others amassed an enormous amount of information about the beauty, wildness, wildlife and archaeological value of the unspoiled

canyon of the free-flowing Snake River. The time gained was precious because we all knew that eventually the preservation of Hells Canyon would require congressional action. We could not look to the FPC to protect the river; the agency's business was licensing dams.

At the same time that we were involved in the FPC hearings, we were in the process of drafting legislation to protect Hells Canyon, going from town to town throughout the Northwest, organizing, gathering together under one banner the old warriors of former conservation campaigns, as well as a host of new volunteers who were part of the rising tide of the environmental movement in the late sixties. We won our first major po-



Ray Arkeson

*Petroglyph near Pittsburgh Landing,
Hells Canyon.*

litical victory in 1970, when Idaho elected Cecil Andrus, an environmentalist governor who favored saving Hells Canyon. This single event completely changed the political picture in that state, breaking the utility companies' stranglehold.

A second big break came when a freshman Republican senator from Oregon, Robert Packwood, took up

the cause. Thanks largely to his efforts, we succeeded in getting Hells Canyon legislation introduced in Congress. The first hearings were held in 1971. The political climate was not yet quite right for victory, but gradually, because of the efforts of many environmentalists in the Northwest, it was shifting in our favor.

Gradually the national media began



David Sumner

to pick up the issue, and other organizations joined with us. By 1973, all the senators from the states in the area had announced their support for saving the canyon. We had come a long way from that first round of hearings in Lewiston, Idaho, when the fate of the canyon hung by the slenderest of threads.

Another break came when Oregon Congressman Al Ulmann, a power in the House of Representatives, announced his support for stopping the dams. With Ulmann on our side, we had a real chance to succeed in the House, just as our good chances of success in the Senate were due primarily to the efforts of Senators Church and McClure from Idaho and Packwood and Hatfield from Oregon.

During the next two years, 1974 and 1975, the bill to save Hells Canyon wound its tortuous course through the legislative maze. After some compromises, it passed the Senate in 1974, and though it almost made it through the House, its strength faded late in the year thanks to the delaying tactics of Congressman Craig Hosmer (R-California).

Licking our wounds, we gathered our forces for a new attempt, returning in January 1975 with a new bill for the House. In my opinion, the victory was decided then, for we succeeded in getting a majority of the



Ray Atkeson

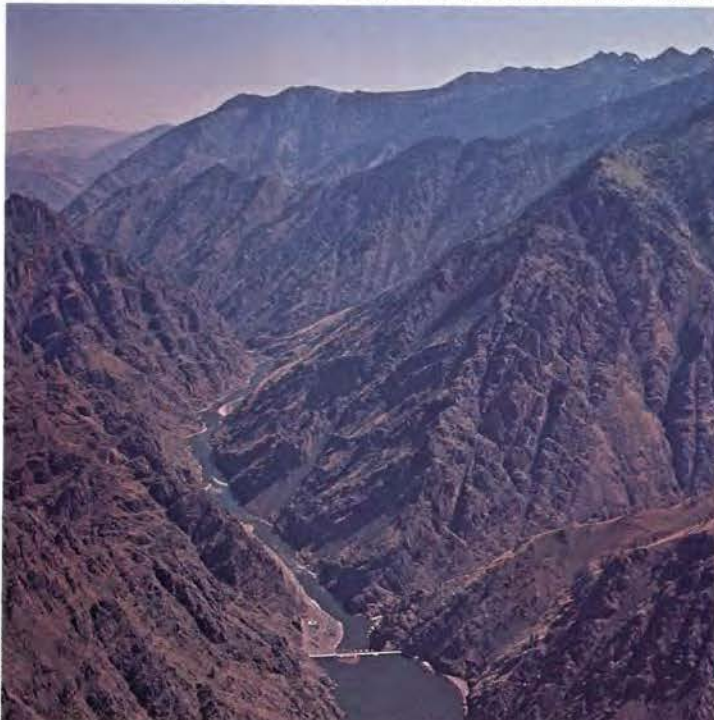
House Interior Committee to cosponsor the bill. The utilities, caught off guard by this tactic, struck back, but the political forces had become too overwhelming. All the governors and senators and most of the congressmen from the states involved now strongly supported the bill. Despite many frustrating delays, the House Interior

Committee, skillfully guided by Congressman Lloyd Meeds of Washington, sent the bill to the full House last November. It passed on November 18.

Now it was up to the President. The utilities made a last-ditch effort to get him to veto the bill, but thanks to the timely intervention of some Republican senators, President Ford refused and gave us the signed bill as a New Year's present on December 31.

Some day I want to return to Hells Canyon, to lie beside the river and listen to its music, to feel the breeze and watch the grand play of light and form, rock upon rock down the gorge, to watch eagles wheel and arc high above the rim. I may wander up one of the side valleys high into the alpine country far above the river and stroll among the flowers and quiet forests and great peaks. And I will remember, with deep joy, that the canyon is safe now, safe forever, because enough people loved and cared enough to rush into the breach and turn a lost cause into a stunning victory. This new recreation area is one of the gifts we now leave to future generations. When more Americans come to know Hells Canyon, they will realize that it is one of the most beautiful victories environmentalists have ever enjoyed.

The Hells Canyon Dam, Snake River, at the upstream end of the canyon.



Ray Atkeson

Brock Evans is director of the Sierra Club's Washington office.

Whither the Tropical Rainforest?

LAWRENCE S. HAMILTON

WHILE THE picture is not absolutely clear, it appears that north of the Orinoco River, Venezuela has lost roughly one-third of its tropical rainforest in the past twenty-five years. Moreover, the rate of disappearance is accelerating. This information comes from a study recently carried out by the Sierra Club through its International Environment Office under a contract with the United Nations Environment Programme and with the cooperation of the Venezuelan government.

South of the Orinoco, vast areas of primary, untouched rainforest remain protected in part by their inaccessibility. But roads are being pushed into this region and frontier settlements are being established "to fill in the blank spaces on the map" and "to open up the jungle." Similar developments are occurring throughout the tropical world. The activities bring with them the slash-and-burn, unstable cropping system which can, on many sites, initiate a chain reaction of degradation following which tropical rainforest may never return to the area (or only after the lapse of centuries). On other sites selected by land-capability surveys, clearing of rainforest is necessary for grazing and cropping, as part of economic development, and some forest must be lost. But there are far too many instances of clearing the wrong sites, not only in Venezuela but throughout the tropical world. Clearing for agriculture is not the only reason this exuberant and magnificent forest biome is disappearing. Wood-hungry developed countries are exploiting it as a vast, scarcely tapped storehouse of timber and wood fibre. Global monitoring carried out by the Food and Agriculture Organization of the UN will soon give us a picture of how fast the tropical rainforest is regressing, but meanwhile FAO estimates that in South America, only about thirty-six percent of what was originally moist forest exists today.

The Sierra Club project has provided specific information on the regression of rainforest for one large region (the Western High Llanos) of one country. Moreover, it has identified the causes of this unfortunate loss and suggested ways of developing a sound conservation program in Venezuela, which might in turn

provide leadership not only for Latin America but for the tropical world in general.

The tropical rainforests have many values which are realized locally, nationally and internationally. Their conservation should be of concern to all people,

including Sierra Club members. A few of these values may be briefly described.

The tropical rainforests of the world are the richest and most exuberant expression of life on land. They have developed over millennia in a relatively nonstressful environment in which tem-



Above: Rainforest in eastern Venezuela; below: Former rainforest.



Photos by Lawrence S. Hamilton

perature and moisture fluctuations are the smallest of anywhere on earth where plants grow—except in the oceans and in some caves. As a consequence, large numbers of very unusual species of plants and animals have evolved in these ecosystems. They are in a very real sense our richest gene pool, literally the genetic cradle of evolution. For instance, of trees alone there may be fifty to 200 species per hectare in a primary tropical rainforest, compared to twenty per hectare in a rich temperate forest. This diversity in itself can be a liability, since it means that on any given area (say ten hectares), there are few individuals of any one species. Thus, heavy exploitation of any one species (or a few) can lead to local extinction because many species have heavy seeds that do not colonize areas far removed from the parent tree. The seed in most cases also has short-term viability. Primary rainforest species are not aggressive in general, and are therefore quite vulnerable to disturbance. Pockets of endemism (a plant or animal species limited in distribution to a small region) are common. Thus, destruction of rainforest can cause rarity or even extinction of species because of their diversity and limited distribution characteristics. It is important to note that not all tropical rainforests

show this amazing species diversity, for there are special soil or flood conditions where species are reduced to a relatively few. This is more the exception than the rule and, in general, the world's tropical rainforests are characterized by floristic and faunal abundance of forms and species as well as interactions.

Scientists are continually searching for and finding new drugs, resins, fibers, foods, and other plant products in this rich reservoir of life. Not only is the tropical rainforest an important and scarcely explored source of new products, but it is also locale for the discovery of new knowledge about unusual plant and animal interrelationships. It is the world's major gene pool and the evolutionary cradle of terrestrial life. It is imperative to slow the rate of disappearance of primary tropical rainforest before some of these scientific values are lost forever.

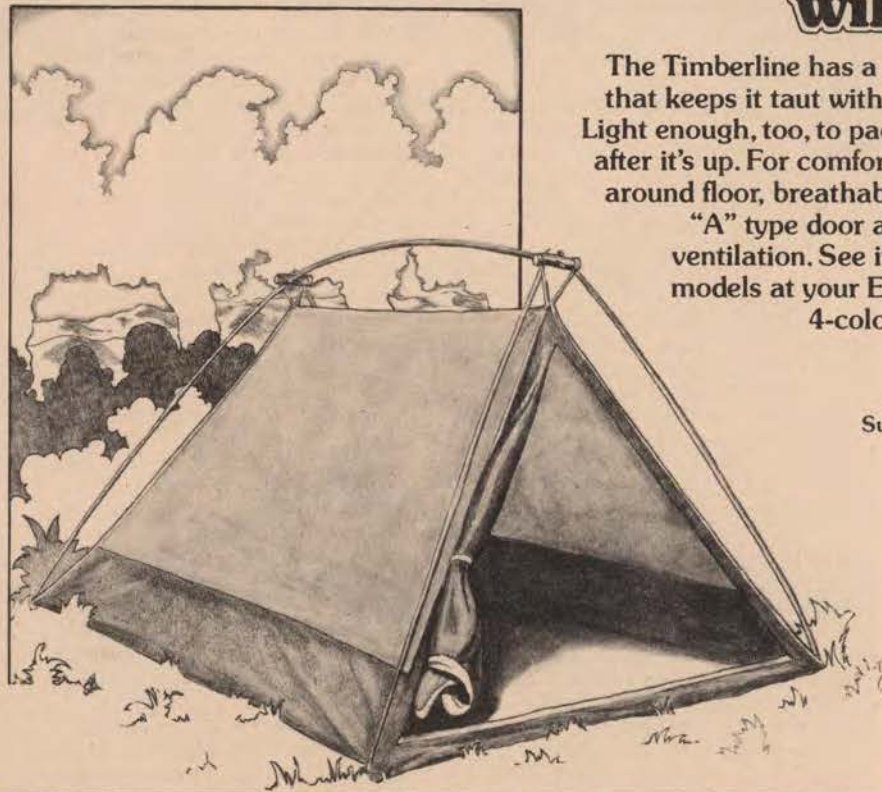
Some aspects of climate are influenced by the presence or the removal of rainforest. Albedo (reflected heat radiation) is reduced when this forest is replaced by other kinds of land uses, thus affecting the global heat budget. While more research is needed, there is scientific concern that large-scale removal of tropical rainforest could result in cooling in the tropics and resultant shifts in world wind patterns and rainfall. There is al-

ready much empirical evidence that clearing of rainforest has led to local changes in rainfall, with attendant disruption to established land uses. Further investigation and quantification of this rainfall-forest relationship are needed, but prudence would indicate a "go slow" policy. While there has been concern expressed about the effect of forest removal in reducing the oxygen supply of the atmosphere, there is as yet no concrete scientific evidence that this is the case.

Rainforests have other local hydrological benefits. Cloud forests serve to capture water from the atmosphere and make it available as underground and surface-flow streams (and thus of service to man as water supplies). Moreover, these forests and those on steep upper watershed serve to regulate the timing of streamflow and maintain the quality of water. As cover for erosive soils, they keep soil where it belongs and it does not end up in streams, reservoirs, lakes, etc., to reduce the usefulness of these bodies of water to agriculture, power production, navigation, municipal water supply and fishing.

Because of the luxuriant vegetation, the soils beneath tropical rainforests would be expected to be high in fertility, but the reverse is true in most cases.

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Fertility exists primarily in the vegetation, not in the soils (some alluvial soils being exceptions). Nutrients are cycled rapidly in this moist, warm, nonstressful environment, and circulate in a virtually leak-proof system. When the forest is removed, as when it is cut and burned for agriculture, this efficient recycling system is shattered. The nutrient additions flushed to the soil from the ash and organic material are usually quickly leached or oxidized after one or two years of cropping. Unless fallowed, or unless large amounts of organic material or fertilizer are added, the soil becomes impoverished. In some lateritic soils, impervious crusts may develop. Where slopes are steep, serious erosion and increased water discharge occur under the high rainfall. A chain of degradation follows, aggravated by weed and pest invasion, and true tropical rainforest may never return to these sites. There are, it is true, some types of soils under tropical rainforest where these distressing changes do not occur when the land is cleared, and such areas can be identified in advance by soil and land-capability surveys. It is important to note that because of these soil limitations, plus problems of pests and weeds, tropical rainforest soils do not have the vast potential to meet world food pro-

duction needs some people are wont to believe they have. These forests are not the world's last large breadbasket.

There are many useful species of woods in the tropical rainforests, though the properties of many others are scarcely known. Growth rates for many species are excellent. Furthermore, the forests are a renewable resource and if harvested wisely can provide a sustained flow of products. They are thus an important part of economic development to meet the country's timber needs and even as material for foreign commerce. They can provide employment and rural stability. On nutrient-poor soils, these forests are the only productive crop that can utilize the energy of the site effectively.

Rainforests are the habitat for some of the world's most unusual and interesting wildlife. As with the flora, there exist the same characteristics of high diversity of species but relatively low numbers of any one species. To prevent wildlife species extinction, maintenance of the forest habitat is necessary.

People native to rainforests have evolved a way of life that depends on a stable relationship with their forest environment, and thus are truly ecosystem people. Industrialized man can learn from their cultures and adopt many attitudes and practices that would perhaps

aid him in coming to terms with his own environmental constraints. At the least, any development of rainforest must take into account the presence and rights of these peoples.

Lawrence S. Hamilton, of the Department of Natural Resources, Cornell University, conducted the research for this report.

The Sierra Club Study

A case study of what is happening to the rainforests of Venezuela, together with recommendations for their conservation, has been completed. It will soon be published as Number 4 in the International Series under the title of "Tropical Rainforest Use and Preservation: A study of problems and practices in Venezuela." Order from Sierra Club Special Publications, Box 7959 Rincon Annex, San Francisco, Ca. 94120. Price \$4.00. Residents of California, New Jersey and New York should add applicable sales taxes. There is also a slide-tape program available from the club for use in group and chapter meetings. For information please write the Sierra Club's International Office at 777 United Nations Plaza, New York, N.Y. 10017.

Sierra Club's position on Tropical Forestry

At its January 1974 meeting, the Sierra Club Board of Directors adopted the following resolution:

MSC (Futrell-Wayburn) WHEREAS rapidly expanding population in tropical countries, the striving for development in these countries, and the much-accelerated search for new resources by developed temperate region countries are all pressing hard on the forests of the tropics. Vast areas have been cleared or modified, and the pace is quickening. The FAO estimates that in Latin America alone, "between 5 and 10 million hectares of forests are being felled for agriculture each year and much of this land is being destroyed" because of inappropriate methods of development. They also estimate that at least 103 million hectares are under shifting cultivation in the Far East. Reports come in from around the world: Sri Lanka (a battle to save the Sinharaja Forest, the last 20,000 acres of untouched rainforest); Brazil (the Trans-Amazon highway and land development schemes will have a major impact on the Amazon rainforest); Malaysia and Indonesia (foreign and multinational logging companies are acquiring rights to much of the remaining rainforest); and elsewhere (the same kind of thing). There is a unanimity of concern from the scientific community that there will be little left by the end of the century.

WHEREAS the tropical rainforest and its soil are unusually sensitive to disturbance and easily degraded and impoverished both in species and in fertility. And

WHEREAS it is the habitat for many of the world's interesting and rare forms of wildlife. And

WHEREAS the tropical rainforests of the world represent a gene pool of plant and animal material that is a global heritage for the present and future welfare of life on earth. And

WHEREAS in many areas of this forest there are primitive native peoples whose cultures and human rights are being endangered by development. And

WHEREAS recognition of the aforementioned problems has been given by the international community at the U.N. Conference on the Human Environment, the UNESCO Man and the Biosphere Program, the Food and Agriculture Organization, the International Union for the Conservation of Native and Natural Resources, and especially the U.N. Environment Program. Therefore be it

RESOLVED:

1. That soil-vegetation surveys for land capability classification purposes be carried out and used in land-control policy before additional forest clearing is permitted. Ill-advised conversion of tropical forests, both through shifting cultivation by squatters or government

land-settlement schemes, is having a devastating effect on tropical forest ecosystems, and not producing a long-term viable agricultural land use. Especially critical are steep slopes, erosive soils, and soil where fertility rapidly degrades following tree removal.

2. That forest units designated to be production units (whether state or private) be handled with care, applying the best we know how in silvicultural practice and logging techniques to retain these areas in primary tropical forest species; and that, moreover, multiple-use policy giving regard to important watershed, wildlife and recreational values be adopted immediately before these values are destroyed by single-minded emphasis on forest exploitation.

3. That many more areas of tropical forest need to be set aside permanently as parks and reserves. The need for these reserves for recreational, scientific or educational use is clear and urgent. Representative areas of most of the remaining significant types of communities with their associated fauna should be identified and set aside. Especially important in this connection are upper watersheds, riverine and estuarine areas and particularly scenic areas. Superlative stands of complex forests need preservation as national heritage.

4. That the culture and human rights of primitive native peoples living in the rainforest of the world must be recognized in any planning program.

Should the Sierra Club be Involved in the 1976 Elections?

AT ITS February meeting, the Sierra Club Board approved a plan for limited club involvement in political education. The plan will allow the club to present information about the voting records and stands on environmental issues of candidates for public office.

This action climaxes six months of discussion by the board, the council and the regional conservation committees and chapters, of one of the more important questions facing the club this year: What role, if any, should the Sierra Club play in the 1976 elections, at national, state and local levels.

Previously, federal law had been clear—the Sierra Club could make no attempt to influence the election of any public official without losing its tax-exempt status. However, recent congressional action that led to revision of IRS rules makes campaign activity possible for us, provided we follow certain rules and procedures. The club may publish voting charts, prepare profiles of candidates, or permit candidates to use its mailing list. The club could even endorse or oppose candidates by name.

But should the Sierra Club work on behalf of candidates? And if so, how? This is the question that has been under discussion since the budget meeting of the board at Clair Tap-paan Lodge in September.

These were some of the arguments on the side of involvement: It is public officials who decide the fate of the club's legislative program, and if we conservationists do not work to see that sympathetic officials are elected, then we will probably face unsympathetic officials. Our opponents traditionally work very hard to elect their friends; our friends often find themselves hard-pressed for campaign funds, volunteers, and other assistance. In recent years, since conservation issues have become more visible, many candidates have run as friends of the environment who had not earned the title; in some cases the public has been fooled, because organizations like the Sierra Club were unable to speak out to set the record straight. Many individual Sierra Club members have long been actively working through the Leagues of Conservation Voters or other groups to influence elections; their energy might be better harnessed through the Sierra Club with its broad membership base.

On the other side were concerns about how members would react to actual endorsements. Would they resent their organization endorsing a candidate whom they opposed for reasons other than conservation stands? If the club endorsed a candidate who lost, there was concern that the winner might be even less receptive to club interests than otherwise, and our program might suffer rather than benefit. Some felt that election activity might drain energy and effort away from wilderness preservation, energy conservation, and other high-priority conservation programs.

Out of the discussions at various levels, two conclusions

emerged: that most of the disadvantages of political activity were associated with endorsing or opposing candidates, while most of the advantages (although not all) could be obtained without such action through more systematic efforts to educate club members and the general public about the environmental records of public officials and candidates. Even those most reluctant about political activity saw good reasons for providing information about where candidates stood. Those most eager to get into the political arena recognized that if carefully prepared information about a race does not motivate the club member to get involved, the mere additional fact of an endorsement certainly will not.

There were still voices favoring both extremes, those for no involvement and those for outright endorsement, but at the February council meeting only two chapters opposed the middle path of political education. The RCC caucus supported it unanimously, and the board of directors, without dissent, approved club involvement in political education, but not in candidate endorsements.

Because of the complexities of federal tax and campaign laws and the need to ensure that Sierra Club groups, chapters and RCCs comply completely with these laws in their political education efforts, the board instructed the president to establish a Sierra Club Committee on Political Education. SCCOPE will shortly provide guidelines to club entities for such education efforts. Until these guidelines are prepared, it is still necessary that all club units continue their traditional practice of avoiding involvement in campaign activities, but they are still free to work on behalf of ballot propositions or legislation. The guidelines will apply only to political activity involving individual candidates.

We have long believed that if we can carry the message of conservation to the American people, they will respond. This Bicentennial Year, an election year, gives us a rare opportunity: to convince the voters to take the concept of conservation with them into the voting booth. I cannot think of a more fitting Bicentennial celebration for the Sierra Club.

Would you like to help the Sierra Club carry out a program of political education? We are now soliciting special contributions to support the Sierra Club Committee on Political Education discussed in the editorial above. Internal Revenue Service regulations specify that if the club can support SCCOPE out of these special contributions, the amount of such funds spent for political education will be exempt from income tax. If the club relies on its general revenues, however, the amount so spent will be subject to federal corporate income tax of about \$0.48 per \$1.00. Each dollar contributed to SCCOPE, then, will save the Sierra Club \$1.50. Checks should be made out to SCCOPE, not to the Sierra Club, and addressed to SCCOPE at 530 Bush Street, San Francisco CA 94108.

REGIONAL REPRESENTATIVES' REPORTS

Southern California: Working for the Nuclear Initiative

“**YES ON 15**” has become the environmental battle cry in a major war in California. Its significance will be felt throughout the country.

On June 8, the state's voters will decide on Proposition 15, the California Nuclear Safeguards Initiative, which the Sierra Club helped draft and then qualify with the gathering of nearly 500,000 signatures. Now the club is playing a vital role in the drive to pass Proposition 15, a campaign that promises to be one of the most important—and one of the toughest—waged anywhere.

If passed, the Initiative would require the state legislature to make an informed and public decision about the future of nuclear power in the state. As such, then, it is a clear challenge to the power companies to prove that nuclear generating stations are safe (if not necessarily clean and cheap). Thus, it shifts the burden of proof from the public, who are always asked to prove what's wrong with a technology, to the industry, which will be asked to prove what's right with atomic energy.

Proposition 15 has three major provisions:

- First, it calls for the lifting of liability insurance limits for offsite radioactivity damage, either by waiver or by legislation. If, as industry insists, the chances of a large accident are so small as to be almost nonexistent, then there should be no reason to retain the \$560 million limit set in 1957.

We know today, of course, that a major accident could cause damages of several billion dollars. As supporters of the Initiative, we believe that since the nuclear industry is asking the public to risk its property, health—even its very lives—on the assurance that a major catastrophe is nearly impossible, certainly the industry should be willing to risk its assets.

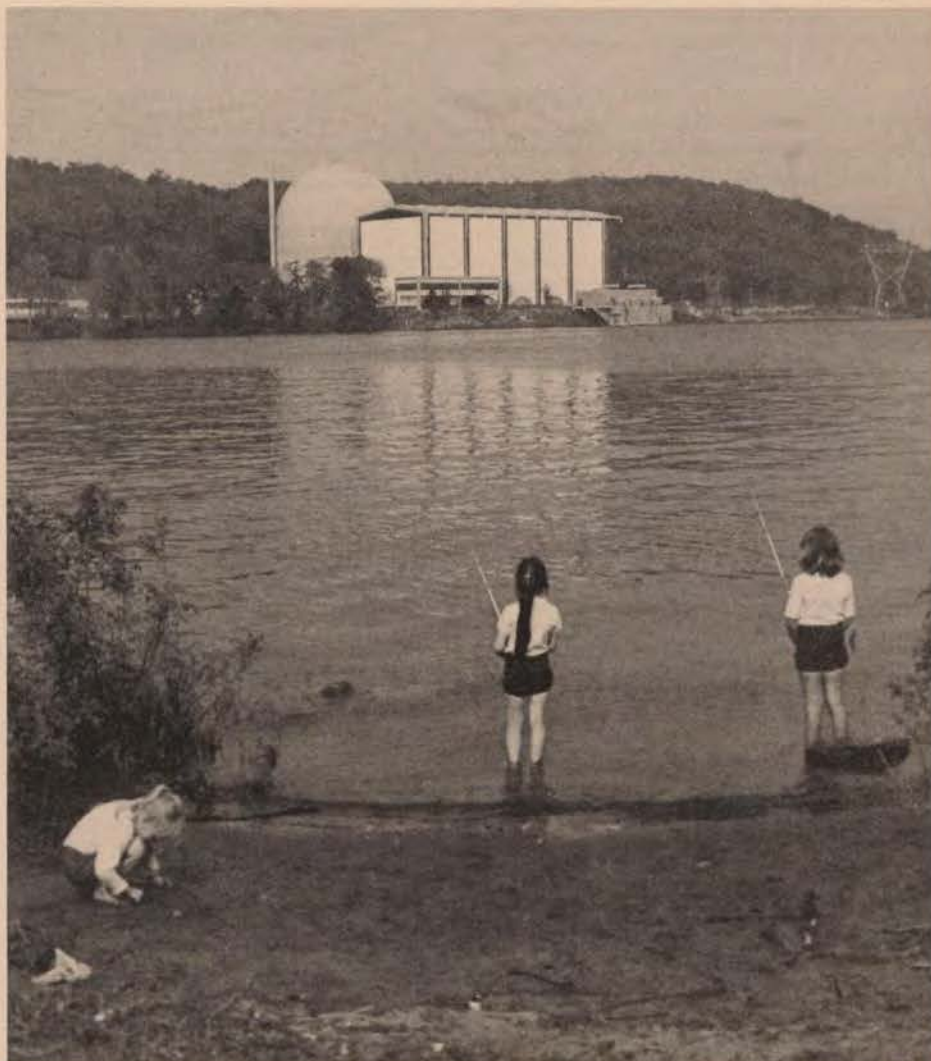
- The second provision deals with the problems of plant safety and radioactive waste disposal, by requiring the state legislature to certify safety and waste storage effectiveness by a two-thirds vote. The legislature is given five years and the help of a committee of experts to conduct this full public service. If, after five years, the legislature fails to give its vote of confidence, then no nuclear

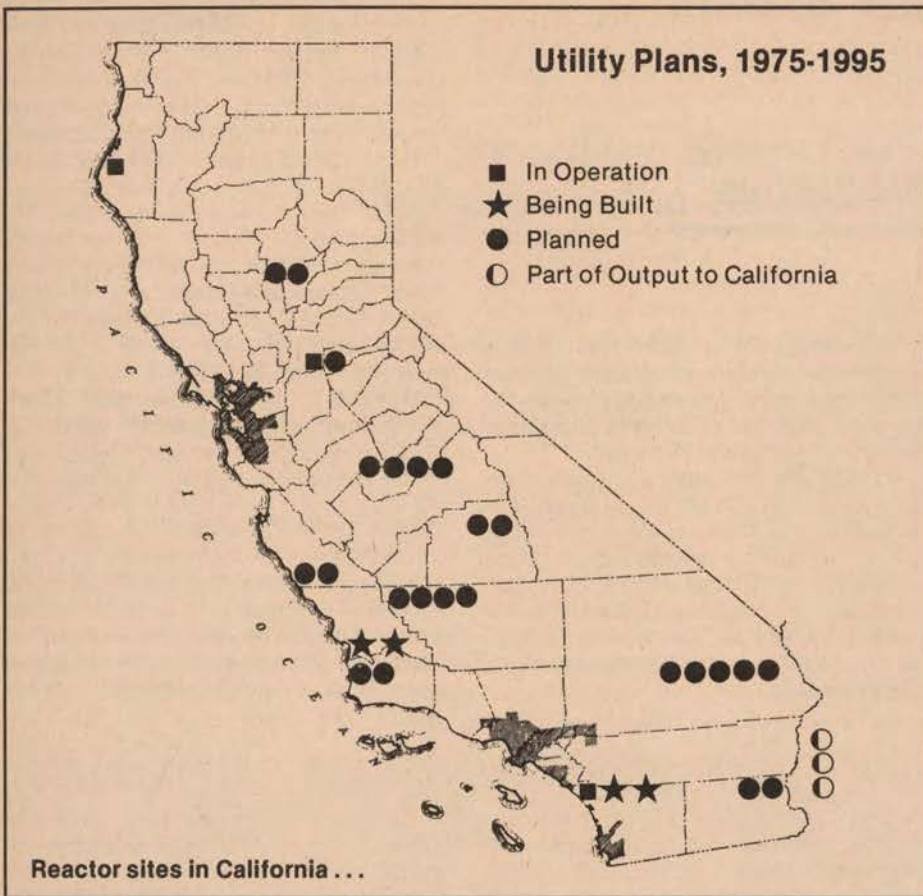
power units may be built and existing plants must be derated to sixty percent of licensed core power level, with ten percent additional annual deratings thereafter, until final phaseout.

- Third, the Initiative also calls upon the governor to publish evacuation plans so that in case of an accident, the public will know how to respond. Such plans are poorly formulated and unpublicized, at present. The citizens of San Diego, for example, would not know what to do in case of a mishap at the San Onofre plant, fifty miles away.

The great importance of the Initiative lies in the fact that it does not ask the voter to decide “Yes” or “No” on nuclear energy. Rather, it sets in motion a process whereby the state's elected representatives, who are held more accountable to the electorate than appointed officials, must conduct a full public review of the problems surrounding the nuclear power industry. It is not, as the industry would like to believe, a “shut-down” measure—unless, of course, industry is unable to demonstrate that its claims about reactor safety and adequacy of waste disposal are true.

Our side of the battle has many allies, all working with us under the banner of “Californians for Nuclear Safeguards.” These include, among others, Friends of the Earth, Another Mother for Peace, Project Survival, Women For, California Citizen Action Group and the Planning and Conservation League. Our ballot argument is signed by Sierra Club president Kent Gill, Nobel Laureate Harold Urey and John Knezevich, president of Local 1969 of the International Brother-





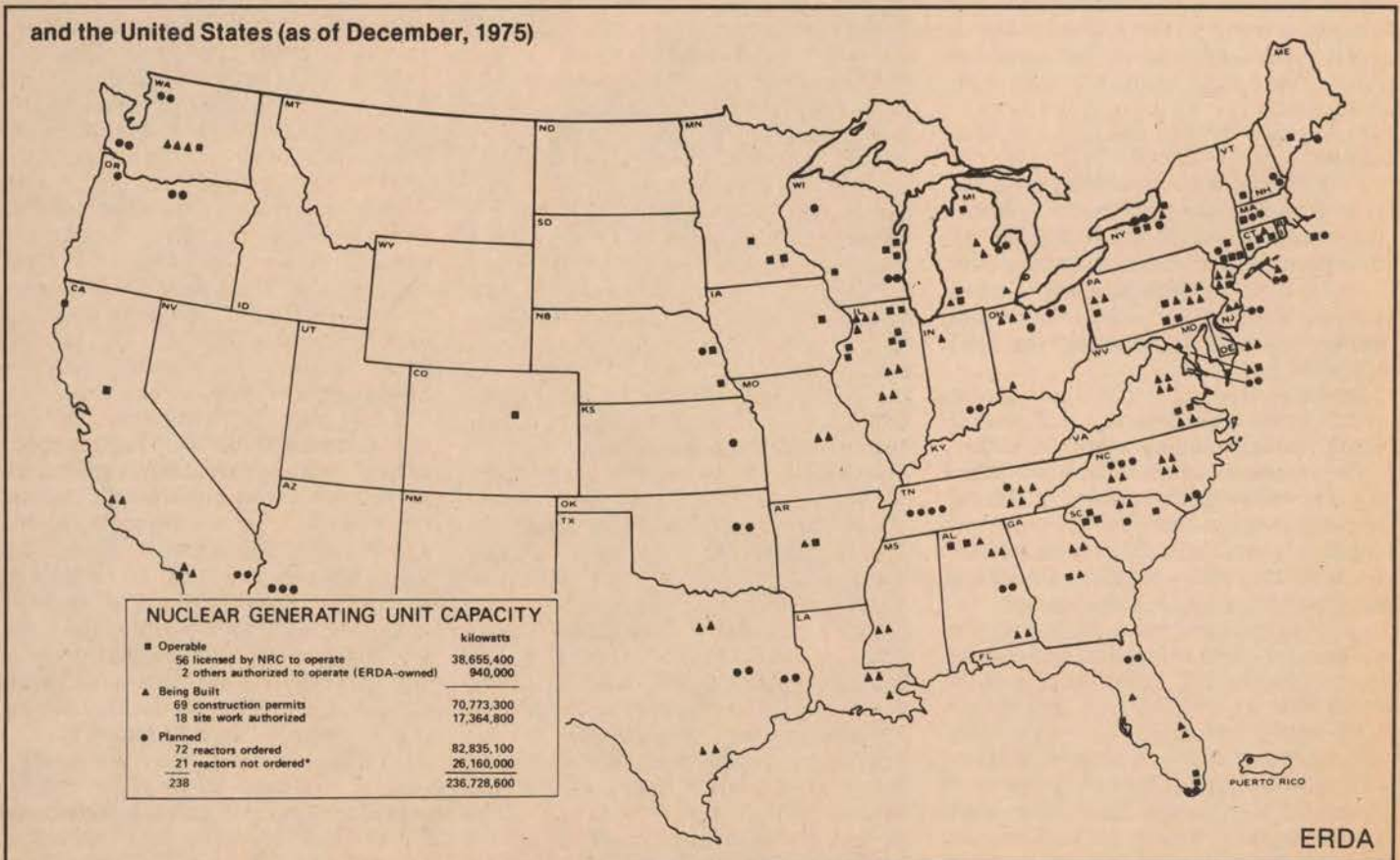
hood of Electrical Workers, AFL-CIO.

Other notable endorsers include Paul Ehrlich, Linus Pauling, Jack Lemmon, Robert Redford and the Democratic Party Central Committees of four major California counties: Alameda, Los Angeles, Marin and San Diego. Endorsing politicians include George Moscone, the newly elected mayor of San Francisco, who announced his support before being elected; Congressman Edward Roybal; Assemblyman Willie Brown; and U.S. senatorial candidate Tom Hayden.

Our opposition, billing itself as "Citizens for Jobs and Energy," is in fact sponsored by corporate and utility money flowing in from California and elsewhere in the country. Now that previous spending limits have been removed by the courts, the opposition reportedly plans to spend \$3-5 million to influence a campaign in which vested corporate interests cannot vote.

In the first campaign finance statement covering the period through December 1975, "Citizens" listed sixty-two reportable contributions, forty-seven from corporations and seven others from corporate executives and almost half of these came from outside California. The total of corporate contributions in just one reporting period was more than a quarter of a million dollars.

The "Citizens" have reported only



eight contributions from sources other than corporations and these have amounted to less than \$2000.

Utility companies alone, whose only source of income is the rate-payer, have already contributed \$90,000 to the campaign against the Initiative. Public utilities as far away as North Carolina and Louisiana and as close as Oregon have joined their California cousins in opposing public scrutiny of the problems surrounding nuclear power.

Our side, of course, will never be able to come close to matching the war chests of our corporate opposition. Instead, we are depending on a grassroots campaign utilizing armies of volunteers. We are soliciting countless small donations to fund this effort.

It goes without saying that we need

citizen help in this epic battle, whose outcome clearly will influence the future of nuclear power everywhere. Similar initiative measures will appear on the November ballots in more than a dozen states and it is urgent that California serve as a successful model at that time.

Contributions are being accepted by the club's Yes on Nuclear Safeguards Committee, 2410 W. Beverly Boulevard, Los Angeles, California 90057. Campaign law in California requires that no anonymous donations be accepted and that all donors of \$50 or more list their occupations and employers.

The Sierra Club in California appreciates your help. Future generations will also be grateful.

Mary Ann Eriksen

Northwest: America's Endangered Wilderness—a Bicentennial Challenge

HERE IN the Northwest, as elsewhere, most of our remaining wilderness is still not fully protected through inclusion in the National Wilderness Preservation System. The fate of this "de facto" National Forest wilderness remains the number one concern of conservationists in the Northwest; the problem is how to assure that the Forest Service considers fairly these wild lands for wilderness designation before making decisions to develop them. For almost three years—since the completion of the Forest Service's Roadless Area Review and Evaluation (RARE) program—we have sought ways to achieve this goal, but for the most part the search has been fruitless.

Conservationists first tried working through the Forest Service's RARE program. Although 274 areas throughout the West were thus selected for full wilderness study, many of these were already under consideration, and another 1,100 areas, totalling more than forty million acres, were not selected. When people complained to the Forest Service about these exclusions, it promised (with a nudge from a Sierra Club lawsuit) that each of the areas would be "further evaluated." This reconsideration was supposed to occur through the process of preparing environmental impact statements (EIS) on National Forest land-use plans, but this promise, too, has produced little. Although a few of the "non-selected" roadless areas were granted wilderness-study status, most are small or should have been obvious choices in the first place. The truth is that more acres of de facto wilderness have been

committed to development than to preservation through this process.

If the Forest Service's land-use-planning process were truly unbiased, then perhaps these results could be accepted, but thousands of acres of de facto wilderness are being lost because the agency emphasizes resource exploitation over wilderness preservation. Few of the land-use plans reflect the promised unbiased "further evaluation" of the wilderness values of existing roadless areas. In several cases, large tracts of de facto wilderness have been divided among several plans, so that they are never considered as a single wilderness unit. Furthermore, in the Forest Service's environmental impact statements, the wilderness alternative is treated in an "all-or-nothing" fashion that equates saving any wilderness whatsoever with the most severe constraints on logging and other forest uses throughout the entire surrounding planning unit.

In an attempt to improve Forest Service planning for roadless areas, various groups and individuals throughout the West have filed comments through the formal EIS process, but the Forest Service, which too often seems to have decided against wilderness prior to "further evaluation," usually gives little serious consideration to these comments. In the case of areas selected for further wilderness study, conservationists have formally appealed poor land-use plans to higher officials of the Forest Service, even to the Secretary of Agriculture. The appeal process, however, often results in the Forest Service hierarchy merely

closing ranks to defend lower-level decisions from challenges from the public.

Now, as some of these key appeals are being decided, citizen groups will be taking their cases to the courts in an attempt to secure more deliberate, objective opinions of the legal adequacy of the Forest Service's wilderness-review process. Meanwhile, de facto wilderness continues to be lost to development. Impatience with the failure of the Forest Service to live up to its promise of "further evaluation" has led an increasing number of groups and individuals to request that Congress provide proper wilderness study for areas the Forest Service is preparing to develop on the basis of its superficial planning. It is Congress, after all, that has the exclusive power to designate lands as wilderness and that originally set forth the detailed requirements for proper wilderness studies.

Numerous individual wilderness bills have been proposed by various congressmen in an attempt to overturn Forest Service decisions that would destroy de facto wilderness prematurely, without proper study. In the Northwest we have such outstanding areas as French Pete, in Oregon, which has been proposed for wilderness designation in a bill by local congressman James Weaver, and the Wenaha-Tucannon area, in Washington, which Representative James Weaver has proposed for "instant" wilderness designation. Montana Senator Lee Metcalf's "Montana Wilderness Study Act," which is stalled in the Senate, would require proper wilderness study for nine roadless areas in his state. In Idaho, strong support has developed for studying the Gospel-Hump area, which comprises more than 400,000 acres. Similar proposals have been made in other states for areas like the Kaiser Peak roadless area in California, the proposed Lone Peak wilderness in Utah and Laramie Peak wilderness in Wyoming, and New Mexico's South Sandia Peak area.

Public concern for the rapid depletion of wilderness in the West has reached a critical point where truly constructive action now seems possible in Congress. It is essential that we generate national support for legislation to assure full study and protection for the nation's remaining roadless areas—its endangered wilderness. In this bicentennial year, what better gift can we set aside for future generations than a generous sample of American wilderness? In this regard, we are happy to report that key congressmen and senators are now preparing a special bill to guarantee fair consideration for America's endangered wilderness.

Douglas Scott
Charles Clusen

WASHINGTON REPORT

Brock Evans

New Attack on the National Forests

FOR THE PAST twenty years, the struggle between environmentalists and the timber industry over the fate of the National Forests has intensified, with environmentalists steadily gaining the advantage. Back in the mid-1950s, when the current battle really began, the Forest Service was overwhelmingly committed to timber production to the exclusion of all other values. Although it still tends toward this view, we have succeeded in getting many new areas set aside as wilderness and have beat back nearly every effort by the timber industry to obtain huge increases in the amount of timber it is allowed to cut in the National Forests.

All too often, the Forest Service has joined forces with the timber industry, resisting efforts to include in the wilderness system any areas containing commercially valuable timber, acceding to, or even supporting, the industry's effort

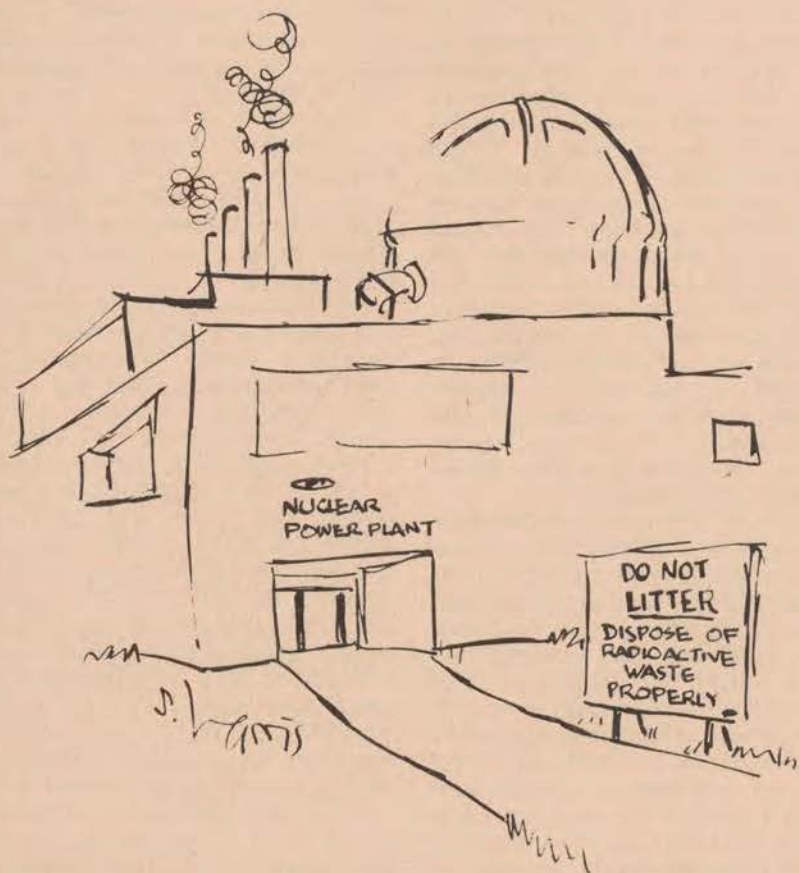
to increase the allowable cut. Because of this symbiotic relationship, environmentalists often have had to resort to litigation in order to assure proper and lawful management of the National Forests. We have enjoyed notable successes in such litigation, the most recent being the justly celebrated "Monongahela Decision," where the court held that the Forest Service, in allowing stands of immature trees in the Monongahela National Forest in West Virginia to be clear-cut, had violated its charter, the Organic Act of 1897.

Although the decision applied only to the national forest named in the suit, environmentalists had hoped the decision would spur the Forest Service to re-evaluate and reform its logging policies, to limit clearcutting and other destructive practices to levels consistent with the goals of sustained-yield forestry and the protection of nontimber values

in the National Forests. But this has not happened. Instead, the Forest Service has joined with the timber industry and its minions in Congress in an all-out effort to reverse the Monongahela Decision by amending the Organic Act of 1897, thus permitting the Forest Service to continue its short-sighted practices instead of having to institute reform.

Legislation to this effect (S. 3091) has been introduced by Senator Hubert Humphrey, who seems to be leading the industry's campaign in the Senate. This bill at first seems to be little more than a collection of innocuous amendments to the Forest Renewable Resources Planning Act, a procedural bill passed two years ago, but a closer look shows it to contain an outright amendment to the 1897 Organic Act. This latest confrontation in the twenty-year struggle over the National Forests should reach a climax in April or May as key committees in both houses attempt to write comprehensive National Forest legislation to deal with the implications of the Monongahela Decision.

Environmentalists are rallying behind the National Forest Reform Act of 1976 (S. 2926 and H.R. 11894), whose lead sponsors are Senator Jennings Randolph (D-West Virginia) and Congressman George Brown (D-California). This legislation, carefully and tightly drawn up by a team of environmental lawyers and forestry experts over a period of three months, sets flexible but specific minimum standards under which future



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logging operations can be conducted in the National Forests. For example, the act would require that timber sales be restricted to lands where logging will not result in erosion, where the trees will grow back and where there will not be substantial damage to other important forest resources.

Senator Humphrey and the timber industry have criticized the act on the grounds that it constitutes "prescriptive forestry," which they claim to be undesirable on the grounds that "You can't legislate good forest management." This attitude has always puzzled environmentalists, who have watched the endless parade of bad forest management in the absence of legislative guidelines—streams filling up with silt, hillsides eroding, wilderness invaded by roads, wildlife habitat destroyed, scenic values ignored. We wonder why foresters, like every other group in society, cannot be subject to some meaningful standards of behavior, standards enforceable in a court of law.

This upcoming confrontation is by far the most crucial battle ever fought between environmentalists and the timber industry. If the industry wins, its misuse of the National Forests and the Forest Service's program of mismanagement

will be frozen into law. If the National Forest Reform Act of 1976 passes, the Forest Service will finally be governed by statutory controls on timber cutting in the National Forests, standards to guarantee that the forests are managed to assure a sustained yield within the constraints imposed by the need to consider and protect other, equally important, values and resources.

The forces of the timber industry are very strong in Washington and may succeed in passing the Humphrey bill unless members of Congress receive an overwhelming public response against it. Every Sierra Club member who cares about the future of the National Forests should immediately write or contact his or her senator or representative. Tell them that you oppose the Humphrey bill, that you cannot support efforts to legalize mismanagement of the National Forests, that Forest Service policy should no longer emphasize timber production to the virtual exclusion of wilderness, wildlife and recreation values. Urge their support of the Randolph/Brown reform legislation. There is still time to make yourself heard on this issue, to offset the intense lobbying effort now underway to turn the public forests over to private industry.

An Evening with Captain Jacques Cousteau

THE SIERRA Club's annual dinner, traditionally associated with the organization meeting of the club's Board of Directors, will be held this year on May 1 at the Four Seas Restaurant in San Francisco. The program following dinner will feature an address by Captain Jacques Cousteau, internationally known marine explorer, author, and producer of award-winning documentary films.

A cash bar will be available at 6:00 p.m. followed by dinner at 7:00 p.m.

To order tickets for the Cantonese-style dinner, at \$8.50 per person, send your letter of request, check, and stamped, self-addressed envelope to: Sierra Club Annual Dinner, 530 Bush Street, San Francisco, CA 94108. Mail orders will be filled between April 1 and April 21. Tickets will be held at the door for paid requests received after that date. Tables for ten people may be reserved on a first come, first serve basis. The table *must* be completely paid for at the time of reservation. Space constraints absolutely limit the number of dinner tickets to 490.

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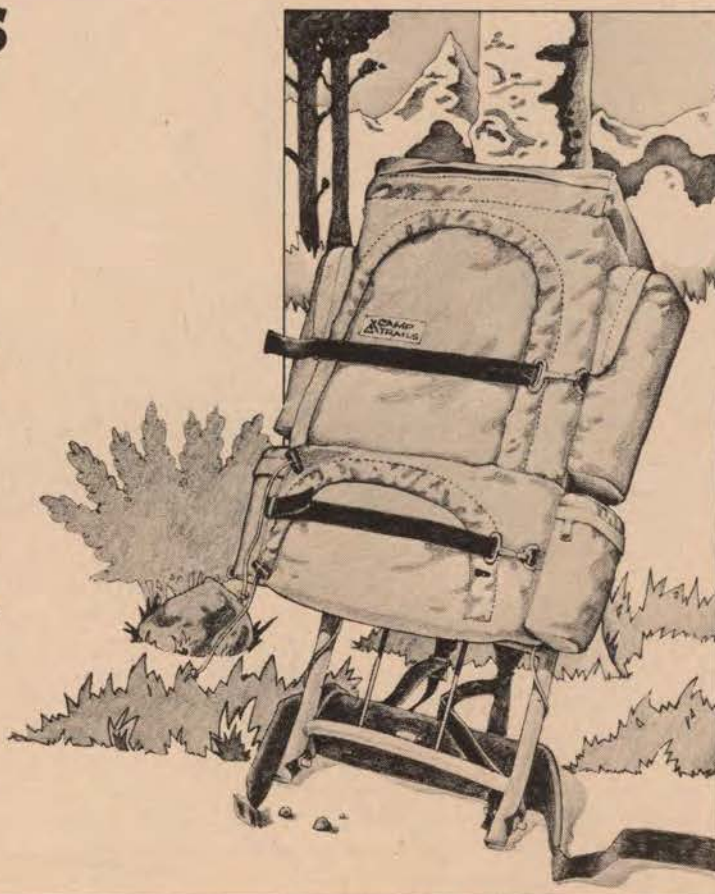
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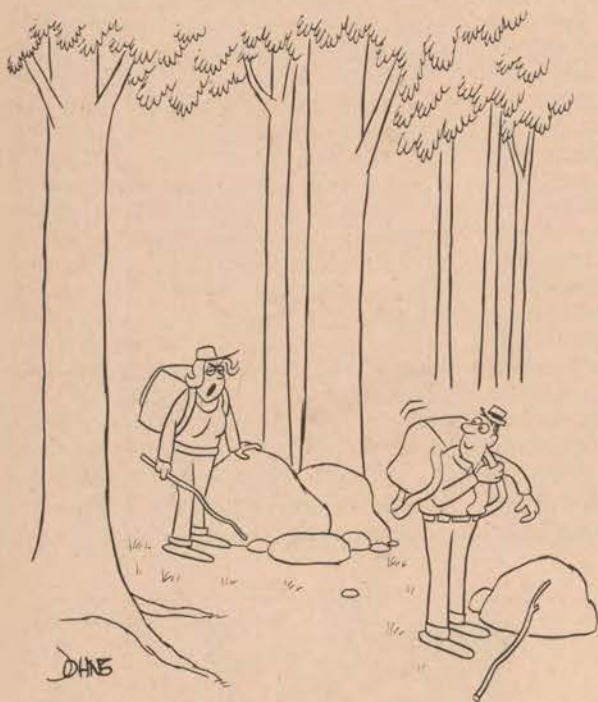
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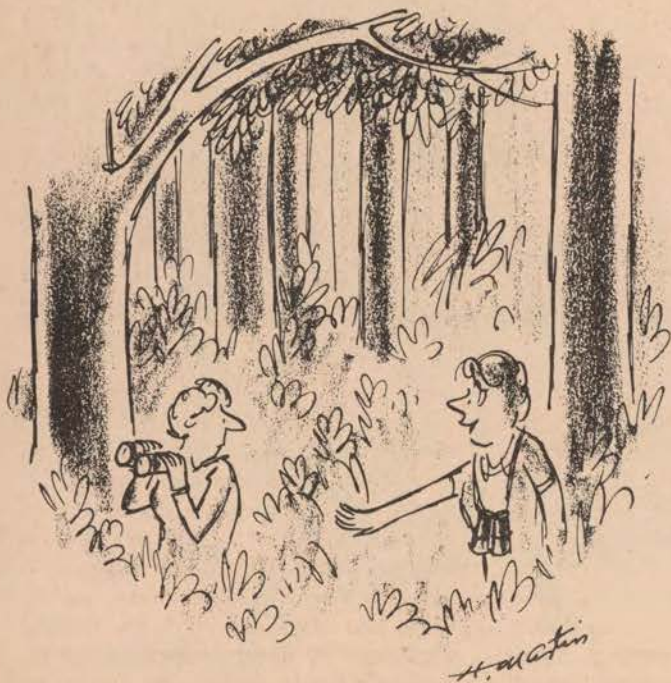
Out . . . in the great outdoors



"... and I wish you'd cut-out that 'Forward Hooooo' stuff!"



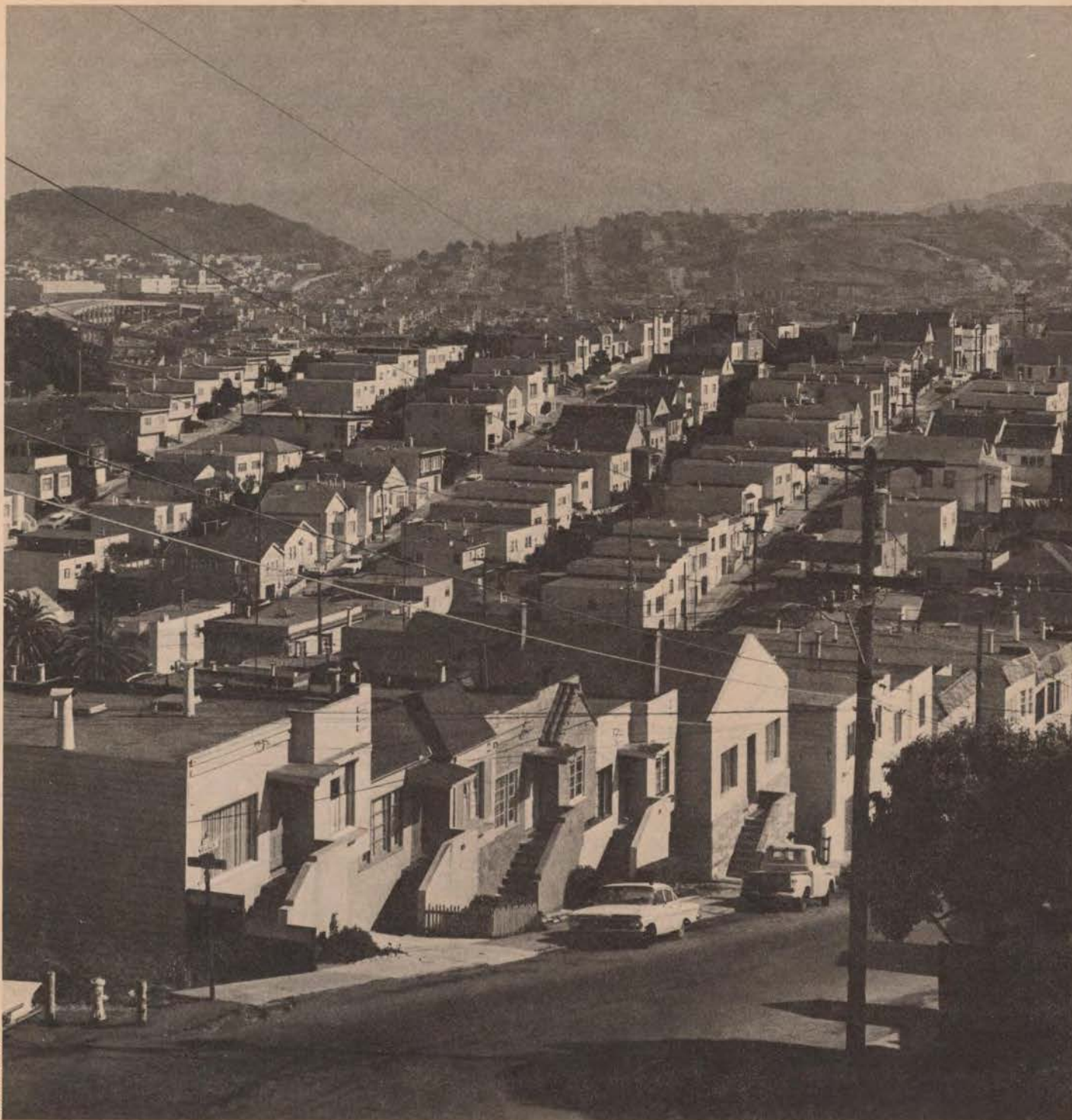
"I don't like it out here. It gives me the creeps to breathe air I can't see!"



"Agnes Mockheimer! Well, it's a small eco-system!"



"Where it's not at for everyone else is where it's at for us."



Susan Landor

AMERICANS' ENDLESS MIGRATION (Continued from page 5)

widespread home ownership; highway construction programs increased city workers' access to the burgeoning suburbs.

As the cities sprawled outward, the traditional core-centered metropolis was supplanted by the "urban region," or megalopolis, as once separate urban centers began to merge at their outer edges, forming networks of urbanized territory. Integrated by high-speed

transportation and communication channels, the urban region constitutes an enlargement of the space available for *urban* living outside the city. In the future, it is likely that most of this country's population will reside in a few urban regions that are populated more or less continuously, but in densities varying widely among urban, suburban and "metropolitan rural" settings.

The trend toward the city, but away from its core, was quite apparent in the 1960s, when the portion of the metropolitan population living in the central city fell from fifty to forty-six percent. This trend continues, but now, in the 1970s, we are seeing a new and startling trend: the revival of growth in nonmetropolitan areas, even those that lie outside the influence of metropolitan centers. For the

first time in this century, migrants are flowing from city to country: non-metropolitan areas, which registered a net out-migration of 300,000 per year during the 1960s, are now *gaining* about 350,000 migrants per year.

This reversal of a long-standing migration pattern is so utterly without precedent that a common first reaction to these latest figures is sheer disbelief. They must be, it is said, a statistical artifact of large metropolises spilling over into their surrounding territory (just because a government agency labels a territory "nonmetropolitan" doesn't mean it is remote from metropolitan influence).

Or perhaps these new statistics are simply registering increases of residents in rural "islands" located *within* the urban regions. In Los Angeles, for example, there are suburban enclaves where Basque shepherds tend their flocks of sheep on canyon slopes within view of commuters tending their charcoal cookers on the patio. Both groups enjoy their own brands of "rural" living.

Return to the land

But, in fact, the current growth in nonmetropolitan areas is not simply the latest manifestation of urban sprawl; it affects areas well removed from metropolitan influence:

- The Colorado mountain slopes and Sierra Nevada foothills in California;

- The Ozarks-Ouachita area, which stretches from St. Louis to Dallas, encompassing the Ozarks, the Lower Arkansas Valley, the Ouachita Mountains and northeast Texas;

- The upper Great Lakes area, which includes northern Michigan, Wisconsin and Minnesota;

- The Southern Appalachian coal field counties of West Virginia, Virginia and Kentucky.

The more remote kinds of places—those that used to be regarded as "nowhere"—have today become "somewhere" in the minds of many migrants.

Some of the reasons for this apparent "return to the land" include the decentralization of manufacturing, Americans' yearning for open space coupled with their growing financial ability to satisfy that yearning, and the spread of retirement settlements into many rural areas of the country.

According to a theory originally

suggested by Wilbur Thompson, industries whose technology has become mature and whose production processes are largely routinized require less skilled labor than they once did; this, together with increasing competition for labor in high-wage areas, makes it attractive or even necessary for industries to relocate to lower-wage areas. Some years ago, for example, the textile mills moved from New England and the Middle Atlantic states to the mid- and Deep South. Retirement villages (an "industry" in the sense used here) are springing up in places other than Florida and the Southwest: the upper Great Lakes, the Ozarks, the hill country of Texas, the Sierra Nevada foothills and the east Texas coastal plain. Retirees, as a class, are growing in number, partly because of the population's changing age distribution and partly because people are taking advantage of optional early retirement plans.

Whatever the causes, shifts in population often spell trouble for our fixed institutional arrangements. Cities have attempted to recapture lost taxes by moving their boundaries to the other side of where the migrants went, but eventually—especially in today's urban region—they will run up against other jurisdictions that may enjoy the benefit of suburbanites' taxes without the cost of providing them with services.

The "crisis of the cities" has been building for over a decade; the newer trend of increasing population in nonmetropolitan areas will impose different kinds of problems on many village and county jurisdictions—the problems entailed in growth of varying intensity and rapidity, which they are ill equipped to cope with and which their residents may vigorously oppose. As increasing numbers of country-living enthusiasts descend on the back roads of rural America, and as the conglomerates move to develop newly valuable natural resources, issues of access—by whom, to what place and for what purpose—are likely to intensify.

Evidence of this is already apparent in widely publicized resistance on the part of several communities to accepting the costs and benefits that an influx of migrants confers. The bitterly contentious "antigrowth" issue has raised a constitutional question of community rights versus individ-

ual rights. Traditionally, migratory growth has been beyond local control, but attempts to regulate it have raised two questions: First, how far does a community's right to control its own growth extend? And second, in attempting to control its growth, does a community infringe on the freedom of individual citizens to migrate?

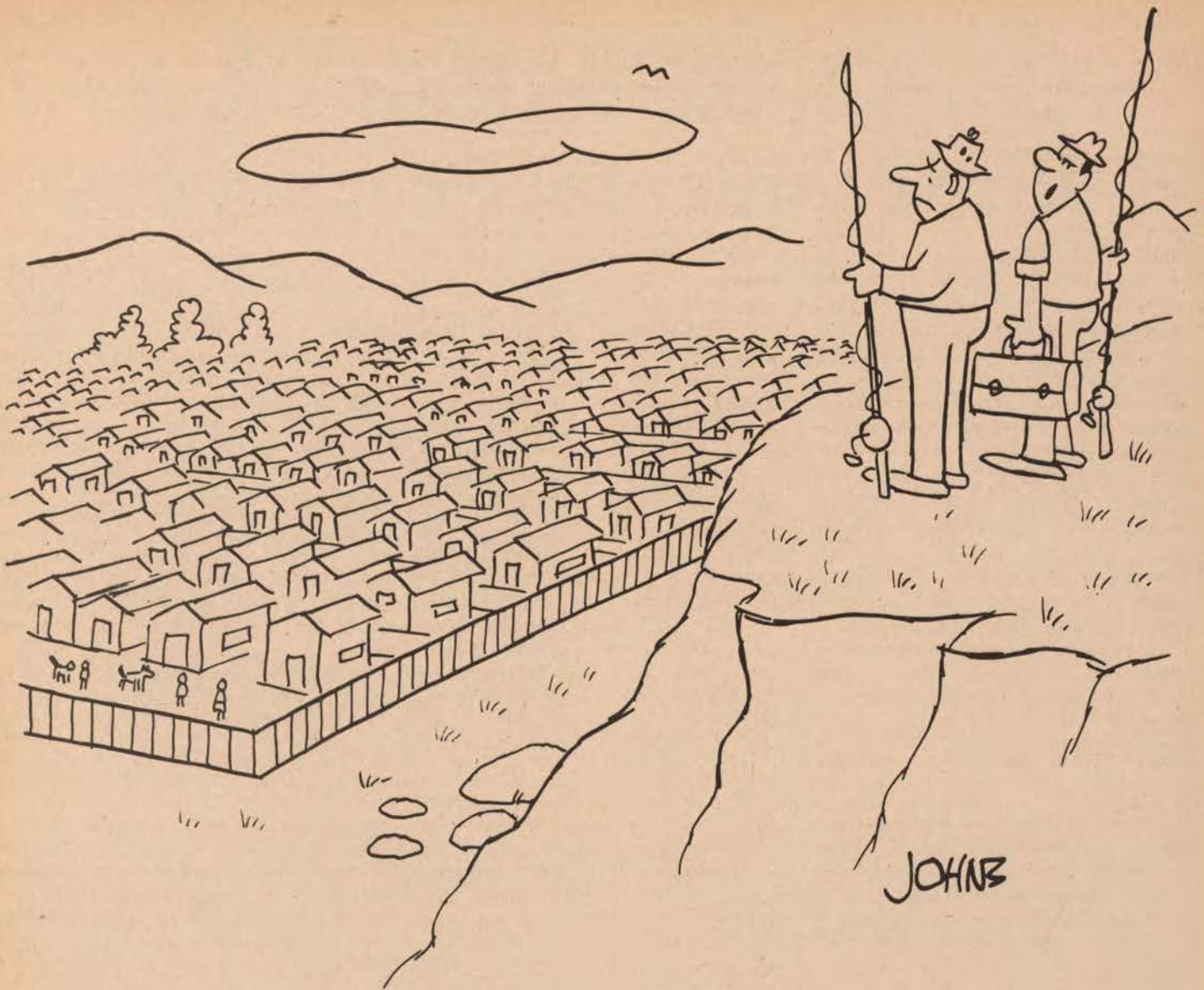
The courts have denied the legality of some antigrowth measures on the grounds that citizens have a constitutional right not to be discriminated against in choosing a place to settle. But the issue is becoming more complex because migration is not "just": it brings growth to some places and decline to others, often despite local efforts to control or encourage it.

An undirected influence

There are a number of implicit mechanisms by which economic and migratory growth are conferred on some communities and not on others, and most of these mechanisms are not fully appreciated at the local level. When government agencies build highways, award defense contracts or choose sites for federal installations, for example, they simultaneously redistribute employment growth and alter incentives for private investment. Although these and other government programs and activities are nominally unrelated to migration flows, they nonetheless exert a powerful, undirected influence on them.

For their part, communities seem to forget that government largesse is a two-edged sword. They welcome a government installation as a source of jobs for the local unemployed and are then surprised when migrants arrive to fill some of the new jobs. They welcome a widening of the highways as a means of access *out*—to markets or recreation—only to be appalled when others find it a means of access *in*. The resulting legal issues embody a clash between two traits ingrained in the American national character—privatism and mobility.

Were a community successful in enacting a population-ceiling ordinance, it would not necessarily be abridging anyone's right of access to that community, for the twin processes of in- and out-migration can produce population turnover without growth, just as a hotel can accommodate many *different* people with a fixed number of rooms. But the issue points up the



"Is that the nice little spot you were telling me about?"

fact that the visibility of migrants at the local level makes them a ready focus of territorial issues. The inclination to discriminate against migrants as a class not only raises profound legal and political questions concerning individual rights, but also introduces the idea of tinkering with the vast and complex system by which population and economic change occur throughout the country. There is no clear point at which such tinkering might stop.

Resistance to growth in some communities will be matched by potentially overwhelming exploitation of growth in areas endowed with newly valuable energy resources. In the near future, Colorado, Montana, New Mexico, North Dakota, Utah and Wyoming may well become significant

sources of coal, synthetic petroleum liquids and natural gas. Typically, the areas to be developed are sparsely populated and lack the legal and institutional structures for coping with the impact of major energy-producing activities.

Local recognition of highly valued indigenous resources has already fostered regional awareness and focused attention on issues of access. The prospect of sharp population increases, and their attendant demands for public services, is likely to intensify such issues. Currently, the most noticeable aspects of uncontrolled growth through migration are evident in the boom areas spawned by the Alaska pipeline construction. Alaska's governor has been quoted as saying, "We can't preserve Alaska as we know it;

we're going to have to lose some freedoms and qualities of life here."

Clearly, for some time to come, we are going to be engaged in trying to reconcile the need for economic development with the need for environmental integrity. The now developing pattern of extending a low-density, spread-out, energy-inefficient system of settlement into distant and wholly rural sections of the nation, even as we wrestle with pressing and profound energy shortage problems, seems a very peculiar condition indeed.

Peter A. Morrison is a population analyst with the Rand Corporation. Views expressed here are the author's own and are not necessarily shared by Rand or its research sponsors.

Settlement Patterns and Environmental Prospects

JUDITH KUNOFSKY

THE CHOICES people make about where to live have a profound effect on such environmental issues as land use and air quality. Though long recognized, this relationship has become especially obvious in the wake of government plans to open up the West to coal development and to accelerate the oil-leasing program on the outer continental shelf. Both programs will require elaborate support facilities, and environmentalists regard the expected influx of large numbers of workers and their families into sparsely settled areas in the northern plains and along the Gulf Coast as among the most serious consequences of these developments. As Peter Morrison notes in the accompanying essay, Alaska is already feeling the impact of the population explosion that has followed the development of the North Slope oil fields.

Though environmentalists have generally recognized the relationship between population distribution and environmental problems, we have seldom dealt with the issue directly and on a nationwide scale. Our perspective has been to look at particular types of land—open space, particularly fragile or beautiful areas and farms, for example—and to insist they be protected and preserved. We have supported land use planning as an additional way to achieve those goals and also to allow communities to have more control over the location, character and rate of development.

The growing migration to rural areas, described by Morrison, intensifies many old problems and poses new ones, spanning many important environmental concerns:

- The protection of coastal wetlands, which are particularly vulnerable to new settlement;
- The preservation of valuable agricultural land from subdivision;
- The preservation of wild, if not, strictly speaking, wilderness, areas across the country.

These are only a few of the issues affected by settlement patterns, but they suggest the scope of the problem. We can seek no relief in figures showing a slow-down in population growth in this country, for at the same time the number of households continues to increase at an alarming rate, largely as a result of the so-called "post-war baby boom." The current seventy-one million households will increase to more than ninety million by 1990, an astounding twenty-seven percent jump in only fifteen years. Only a severe shortage of, or price increase in, housing, or a drastic change in marriage patterns, could significantly affect these numbers because the people they represent have already been born. If current housing preferences continue, more households will mean a vastly increased desire for single-family homes. In fact, *whatever* housing is preferred, nineteen million units will need to be created, in addition to replacement demand—and all within a very short period of time. It seems imperative, then, if environmental considerations are to receive due attention, that we begin to address the question of where we want and where we do not want people to live.

Recently, the Supreme Court upheld the constitutionality of a plan regulating multiple housing construction, which had been designed for Petaluma, California. Localities around the country are attempting "growth control" of various kinds, but

many of the issues need to be addressed at broader-than-local levels. One of the strongest expressions of a state's concern about the issue has been the recent request of the Hawaii Senate that Congress "devise ways and means of granting authority to all U.S. island States, Territories and Possessions to control in-migration to their jurisdictions." However, action by any particular state is now limited by prevailing interpretations of a citizen's right to move freely throughout the country.

As a result of considerable national interest in urban and rural problems in the late 1960s, Congress, in 1970, authorized the executive branch to prepare a biennial "Report on Growth and Development." These reports were to review federal policies affecting population distribution, economic growth and the types of development being encouraged. They were also to assist in the formulation of a national "growth policy" by proposing several alternatives. Explicit discussion of population distribution options has, however, become a relatively minor part of the reports.

Attention at the national level also has great precedent in other countries. James Sundquist of the Brookings Institution has observed that, "In treating the geographic distribution of economic activity and population as a matter for market forces, rather than national planning and national action, to determine, the United States stands alone among the advanced democratic countries in the world."

What would constitute environmentally sound criteria for population distribution and settlement patterns? There are no easy answers because the factors involved are so many and so intricately interrelated. In fact, examination of this problem demonstrates the difficulty of attempting to consider only one problem at a time. For example, Colorado's Governor Lamm, faced with high migration into the state, has advocated finding ways to channel growth away from the already congested Boulder-Denver-Colorado Springs area. But where? Do you allow increased congestion, air pollution and suburban sprawl in an area already thus afflicted, or do you unleash this possibility on an area currently undisturbed? Which is better, a modest amount of air pollution spread over a wide area, or a patchwork of clean and dirty zones, with the dirty zones approaching virtually intolerable levels? Obviously, neither alternative is acceptable. Migration to Colorado would be lessened only if the economic forces and, to some unknown extent, the cultural values supporting the movement were to change. But the increase in households will take place *somewhere*.

Environmentalists have opposed the indiscriminate placement of housing in wild or relatively uninhabited areas and have also questioned the needless stimulation of growth in the major urban centers. Granting that both objectives are desirable, the question is whether both are possible within the near future. Or will neither goal be realized as this country wanders to some sort of unanticipated compromise? This seems to be what is now happening. Perhaps we should examine the idea of supporting planned increases in population in smaller and medium-sized urban areas and limitations on sprawl in order to keep at least some areas free for the future. Yet, we must not forget the fine line between planning for population increases that will occur regardless and stimulating further increases that need never take place.

Judith Kunofsky is the population specialist for the Sierra Club.

Sierra Club Financial Report

Sierra Club Financial Report

Report of Independent Accountants

February 12, 1976

To the Members of the Sierra Club:

The fiscal year ended September 30, 1975 showed substantial progress in the restoration of the Club's financial position. Operating results of \$6,028,495 in revenues and \$5,808,806 in expenses produced an increase in fund balances of \$219,689.

In general, the net cost of program conformed to budget. Notable levels of higher-than-planned revenue were achieved through trip fees and sales of publications, while contributions again fell short of expectations.

Membership dues and admissions were 3% over budget and 6.6% higher than the previous year. Membership increased during the year by 6.1% to a new high of 153,004.

The Club's cash flow position improved with the increase of revenues over expenses. Total liabilities at year end were nearly \$150,000 lower than at the prior year end.

Fiscal year 1975 saw the Club move closer to financial stability. This is necessary to provide a sound base for existing programs and to build a foundation for future growth.

To accomplish this, the Club continues to operate on a tight budget under conditions of fiscal restraint. In the face of heavy inflationary pressures, we must find ways to increase revenue, including an expanded membership base, in order to continue our broad range of conservation programs.

Lowell Smith, Treasurer
Allen E. Smith, Controller

To the Board of Directors and
Members of the Sierra Club

We have examined the balance sheet of the Sierra Club as of September 30, 1975 and the related statements of revenues and expenses, functional expenses and changes in fund balances for the year then ended. Our examination was made in accordance with generally accepted auditing standards and accordingly included such tests of the accounting records and such other auditing procedures as we considered necessary in the circumstances.

As described in Note 2 to the financial statements, the Club retroactively adopted certain accounting principles during the year ended September 30, 1975 as required by the Industry Audit Guide of the American Institute of Certified Public Accountants entitled "Audits of Voluntary Health and Welfare Organizations."

In our opinion, the financial statements examined by us present fairly the financial position of the Sierra Club at September 30, 1975, and the results of its operations and the changes in its fund balances for the year then ended, in conformity with generally accepted accounting principles applied on a basis consistent with that of the preceding year after giving retroactive effect to the changes, with which we concur, referred to in the preceding paragraph.

San Francisco, Calif.

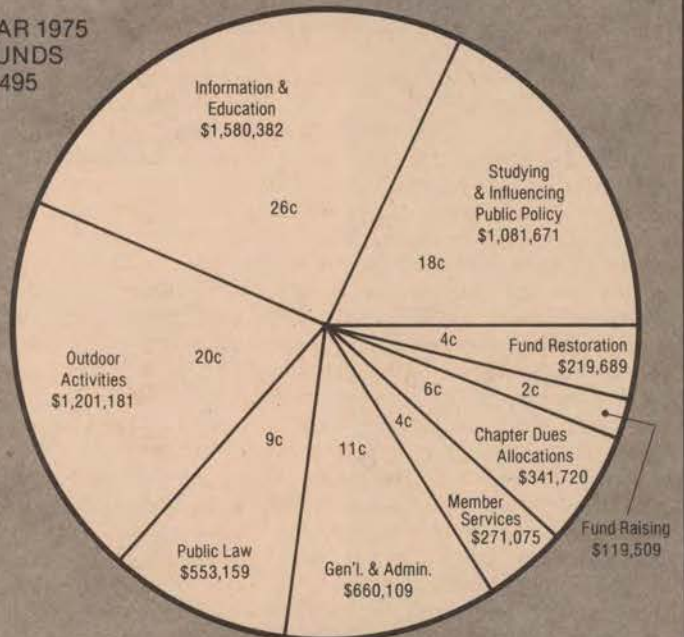
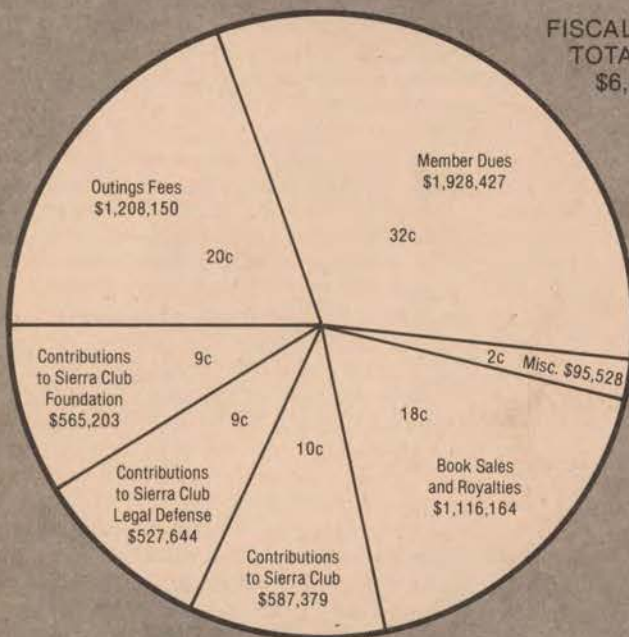
Price Waterhouse & Co.

FISCAL YEAR ENDED SEPTEMBER 30, 1975

SOURCE OF FUNDS

USE OF FUNDS

FISCAL YEAR 1975
TOTAL FUNDS
\$6,028,495



CHARTS ARE GRADUATED IN CENTS/DOLLAR OF FUNDS FOR SOURCE AND USE OF FUNDS AND SHOW ACTUAL FUNDS AS WELL AS CENTS/DOLLAR

Balance Sheet September 30, 1975

ASSETS

Cash	\$ 38,569
Accounts receivable—publications, less allowance for doubtful accounts of \$8,496	222,726
Royalty and other receivables	171,739
Inventories—principally publications, at the lower of cost (first-in, first-out) or market	389,046
Marketable securities, pledged as security for note payable to bank (Note 3)	571,552
Royalty advances (less allowance of \$30,479), travel deposits and other deferred charges	157,068
Property and equipment, less accumulated depreciation of \$6,043	52,107
	<u>\$1,602,807</u>

LIABILITIES AND FUND BALANCES

Liabilities:	
Note payable to bank, secured by marketable securities (Note 4)	\$ 218,609
Other note payable (Note 4)	100,000
Accounts payable	391,279
Accrued salaries and other expenses	182,531
Advance travel reservations, royalties, publication sales and other deferred revenues	218,396
	<u>1,110,815</u>
Fund balances:	
Unrestricted (Note 9)	373,734
Restricted	66,151
Property and equipment	52,107
	<u>491,992</u>
	<u>\$1,602,807</u>

Statement of Financial

Salaries and emp
Charter transpor
Outside contract
Legal services pr
Legal Defense
Cost of publicati
Travel and meeti
Office supplies a
Printing
Chapter allocatio
Advertising
Royalties
Rent and office e
Telephone
Insurance
Interest
Other expenses
Total es

Statement of Revenues and Expenses — Year ended September 30, 1975

	Unrestricted	Restricted	Property and equipment	Total
Revenues:				
Member dues and admissions	\$1,928,427			\$1,928,427
Trip reservations and fees	1,208,150			1,208,150
Contributions (Note 8)	967,473	\$712,753		1,680,226
Sales of publications	809,774			809,774
Royalties	306,390			306,390
Other revenues and investment income	94,728	800		95,528
	<u>5,314,942</u>	<u>713,553</u>		<u>6,028,495</u>
Expenses:				
Program services:				
Studying and influencing public policy	718,837	362,834		1,081,671
Information and education	1,285,384	294,998		1,580,382
Outdoor activities	1,197,469	1,312	\$2,400	1,201,181
Public law	530,448	22,711		553,159
	<u>3,732,138</u>	<u>681,855</u>	<u>2,400</u>	<u>4,416,393</u>
Support services:				
General and administrative	652,217	4,249	3,643	660,109
Membership	611,662	1,133		612,795
Fund raising	119,095	414		119,509
	<u>1,382,974</u>	<u>5,796</u>	<u>3,643</u>	<u>1,392,413</u>
	<u>5,115,112</u>	<u>687,651</u>	<u>6,043</u>	<u>5,808,806</u>
Excess of revenues over (under) expenses	<u>\$ 199,830</u>	<u>\$ 25,902</u>	<u>(\$6,043)</u>	<u>\$ 219,689</u>

ents September 30, 1975

unctional Expenses — Year ended September 30, 1975

	Program Services				Support Services			Total
	Studying and influencing public policy	Information and education	Outdoor activities	Public law	General and administrative	Membership	Fund raising	
Employee benefits	\$ 463,017	\$ 144,166	\$ 145,649	\$ 14,922	\$313,982	\$145,189	\$ 26,364	\$1,253,289
Travel and trip supplies	140		799,843					799,983
Services provided by Sierra Club	158,980	264,332	5,270	6,147	105,852	38,899	13,767	593,247
and				527,644				527,644
s		427,267	7,524		2,853			437,644
s	162,939	144,880	46,269	27	70,840		5,897	430,852
mailing	48,367	122,173	35,825		71,308	43,991	55,087	376,751
s	52,622	165,240	12,963		8,294	10,112	13,426	262,657
						341,720		341,720
	53,401	117,020	43,518	86	573	14,865	38	229,501
		136,031						136,031
expenses	39,098	17,369	7,462	888	38,332	17,045	3,167	123,361
	65,372	11,159	2,548	3,076	28,384	967	1,733	113,239
	469	2,732	40,028		4,631			47,860
		16,627			8,404			25,031
	37,266	11,386	54,282	369	6,656	7	30	109,996
expenses	<u>\$1,081,671</u>	<u>\$1,580,382</u>	<u>\$1,201,181</u>	<u>\$553,159</u>	<u>\$660,109</u>	<u>\$612,795</u>	<u>\$119,509</u>	<u>\$5,808,806</u>

Statement of Changes in Fund Balances — Year ended September 30, 1975

	Unrestricted fund (deficit) (Note 9)	Restricted funds	Permanent fund	Property and equipment fund	Total
Fund balances (deficit) at September 30, 1974, as originally reported	(\$ 601,019)	\$186,370	\$575,304		\$ 160,655
Adjustments of fund balances to adopt accounting principles required by AICPA Industry Audit Guide "Audits of Voluntary Health and Welfare Organizations" (Note 2):					
Reclassification of funds designated for specific purposes by the Board of Directors from restricted funds to unrestricted fund	147,621	(147,621)			
Reclassification of permanent fund to unrestricted fund and donor-restricted funds	573,804	1,500	(575,304)		
Net book value of property and equipment				\$53,421	53,421
Payments made by the Sierra Club Foundation constituting an element of inventory cost	58,227				58,227
Fund balances at September 30, 1974, as restated	<u>178,633</u>	<u>40,249</u>	<u>—</u>	<u>53,421</u>	<u>272,303</u>
Revenues	5,314,942	713,553			6,028,495
Expenses	5,115,112	687,651		6,043	5,808,806
Excess of revenues over (under) expenses	<u>199,830</u>	<u>25,902</u>		<u>(6,043)</u>	<u>219,689</u>
Other changes in fund balances:					
Property and equipment acquisitions from unrestricted fund	(4,729)			4,729	
Fund balances at September 30, 1975	<u>\$ 373,734</u>	<u>\$ 66,151</u>	<u>—</u>	<u>\$52,107</u>	<u>\$ 491,992</u>

SIERRA CLUB
NOTES TO FINANCIAL STATEMENTS, SEPTEMBER 30, 1975

NOTE 1—Summary of significant accounting policies:

The accounts of the Club are maintained on the accrual basis. Property and equipment is recorded at historical cost or market value at date of bequest, as appropriate. Depreciation expense is determined using the straight-line method over the estimated useful lives (10 to 30 years) of the related assets. Marketable securities are carried at cost or fair market value at date of bequest, as appropriate. Such carrying value reflects, where appropriate, provision for unrealized losses resulting from declines in market value. Payments made on behalf of the Club by The Sierra Club Foundation and the fair value of legal services performed on behalf of the Club by The Sierra Club Legal Defense Fund are recorded as contributions and are charged to appropriate expense accounts. All contributions are considered to be available for unrestricted use unless specifically restricted by the donor. It is the policy of the Club to fund pension costs currently as accrued.

NOTE 2—Changes in accounting principles:

In September 1973, the American Institute of Certified Public Accountants adopted an Industry Audit Guide entitled "Audits of Voluntary Health and Welfare Organizations." During the year ended September 30, 1975, the Sierra Club retroactively adopted certain accounting principles as required by the Audit Guide and, accordingly, restated the September 30, 1974 fund balances to reflect the retroactive adoption of such accounting principles. The accounting principles adopted during the year ended September 30, 1975 included (1) recording of donated services, at fair value, as revenue and expenses, (2) recording of certain payments made on behalf of the Club by The Sierra Club Foundation as revenue and, as appropriate, expense or an element of inventory cost and (3) recording of property and equipment owned by the Club at historical cost or fair market value at date of bequest, as appropriate, less accumulated depreciation. The aggregate increase in fund balances at September 30, 1974 as a result of the adoption of these accounting principles was \$111,648.

NOTE 3—Marketable securities:

Marketable securities at September 30, 1975 consisted of the following:

	Carrying value	Market
U.S. Government bonds	\$496,227	\$496,395
Corporate bonds	73,188	56,375
Common stock	2,137	2,509
	<u>\$571,552</u>	<u>\$555,279</u>

During the year, the Club realized a net loss on the sale of marketable securities of \$14,617 and recognized an unrealized loss of \$25,000 representing declines in market value of certain corporate bonds.

NOTE 4—Notes payable:

At September 30, 1975, the Club had a revolving line of credit of \$450,000 with a bank at the bank's prime interest rate. Borrowings are secured by the Club's marketable securities.

The other note payable at September 30, 1975 is unsecured and bears an interest rate of 4½%.

NOTE 5—Tax status:

The Club qualifies for tax-exempt status under Section 501 (c) (4) of the Internal Revenue Code as a civic organization operated exclusively for the promotion of social welfare whereby only unrelated business income, as defined by the Code, is subject to income tax. Under this section of the Code, a contribution to the Club is not deductible for tax purposes by the donor.

NOTE 6—Pension plan:

The Club has an insured pension plan covering certain employees who have been engaged for more than one year and are at least 30 years of age. In addition to contributions by the Club, participating employees contribute a portion of their salaries to the plan. Total pension expense required to be provided under the plan for the year ended September 30, 1975 was approximately \$7,000 which includes amortization of prior service cost over a 30-year period. At September 30, 1975, the assets of the plan exceeded the actuarially calculated value of vested benefits. The estimated unfunded prior service cost at September 30, 1975 was approximately \$33,000.

An actuarial study of the Club's pension plan has determined that future plan revisions required in order to comply with the provisions of the Employee Retirement Income Security Act of 1974 will result in an annual charge to expense of approximately \$25,000. Management anticipates adoption of the required plan revisions retroactively to January 1, 1975 by the Board of Directors and, accordingly, the Club has provided pension expense of \$22,000 for the year ended September 30, 1975.

NOTE 7—Lease commitments:

The Club's office facilities and certain accounting equipment are leased under various agreements expiring 1978-1985. At September 30, 1975, minimum annual rental commitments were as follows: fiscal 1976 - \$143,000; 1977 - \$162,000; 1978 - \$149,000; 1979 - \$150,000; 1980 - \$153,000; 1981-1985 - \$815,000.

The initial term of the lease for the Club's office facilities is ten years. The terms of the lease also provide for renewal options for two five-year terms after renegotiation of rental terms, and for an option to purchase, at fair market value, the office building and the underlying land after the fifteenth year of the lease.

NOTE 8—Contributions from The Sierra Club Foundation and The Sierra Club Legal Defense Fund:

Contributions for the year ended September 30, 1975 included (1) \$565,203 from The Sierra Club Foundation representing direct reimbursements to the Club and payments on behalf of the Club in support of programs that are nonlegislative in nature and (2) \$527,644 from The Sierra Club Legal Defense Fund representing the fair value of legal services performed on behalf of the Club.

NOTE 9—Unrestricted fund:

Revenues from life memberships are designated by the bylaws of the Club for separate investment as a permanent fund, only the income of which may be expended for general operations. In addition, the Board of Directors has designated a portion of the unrestricted fund to provide for funds in addition to insurance coverage to rebuild the Clair Tappaan Lodge in the event of fire, and to provide for unanticipated adverse results of operations or catastrophe expenses relating to Club trips and outings. The following is a summary of the unrestricted fund balance at September 30, 1975:

Fund designated by Club bylaws for permanent investment	\$527,700
Designated by Board of Directors for:	
Clair Tappaan Lodge reserve	82,500
Outings reserve	70,000
	<u>680,200</u>
Accumulated deficit from general operations	<u>(306,466)</u>
Unrestricted fund balance	<u>\$373,734</u>

NOTE 10—Pending litigation:

The Sierra Club, the County of Sacramento and others are defendants in a case in the Sacramento Superior Court in which they have been charged by the Consumnes River Protective Association and others with certain acts of disruption and trespass at the Consumnes River. Insofar as damages are concerned, the plaintiffs seek from each defendant nominal damages in the sum of \$1, exemplary or punitive damages in the sum of \$1,000,000 and reasonable attorney's fees in the sum of \$10,000. Management believes there is virtually no likelihood that any significant liability will be accrued to the Club as an outcome of this case.



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The *California Explorer* is written for and by California backpackers and ski tourers. But it is much more than just a newsletter. It is an open forum where our readers are encouraged to write in their own on-the-trail experiences for the benefit of all. As you can imagine, this interplay with our subscribers makes for some highly informative, entertaining reading.

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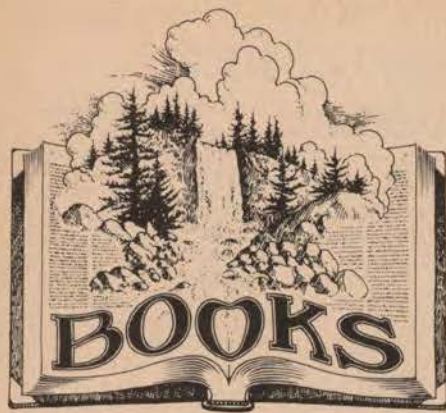
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Where Forests Stand

The Forest Killers: The Destruction of the American Wilderness, by Jack Shepherd; Weybright and Talley, New York, 1975, \$15.00

The Forest Service: A Study in Public Land Management, by Glen O. Robinson; *Resources for the Future/Johns Hopkins University Press*, Baltimore and London, 1975. Paper, \$4.95

David Sumner

WHEN FUTURE HISTORIANS begin to focus on the 1970s, one of their first tasks will be to sort out and evaluate our gaggle of crises: energy, canning lids, meat, newsprint, wheat, minerals, lumber, housing, morality and others.

One of the earliest of the bunch was the Housing Crisis, which was officially launched in 1968 with a call for a national construction goal of 2.6 million new homes each year for the next decade. "Twenty-six million new homes!" Reporting on the clearcutting controversy in the central Rockies, I heard those words in hearing rooms, in District Rangers' offices and on "show-me" field trips. I got them from chamber-of-commerce managers, small-town newspaper editors and timber-industry executives. I read them in reports, pamphlets, fliers, white papers and "PR" materials. One would have thought we were about to rebuild Detroit, Watts and the whole shame of the sixties out of pure 2x4s. To get the wood, of course, it was necessary to "up the cut." This was a "crisis," after all, so there was no other choice but to raid the National Forests.

And yet:

- In 1968 the timber industry was "sitting on" (i.e., withholding from market) 26.6 billion board feet of National Forest timber, a two-year supply;
- That same year, the industry exported 2.23 billion board feet of timber to Japan, which was suffering no building crisis;
- From 1970 to 1973, the price of lumber in an average two-story, one-family home shot up over 140 percent—about \$1,700/house—effectively pricing such a dwelling beyond the reach of 2.5 million low-income Americans;
- A 1973 General Accounting Office study showed what many had already concluded from looking on the ground: the industry could get all the timber it said it needed from waste left behind after loggers had cut and run;
- Twenty-six million new homes in a decade would mean a new dwelling for fully half the American home-buying sector;
- Most low-income urban housing (clus-

ter or high-rise) doesn't use much wood anyway;

● Per-capita consumption of many wood products in the United States is declining; substitutes are taking over.

So, the Timber Crisis, child of the Housing Crisis, shows itself finally to be little more than a word crisis, largely a figment designed to fabricate a hopped-up demand for more timber.

Well-marshalled facts and arguments like these are what make Jack Shepherd's *The Forest Killers: The Destruction of the American Wilderness* the most sustained and far-reaching indictment of the three-headed "timber beast" yet to appear. The U.S. Forest Service, the timber industry and the Nixon administration: Shepherd rakes them all, relentlessly, for over 400 pages. His tone is that of an advocate and investigative journalist in high gear. The research behind *The Forest Killers* is ample—some of it standard, a good bit of it fresh. Shepherd quotes memos (leaked and other), reports, testimony and many persons interviewed in Washington and forty-six states. The Sierra Club's Gordon Robinson ("wisest bear in the woods" and Forest Service gadfly) opened his files to Shepherd; his presence is felt throughout *The Forest Killers*.

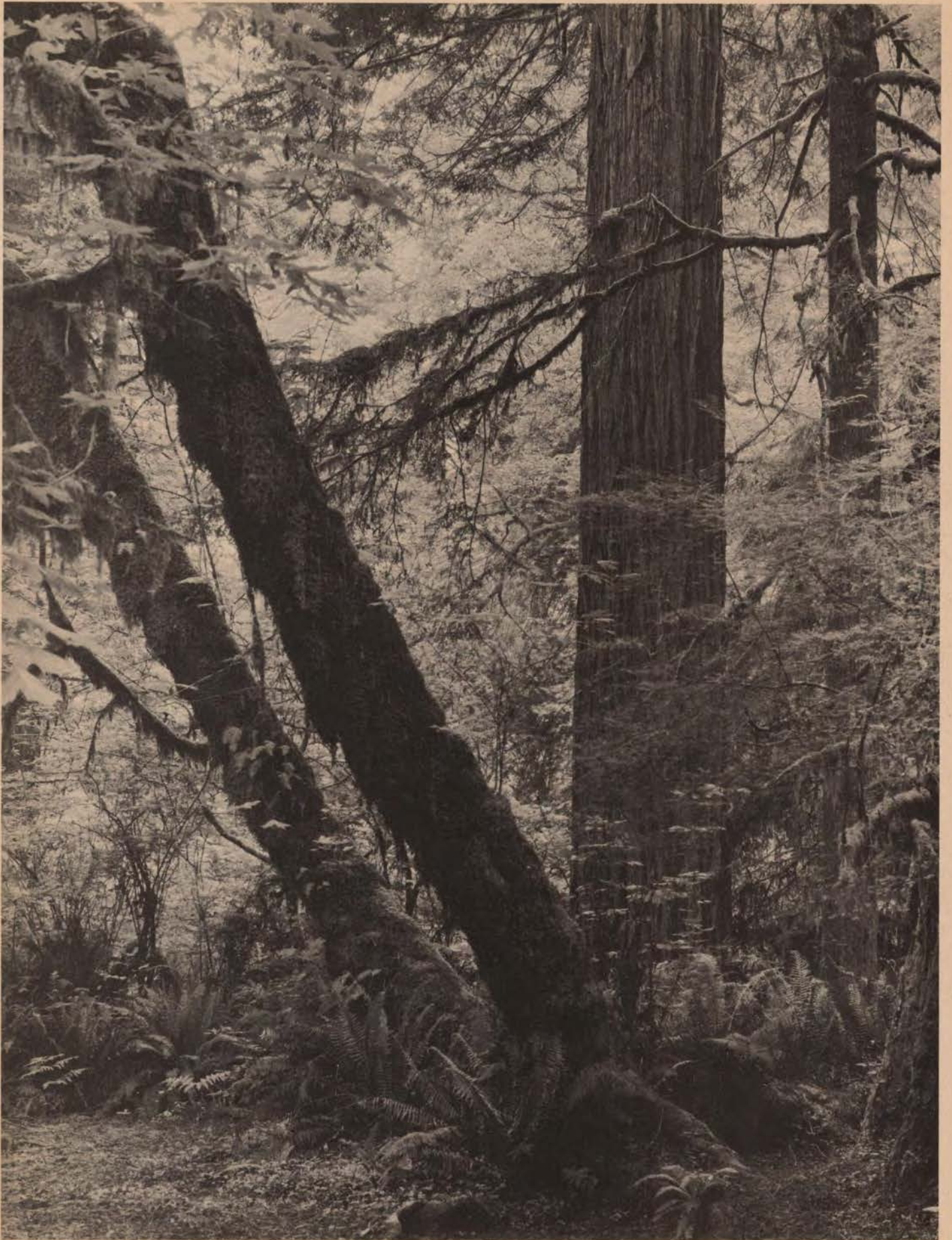
Covering the entire timber controversy of the last decade, and then some, is no easy task, yet this book moves about ambitiously and well. Here, as one would expect, are full, tough chapters on the two most prominent issues: clearcutting and wilderness. In addition, there are hard, well-researched sections on road building (with a sustained exposé of the Elk Mountain fiasco on the Santa Fe National Forest in New Mexico), spraying (especially for the tussock moth), ski areas (focus on Mineral King), mining, grazing, self-justifying Forest Service research, fire ecology (enter Smoky the Bear), the timber lobby in Washington, the industry's grip on Maine, the odious National Timber Supply Act and the Executive Orders which followed its defeat, the huge timber sale on the Tongass Na-

tional Forest in Alaska, and many more.

Included also are careful examinations of the Forest Service's manipulation (ever upward) of the decisive "allowable cut" figure, its peculiar way of peddling timber and, most important, the manner in which the whole agency is budgeted. Shepherd's chapter on the bogus timber shortage is perhaps the most revealing—and incriminating—in the book.

The final chapter of *The Forest Killers* is titled "The Last Cuts," a phrase that belies the industry's claim that trees are a crop like wheat or beanstalks, that there is no such thing as "last cuts," only "thrifty new forests." Events of the past decade, however, have been too frantic to support this carefully nurtured image of diligent husbandry, this vision of the timber industry contentedly sowing and reaping its way into a bountiful tomorrow. If logging is like farming, if the industry is taking care to plant tomorrow's forests today, then why has it relentlessly sought to increase the annual allowable cut on the National Forests? Why is it so adamant in its opposition to wilderness? Why does it insist, beyond all the pleadings of reason, on clearcutting every last patch of mature timber in this country? The standard explanations ("greed," "bureaucracy," etc.) do not entirely explain the industry's excessive zeal to get those trees. This is strange behavior for an industry that claims to be an agricultural enterprise that will be around for years to come, planting its seeds and harvesting its crops.

In "The Last Cuts" Shepherd describes the timber industry in a peculiar state of transition that suggests it does not intend just sitting around. The picture that clearly emerges is that of an industry whose leaders have a minimal sense of obligation to anything but the stockholders and a highly developed eye for the main chance. Weyerhaeuser slowly selling off domestic holdings, focusing on places like the Philippines and Malaysia; U.S. Plywood-Champion International waiting out the Biafran strike,



Philip Hyde

now moving on the rainforests of south-eastern Nigeria; Georgia-Pacific picking up cutting rights in Borneo.

In fact, the American timber industry has perceived our forests as finite in terms of its ambitions, and it intends to cut what it can and then leave. Trees may be renewable, but *not fast enough*. Big trees standing right now are what it wants, for in truth, this industry, as a whole, has never operated within the biological constraints of the resource on which it depends. Shepherd describes the current state of affairs: we're cutting trees faster than we're growing them. We're scrambling to get the gravy (call it "abundance") while the getting is good, because even twenty-five years from now there will be no more huge timber sales like the monster on the Tongass, or smaller (but still big) sales now active in the Pacific Northwest, the west slope of the Rockies and elsewhere.

Unlike the fossil-fuel folks, however, the timber industry really can't cry crisis. They can't say we're running out of abundant trees because the admission is too obviously self-incriminating. So they rush urgently to "up the cut" while they can, knowing well that their halcyon days are running out.

Very unlike *The Forest Killers*, Glen O. Robinson's *The Forest Service: A Study in Public Land Management* is a staid, measured examination of the agency and its policies. For one involved in environmental advocacy, its prime value will be as a library resource. Robinson covers much of the same ground as Shepherd, but his overall approach is more like that of a friendly management consultant. He digs deeply, precisely and informatively into Forest Service policies and actions to explain what they have been and are, then makes suggestions as to how the agency might improve. Basic philosophies are not seriously questioned; the Forest Service is chided for being "slow to recognize the modern mood of an environmentally conscious public."

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Date Change: High-Light #134 Northern Yosemite, Sierra, leader Stuart Dole, has been changed to August 7-21. See January Bulletin for application & information.



Bruce Barnbaum

Should Trees Have Standing?, by Christopher D. Stone; William Kaufman, Inc., Los Altos, California, 1974. Paper, \$2.95

Maurice J. Forrester, Jr.

THE environmental revolution in which we are all participating to a greater or lesser degree has (like so many other modern social upheavals) seen many of its battles won or lost in the courts and the legislative halls of the land. There have been judicial victories, such as the Monongahela National Forest clearcutting decision; and there have been ostensible setbacks, as in the Mineral King decision. But win or lose, for good or ill, the environmental movement is inextricably bound up in our laws and legal apparatus. Indeed, it often seems that many of our environmental leaders must spend a good deal more of their time in court and at hearings than they do enjoying the environment they are striving so hard to protect.

Looking to the future, it appears certain that there will be no abatement of the environment's intimacy with the law. The nature of the relationship, however, is likely to evolve as the law itself evolves. In an effort to assess the direction this evolution might take, Christopher D. Stone, professor of law at the University of Southern California, has written, *Should Trees Have Standing?* This remarkable treatise, which seems destined to take its place as a classic of environmental literature (on a par with Aldo Leopold's *A Sand County Almanac*) first appeared in the *Southern California Law Review* in the spring of 1972, and was promptly quoted by Justice William O. Douglas in his famous dissent from the Supreme Court's Mineral King decision in *Sierra Club v. Morton* (Mineral King case).

Acknowledging the unorthodox nature of his arguments by the very title of his introduction, "The Unthinkable," Stone lays it on the line early in the essay:

I am quite seriously proposing that we recognize legal rights of forests, oceans, rivers and other so-called "natural objects" in the environment—indeed, of the natural environment as a whole.

To provide a solid foundation for his heresy, the author skillfully and persuasively outlines the development of law in human society. As Stone depicts it, the law is an organism that since its beginnings in the earliest societies has steadily grown and expanded its purview. At first, the protection of "law" extended only to the members of one's immediate family. "Strangers" had no rights and were fair game for robbery or worse. Then slowly, step by step, the web of the law was enlarged to encompass the city and the state—adult males only, of course; women and children had no rights. Eventually forms of the law sheltered all men of the same race. Blacks, browns and "all those others" remained, as Kipling put it, "lesser breeds without the law."

It was not until relatively modern times that the rights of nonwhite races and women were first affirmed within the law. These rights are still being expanded today. An even more recent development was the first definition of rights for children. Modern times, too, have seen the development of rights for abstract entities (corporations) and for nonhuman animals.

The law has not stopped growing, and Stone believes that the time has come to acknowledge legal rights for the natural environment. The rights of trees and streams and wilderness areas would not be the same as human rights, of course, and indeed, their very definition would be a long evolutionary process. The im-

portant thing in the beginning is to establish the principle that the environment can be represented by counsel in court in its own right without regard to its impact on humanity.

Drawing on the long-established precedent that courts can be petitioned to appoint guardians for incompetent persons, Stone argues that

... we should have a system in which, when a friend of a natural object perceives it to be endangered, he can apply to a court for the creation of a guardianship.

It would be the duty of the guardian to argue before the court in behalf of the threatened environmental unit and to seek the court's protection, not only against the immediate dangers and those that impinge directly on humankind, but even against dangers less imminent and without financially measurable human impact:

I favor a system in which the guardian would urge before the court injuries not presently cognizable—the death of eagles and inedible crabs, the suffering of sea lions, the loss from the face of the earth of species of commercially valueless birds and the disappearance of a wilderness area.

No right is absolute, and neither would

be the rights that would evolve for the environment. Compromises would have to be made and balances struck:

... whatever the merits of "total purity" as an ideal, the social price tag of putting it into effect will often be too high to accept.

*... to bring the environment into the society as a rights-holder would not stand it on a better footing than the rest of us mere mortals, who every day must suffer some of the irreducible injuries of an overcrowded planet: a certain amount of smog, of noise, of limited space. Much of this sort of thing the law must write off as *damnum absque injuria*—harms for which there ultimately can be no redress. Forests are going to be cut, and fish fished.*

Going beyond the formal mechanisms of the law, Stone looks to a gradual change in humanity's underlying attitude toward the environment. He sees the eventual development in humankind of a basic sense of unity with all their fellow travelers on the spaceship Earth. Without abandonment by society of its old concepts of the natural environment as an adversary to be subdued or a storehouse to be plundered, all the wiles of the law will fail for lack of public support.

"Nature," he writes, "is a continuous theater in which things and species (eventually man) are destined to enter and exit." But although individual species and life forms, including humankind, have no claim to permanence, nature itself will continue. While humanity remains on the scene, however, it has a part to play—as important as any other part, but no more so:

... I do not think it too remote that we may come to regard the Earth, as some have suggested, as one organism, of which Mankind is a functional part—the mind, perhaps; different from the rest of nature, but different as a man's brain is from his lungs.

This book begins to open the windows on a new view of the natural environment and man's place therein. As humankind and their environment move toward a closer accommodation, the arms of the law open to enfold them both and to accord to nature the protection of this singular creation of human genius. Anyone concerned about the future of the environmental movement should read this book, if for no other reason than to be prepared for that day which "is not too far off when the law will call us to account for . . . our responsibilities as trustees of the earth."

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More on Toxic Substances

To the Editor:

In the November/December issue of the *Sierra Club Bulletin* the section on polyvinyl chloride in the article on toxic substances legislation contained numerous errors of fact and interpretation that we believe should be corrected in a future issue of the *Bulletin*.

Of utmost concern is the failure to differentiate adequately between polyvinyl chloride (PVC), the plastic, and vinyl chloride monomer (VCM), the gaseous raw material from which PVC is made. Contrary to the very first sentence of the section on polyvinyl chloride, PVC is *not* carcinogenic, and no knowledgeable individual in government or the medical profession believes it is.

Only VCM, the gas, has been implicated in the tragic series of angiosarcoma deaths that have been discovered and reported by the industry over the past two years, and only then as a result of circumstances involving extremely high exposures over a period of many years. According to published government statistics, the mean length of exposure for those workers who contracted angiosarcoma was 17 years, which effectively rebuts the statement in the article that the disease could "be triggered by even a single overdose."

Furthermore, there is not one shred of evidence that anyone in any place has ever suffered harm from contact with finished polyvinyl chloride products. While it is true that detectable amounts of vinyl chloride were found in a variety of liquids packaged in PVC bottles made from "old-style" resins, industry efforts over the past two years have reduced the residual monomer content of packaging-grade resins to such an extent that it is now impossible to detect any VCM migration from PVC packages into their contents.

It should also be pointed out that it was not the FDA but the Treasury Department's Bureau of Alcohol, Tobacco and Firearms that withdrew its provisional ap-

proval for PVC liquor bottles. This was not done, as your article states, because of the VCM-cancer relationship in humans (which was unknown at the time) but only because VCM affected the "taste" of the liquor.

In addition, the FDA has only "proposed" that Federal approval of rigid PVC food packaging be withdrawn; it has not "banned" anything. This proposal was made on the basis of completely out-of-date test results. Extensive new studies prove conclusively that the current improved grades of rigid PVC packaging do not expose the consumer to detectable amounts of VCM.

While it is true that most people cannot tell whether a particular plastic food container is made from PVC or not, this should be of no concern to the American consumer. If the container is safe (as PVC packaging materials are), then there is no reason to worry about the particular type of material from which it is made. If it is unsafe, then it should not be on the shelf in the first place.

On the question of increased birth defects rates in areas where PVC plants are located, a July 1975 report from the Federal Center of Disease Control concluded, on the basis of the Center's own investigation and a thorough analysis of the existing research data, that the evidence did "not establish any association between (birth defect) cases and vinyl chloride exposure." Furthermore, while investigations are still under way, to date the Center for Disease Control, the government authority in such matters, has not confirmed a single case of vinyl chloride-related angiosarcoma among people living in the vicinity of PVC plants.

With regard to four other errors in the article:

- The so-called "new car" smell in automobiles does not come from vinyl chloride escaping from PVC upholstery. In fact, the odor of VCM only becomes detectable at between 2,000 and 4,000 parts per million, levels seldom exceeded even in uncontrolled plant situations decades ago and never exceeded today.
- VCM is not released when PVC sheets are "hot wire" cut for meat wrapping. The combustion by-product involved is hydrogen chloride, a respiratory irritant that should not be inhaled, but is not VCM and is not carcinogenic.
- To the best of our knowledge, there is no reliable scientific evidence in the literature linking liver ailments of any kind with the migration of VCM from PVC medical devices, such as syringes, tubing, catheters, or any others.
- While the PVC industry would undoubtedly appreciate the compliment, PVC is the second most common plastic in use in the U.S. today, not the first, and it accounts for slightly less than 20 per cent of the total plastic market, not "about half" as your article states.

It was not our intent in writing this letter to diminish the seriousness of the vinyl

chloride problem, but merely to place that problem in its proper perspective. It was first identified as an industrial health hazard in 1974, and through the combined efforts of industry, the scientific community, government and organized labor, a tremendous amount has been accomplished in the last two years.

Plant exposure levels have been reduced a hundred-fold or more, and the same is largely true of emissions into the environment. New and better packaging resins have been developed, thus eliminating the possibility of detectable monomer migration into food.

These efforts have enabled us to achieve the twin goals of protecting workmen and the American public from the dangers of excessive VCM inhalation while at the same time assuring the continued availability of a wide range of valuable and useful PVC products to our society.

Ralph L. Harding, Jr.
President

The Society of the
Plastics Industry, Inc.
New York City



The Editor responds:

We dispute Mr. Harding's contention that the article fails to "differentiate adequately" between PVC and VCM. In fact, it explains clearly that VCM is bound up in, but not chemically part of, the PVC molecule. Evidently, Mr. Harding would like to separate the two in word even though the industry he represents has had trouble doing so in deed. He plays down the fact that virtually all PVC plastics on the market contain detectable, and many would say dangerous, levels of VCM. If he is correct that the industry has developed new resins in which VCM is negligible, then we should all be pleased. We wish, however, that he had supplied concrete details, including whether these new resins are in widespread use. Until then we prefer to rely on a statement in the May 1975 issue of *Modern Plastics* to the effect that PVC resins free of VCM are not likely to be a commercial reality in the near future. It does us no good if these new resins are merely test-tube achievements.

Which brings us to the point of whether we were justified in calling PVC a "known carcinogen." A chemist might disagree

because VCM, the recognized toxic ingredient, is not part of the PVC molecule. In common parlance, however, it is enough that a substance merely *contain* a toxic agent for it to be called poisonous. Thus we say that certain mushrooms are poisonous even though we understand that not every molecule they contain, but merely particular alkaloids, are the culprits. When we say that rattlesnakes are poisonous, we do not mean the rattles.

Mr. Harding also suggests that the article implicated PVC in the recent angiosarcoma deaths. Not so, except that they occurred to PVC workers. Even so, it identifies exposure to VCM gas as the cause. It seems prudent, however, in the light of this relationship, to point out that PVC contains VCM and that VCM has been shown to migrate from PVC containers into various liquids.

Mr. Harding says that "there is not one shred of evidence that anyone in any place has ever suffered harm from contact with finished polyvinyl chloride products." We refer him to "Plasticizers in P.V.C. and the Occurrence of Hepatitis in a Haemodialysis Unit," *Scandinavian Journal of Urology and Nephrology*, May 1971, pages 141 through 145. Here, Neegaard *et al* cite evidence that hepatitis may be induced through exposure to certain phthalic acid esters that could be "washed out from a PVC blood tubing set tested for use in hemodialysis."

Mr. Harding relies on the Federal Center of Disease Control to assure us that evidence "did not establish any association between (birth defect) cases and vinyl chloride exposure." We contend there is reasonable doubt, especially in the light of work showing that vinyl chloride induces gene mutations. (See Malaveille, *Biochemical and Biophysical Research Communications*, 63, 2 [1975]; Bartsch, *International Journal of Cancer*, 15, 1975; Rannug *et al.*, "Mutagenicity of Vinyl Chloride after Metabolic Activation," reprinted in *Vinyl Chloride*, Hearing before the Senate Subcommittee on Environment of the Committee on Commerce, August 21, 1974, 32; Ducatman, "Vinyl Chloride Exposure and Human Chromosome Aberrations," *Mutation Res*, 31, 163 [1975].)

With regard to Mr. Harding's assertion that only prolonged exposure to high levels of VCM gas will produce angiosarcoma, we cite simply the following testimony from Senate hearings on vinyl chloride:

"Statement of Dr. Irving Selikoff, Professor of Environmental Medicine, Mount Sinai Medical School, New York City

"Dr. Selikoff . . . it is common experience that cancers resulting from exposure to an agent at low levels generally take a longer time to become evident. Since the vinyl industry is a new one, largely developed during the 1950s and 1960s, and

since the cancer cases among the polymerization workers have been found to occur after an average of 20½ years from onset of exposure, our experience, both industrially and environmentally, is still ahead of us. . . . The full, potential impact of vinyl chloride cancer is not yet known. It may be considerable."

Mr. Harding is correct that HCl is released by cutting PVC wrap with a "hot wire," as in butcher shops, but wrong in suggesting that it alone is the cause of the respiratory ailment known as "meatpackers' asthma." By the same token, we were inaccurate in suggesting that the release of VCM was the sole cause. According to Phillip L. Polakoff, author of "PVC Paralysis Products—A Potential Cause of Respiratory Impairments," in *Archives of Environmental Health*, June 1975, volume 30, the likely causes of the affliction are certain plasticizers released in conjunction with VCM in the process of cutting PVC wrap with a hot wire. He doubts that HCl alone could produce this chronic respiratory disease. Polakoff also said that he had been informed by the industry that the seat-cover smell in new cars was in part caused by the release of VCM gas.

In the following instances, Mr. Harding was correct in pointing out inaccuracies. We appreciate his bringing them to our attention and take this occasion to pass them on to our readers.

First, the FDA has not banned rigid PVC food containers as reported; it has only proposed such a ban, but according to an agency spokesman the proposed ban is likely to be implemented substantially in its current form this coming summer.

Second, PVC does not comprise "about half" of all plastics in use today, but it is present, at least in part, in about fifty percent of all plastic products, according to an article in the January 1975 issue of *Job Safety and Health*, a magazine published by the U.S. Department of Labor's Occupational Safety and Health Administration.

Third, Mr. Harding is correct about who instituted the ban on PVC liquor bottles and perhaps even on the reason for the ban. But it is not true that the carcinogenic properties of VCM were unknown at the time of the ban in 1973. To name only one study: Viola, P. L., "Carcinogenic Effect of Vinyl Chloride," *Abstract Tenth International Cancer Congress*, Houston, Texas (1970), page 20.

Despite all the attention paid to matters of "fact and interpretation" in Mr. Harding's letter, its most telling statement is his contention that the American public should not concern itself with what containers are made of so long as the substances are safe. But this begs the question. Who is to say what is safe? Up to now, we have left this decision largely in the hands of industry, and as a result we

have been overwhelmed with toxic substances, all of them bearing industry's seal of approval. No offense intended, but we cannot accept Mr. Harding's or the plastics industry's assurances that PVC containers are safe. We were also once told that DDT was safe. Mr. Harding says, "If it is unsafe, then it should not be on the shelf in the first place." Precisely. And if toxic-substances legislation requiring pretesting is passed, it won't be.



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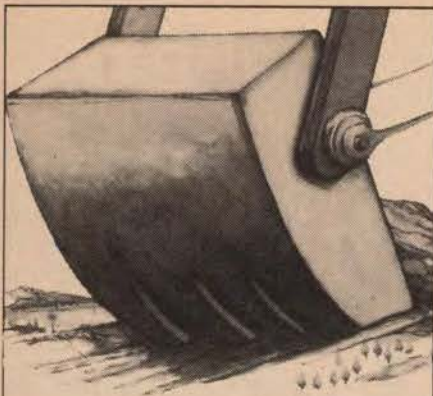
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News

Export of nuclear fuel to India challenged

The Sierra Club, the Natural Resources Defense Council and the Union of Concerned Scientists filed an administrative appeal in early March to block the United States' proposed export of nuclear fuels to India. In this, the first instance of public intervention in the Nuclear Regulatory Commission's licensing procedure for nuclear exports, the groups called for a denial of Edlow International Company's application to ship approximately 40,000 pounds of uranium fuel to the Tarapur Atomic Power Station near Bombay. Approximately 200 pounds of plutonium—enough for ten Hiroshima-sized bombs—would be produced in the burning of the fuel in Tarapur's two 200-megawatt light-water reactors. The groups said that one purpose of their action is to force major changes in American nuclear-export policy. "The U.S.," they said, "by fostering nuclear-power growth around the globe, is providing the basis for nuclear proliferation and setting the stage for a world catastrophe." Although India exploded her first nuclear device almost two years ago, she still refuses to sign the Nuclear Non-Proliferation Treaty, and refuses to submit her nuclear activities to adequate international safeguards and inspection.

U.S. population grows by 1.8 million in 1975

According to provisional estimates released last month by the Bureau of the Census, U.S. population reached 215,005,859 as of January 1, 1976. The increase in 1975 was 1.8 million, compared with an increase of 1.6 million in 1974 and 1.5 million in 1973. On the basis of data for the first ten months of 1975, the Census Bureau reports that the gain was a result of approximately 3.2 million births, 1.9 million deaths and net immigration of about 504,000. If current trends continue, the population of the U.S. will reach 300 million in 2025. The Sierra Club supports a rapid end to population growth in this country.

"Game Range Bill" becomes law

In what Sierra Club Washington Representative Charles Clusen termed "a total victory," President Ford signed H.R. 5512, the "Game Range Bill," into law on February 27. The bill amends the Fish and Wildlife Administration Act of 1966 to provide that no unit of the National Wildlife Refuge System can be disposed of or transferred without an act of Congress. The bill also placed sole jurisdiction for the Kofa, Charles Sheldon and Charles M. Russell game ranges with the Fish and Wildlife Service, thus eliminating joint authority of the Fish and Wildlife Service and Bureau of Land Management.

Senate committee rejects Ford's nomination of Hooper to TVA board

The Senate Public Works Committee voted 11-1 to "postpone indefinitely" further consideration of President Ford's nomination of James F. Hooper to the board of directors of the Tennessee Valley Authority. The motion, jointly proposed by Chairman Jennings Randolph (D-West Virginia) and Senator Howard Baker (R-Tennessee) is tantamount to a rejection of the Mississippi farmer, whose only apparent "qualification" for the post is his marriage to the Republican committeewoman from that state.

Club sues to protect Death Valley

A lawsuit filed recently against Secretary of the Interior Thomas S. Kleppe and other federal officials in U.S. District Court in San Francisco would compel the secretary to protect Death Valley National Monument from damage currently being caused by "active and substantial" open-pit and strip mining operations for talc and borates. The suit, brought on behalf of Death Valley by the Sierra Club, Friends of the Earth and George Service, a leader of guided expeditions into the Monument, contends that Secretary Kleppe is by law the guardian of all national parks and monuments, and that by allowing strip mining operations within Death Valley, he is violating his statutory trust and duty, as well as the Wilderness Act and the National Environmental Policy Act.

Wildlife-refuge hearings

Public hearings on the operation of the National Wildlife Refuge System by the U.S. Fish and Wildlife Service (FWS) were held across the nation all through March. Testifying for the club at the Washington, D.C., hearing, Sierra Club National Wildlife Committee Chairman Robert Hughes called for adequate funding and staffing for the system, which currently comprises almost thirty-four million acres on 367 refuges in forty-nine states. A draft environmental impact statement produced by FWS in partial response to a Sierra Club lawsuit indicated that many refuges have had to be "mothballed" for lack of funds to operate them at even a marginal level. "The consequences of such actions could be irreversible," Hughes said. "The Sierra Club does not believe that the public would elect to abandon or reduce, directly or indirectly, our National Wildlife Refuge System." The club is looking forward to legislation that would create an "organic act" for the system, thereby providing FWS with clear guidelines for its operation.

Congaree Swamp campaign goes to Congress

In what local Sierra Club leaders termed a "giant step forward" in the long-standing drive to preserve the ancient hardwood forests of the Congaree Swamp in South Carolina, Congressman Floyd Spence (R-South Carolina) introduced legislation into the House of Representatives to establish a Congaree Swamp National Preserve under the management of the National Park Service. The bill was referred to the House Interior Subcommittee on National Parks and Recreation. Sierra Club members are urged to write to their representatives serving on this subcommittee to request their support for this bill.

Kleppe decides to proceed with Alaskan OCS lease sales

Interior Secretary Thomas Kleppe has announced his decision to proceed with a sale of oil and gas leases on the Outer Continental Shelf (OCS) in the northern Gulf of Alaska. Environmentalists, the Council on Environmental Quality (CEQ), the Environmental Protection Agency and Governor Jay Hammond had sought to delay the lease-sale to allow time for ascertaining the environmental and social impacts of OCS activity in this area. CEQ considered the Gulf of Alaska the area of highest environmental risk of all American OCS areas under current consideration for oil exploration because it is subject to violent gales, great waves and earthquakes. Governor Hammond had asked repeatedly for more time and federal funding to help small coastal communities prepare for the impacts of the development of extensive coastal facilities in conjunction with offshore oil operations.

Club News

Club testifies on oil tankers

At hearings before the Senate Commerce Committee in early March, Eldon Greenberg of the Center for Law and Social Policy testified that the Coast Guard's failure to promulgate regulations under the Ports and Waterways Safety Act of 1972 has resulted in the exemption of "literally hundreds of new oil tankers from meaningful standards and virtually ensured that the design and construction requirements of the law are little more than dead letters." Greenberg, who represented the Sierra Club and eight other groups, recommended several amendments to the act which would make it clear that the best available technology must be employed, that standards must be adopted regardless of compatibility with international agreements and that exemptions for ships constructed subsequently are to be granted sparingly. A suit to force the Coast Guard to implement effective regulations is currently before the courts.

Club chooses new research director

The Sierra Club has recently chosen Edmund A. Schofield of Columbus, Ohio, as its new Director of Research. Schofield will be leaving his position as an ecologist with the Environmental Assessment Section of the state of Ohio's Department of Natural Resources, where the thrust of his work found him in repeated contact with numerous federal and state agencies, universities, private institutions and citizen groups. An authority on polar lichens, Schofield also leaves a position as research associate with the Institute of Polar Studies at Ohio State University. At the time of his appointment, he was a member of the club's International Committee and served as the Ohio Chapter's Alaska Representative. He also served as chief program consultant for the recent EARTHCARE Conference. Schofield assumed his responsibilities as Sierra Club Research Director on March 15. He replaced Robert R. Curry, who resigned last year to resume his professorship at the University of Montana.

Interior Department ready to accelerate coal development

Appearing before the Senate Interior Committee, Secretary of the Interior Thomas Kleppe indicated that his department is ready to swing into action to step up the pace of federal coal leasing. "Directions for approval of mining plans are in the process of being prepared," he said. In sharp contrast, the General Accounting Office (GAO) testified that the need for new federal coal leasing has not been established, and if such a need exists, the Department of Interior's policies are not sufficient to administer an adequate program. GAO recently issued a report on federal coal policy.

Final Mineral King EIS released by Forest Service

The U.S. Forest Service released in early March its final environmental impact statement on the proposed Disney development in the Mineral King National Game Refuge in California's Sequoia National Forest. The preferred alternative calls for a year-round recreational complex capable of handling 6,000 people at one time in the summer and 8,000 in the winter in this 16,000-acre valley. Skiing facilities on the south side of the valley would include eighteen ski lifts. Planned support facilities would include hotels and apartments (ten to twenty percent of which would be luxury units), restaurants, shops, swimming pools, skating rinks, helicopter pads, parking lots (including a "multi-tiered parking structure for 2,200 cars"), gas stations and "covered walks, malls and bridges." The Sierra Club believes that Mineral King should be protected from development by being added to the surrounding Sequoia National Park.

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Club News

The Sierra Club Board of Directors met in San Francisco on February 21-22 and adopted, among other things, an extensive Agricultural Policy. The entire text of that policy follows.

Sierra Club Agricultural Policy

Agriculture—the raising of plants and animals for food and fiber—is an essential human activity. Its use of land, water, energy and other resources merits high priority, but its impacts on these resources are many and distribution of its benefits far from equitable. We must strive for an equitable and sustainable balance between human population and agricultural supply.

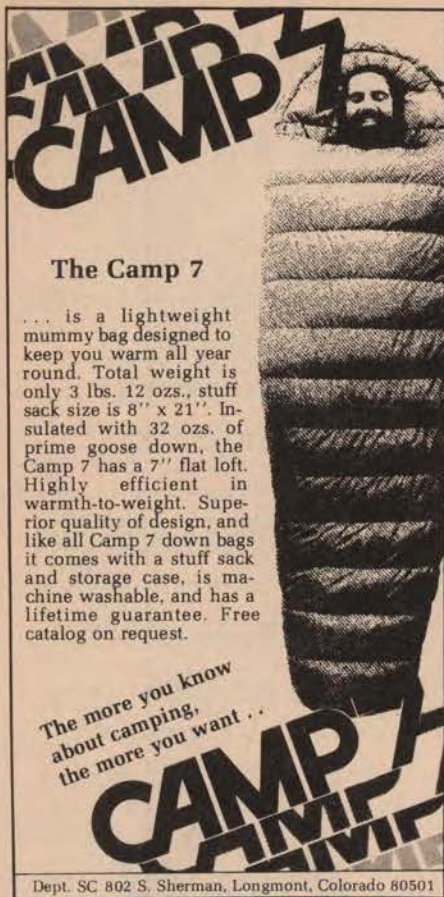
- A. *Goals:* Agriculture must be carried out in an environmentally sound manner which:
1. Protects land, soil, and water resources and maintains their longterm productivity.
 2. Conserves wilderness and other natural land and aquatic ecosystems.
 3. Protects genetic diversity.
 4. Reduces energy and materials input per unit of production.
 5. Minimizes dependence on manufactured chemicals.
 6. Promotes innovative techniques, such as low-energy, labor-intensive technologies, solar energy for crop drying, crop, livestock and sewage waste usage, minimum tillage, and agricultural training for urban residents.
 7. Meets the essential nutritional needs of a balanced world population.
 8. Promotes longterm, stable associations of those who raise crops with the lands upon which their livelihood is based.

B. *Land Use:* Two trends are of intense concern: the loss of productive agricultural land to urban, industrial and mining development and the conversion of marginal lands and underdeveloped areas to agricultural use.

1. In general, land should not be converted from those agricultural uses which protect long-term resource productivity.
2. In areas not now in agricultural use, land use classifications and policies should be developed and implemented before conversion is permitted.
3. Those seeking to convert land to other uses should bear the burden of proving that the proposed new use is more important to current and future public welfare and that there is no other feasible location for the proposed use.
4. Comprehensive land use planning is necessary to ensure a balance of lands for all purposes. It is important that there be wide public and professional participation in the planning process and that farmers, ranchers, and other agricultural professionals participate in land use decisions.
5. Zoning and land-division policy and practice should be restructured to serve as a substantive control over conversion of agricultural lands.
6. Tax policy, to the extent it encourages conversion of agricultural land, must be reformed. Examples include adoption of differential assessment and tax deferral techniques, restructuring of estate and inheritance taxes to promote continuity of family farming, and elimination of tax shelters.
7. The concept that the "highest and best use" of land and water resources is that which can pay the highest immediate price must be modified to reflect the longterm goal of preserving agricultural productivity and natural resources.
8. Soil erosion control should be focused on prevention of the problem at its source. Special attention should be given to restoration of formerly productive eroded lands.
9. In general, smaller, more diverse production units such as family farms, to the degree that they result in increased environmental responsibility, are preferable to the extensive monocultures characteristic of larger units.

C. *Water:* Agricultural use of water is of critical concern both quantitatively and qualitatively.

1. A comprehensive water allocation policy is necessary in many regions to balance finite supplies between the needs of agriculture, industry, municipalities, recreation and ecosystem maintenance.
2. In general, conversion of present or potential supplies of agricultural water to shortterm industrial activities, such as mineral extraction and conversion, should be carefully limited.
3. Use of water for any purpose should not result in undue loss of aquatic ecosystems, adverse effects on ground water, or construction of storage and conveyance projects whose total social, economic and environmental costs exceed their benefits to society.
4. Agriculture must strive for improved efficiency in water use and reuse.
5. In water-deficient areas, proper grazing or dryland farming techniques are more acceptable than water-intensive agriculture which often involves interbasin water transfers, massive construction of new water works, and groundwater mining.
6. Agricultural pollution control should be increased and should be preventative, being focused on the source and causes of contaminants rather than on elaborate downstream treatment facilities.
7. Public irrigation water projects should be accountable for their full social, economic and environmental costs and these costs, in general, should be fully reflected in the price of the water to the irrigators. Subsidies are not per se objectionable to the extent they are used to advance specific public policy goals and are explicitly acknowledged.



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Club News

D. Meat Production and Grazing: Properly regulated stock grazing is an acceptable activity on many of those public and private lands which are suitable for sustained-yield forage production.

1. Rangelands should be managed to provide a sustained-yield forage which also supports healthy and diverse wildlife populations.
2. Grazing fees on public lands should reflect the total social, economic and environmental costs of the use of this resource.
3. Grazing and pasturage, which recycle animal wastes back into the soil and which have the potential to transform vast amounts of coarse forages into useable protein, are preferable to present large-scale feed-grain production and feedlot operations, which, while producing large quantities of meat protein, also have solid waste management problems, air and water pollution, and high energy use.
4. Any control of predators should be aimed at individual problem animals.

E. Agricultural Chemicals: Overdependence on manufactured fertilizers and biocides, which has caused pollution of the environment, increased the energy intensiveness of agricultural production, induced increased disease and pest resistance, and increased human and animal morbidity and mortality, is of great concern.

1. Fertilizers should be used sparingly, according to soil test recommendations for the specific crops to be grown.
2. Crop residues and other natural fertilizers should be used in preference to manufactured fertilizers to the maximum extent possible.
3. Dependence on environmentally damaging pesticides should be phased out in favor of natural management practices and biological pest controls.
4. In growth and processing of food, application of chemicals to improve product appearance without significant qualitative contribution should be stopped.

F. Genetic Diversity: Diversity is an important factor in the stability and survival of all ecosystems.

1. Agricultural practices which could destroy the gene pools preserved in diverse varieties of native and agricultural plants and animals must be controlled and discouraged.
2. Diversity should be promoted so as to minimize large monocultures which are vulnerable to pests and disease.

G. Food Policy:

1. Agriculture should optimize output of critical nutritional needs, rather than only maximizing quantities per acre.
2. Particularly in developed countries, there should be a reduction in excessive food consumption and waste patterns to allow maintenance of diet quality at lower environmental cost. An important first step would be to develop a greater reliance on vegetable protein.
3. Within environmental constraints, we must develop standby food reserves. However, efforts to expand drastically North American food production, at potentially great environmental cost, must be viewed with caution.

Federal Highway Administration Safety Improvement Program

Recognizing the serious environmental impacts of the Federal Highway Administration's "Safety Improvement Program," the club's New England Chapter proposed the following resolution which the board adopted. Any other chapters which have experience with the program are urged to contact Chris Wasiutynski, chairman of the club's Transportation Committee.

Board Resolution:

"The so-called 'Safety Improvement Program' of the Federal Highway Administration involves massive reconstruction, has serious environmental and esthetic impacts and has questionable effectiveness in achieving its objectives. Consequently, the value of this program must be weighed against alternative measures for improving safety and in the context of alternative uses of the public funds expended.

"Therefore, the Sierra Club calls upon the Federal Administration to prepare a programmatic Environmental Impact Statement for the Highway Safety Improvement Program as well as Environmental Impact Statements for indi-

vidual projects. Furthermore, the Sierra Club calls for cessation of ongoing clearing activity and no new construction until these impact statements have been prepared and reviewed."

Board endorses new forestry bill

In other actions, the board adopted a policy concerning *forestry legislation*, which supports in general principle the proposed National Forest Timber Management Reform Act of 1976 as presently advocated in S. 2926 (authored by Senator Jennings Randolph of West Virginia). Club legislative priorities were revised to put forestry legislation in the highest category, along with energy conservation, preservation of national interest lands in Alaska, and additions to the wilderness system. Legislation to increase the *Land and Water Conservation Fund* will also be given a stronger focus in the club's legislative priorities. And finally, the club's board unanimously endorsed the *California Nuclear Safeguards Initiative*, Proposition 15, and urged its passage on the June ballot.



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Robert A. Irwin

HERE AT 530 BUSH, CONTINUED

THE DOORS have knobs now. The gaping wounds in the ceilings have been closed, the rubble replaced by neat carpeting, and the plywood walls of the elevators paneled over. The reason? An occasion—a festive open house to celebrate the move of the Sierra Club's headquarters into the San Francisco Environmental Center, the handsomely remodeled powerhouse at 530 Bush Street. It was the social and convivial high point of the meetings of the board of directors and council on the weekend of February 20-22.

The transformation from seeming chaos to ordered elegance from early Friday afternoon until 6 p.m. Saturday, when the libations began to flow, was astonishing. There was Christie Hakim in the midst of the hubbub, poised, trim and pert, reigning over her library and its food-laden tables. When I had seen her earlier, she was shoving huge cartons around and frantically shelving books—and she scarcely an inch over five feet or an ounce over 95 pounds! And Executive Director Mike McCloskey, the very picture of calm civility as he warmly greeted members and guests. That same afternoon he could have been seen, hair disheveled, face flushed, pushing tables from here to there and lugging stacks of chairs in urgent preparation for the gala. The consensus of the staff seemed to be that the big push for the open house was exactly what was needed to get its new quarters finally into shape.

Perhaps, too, the open house served another purpose—to mark a turning point in Sierra Club history. On the practical side, from that weekend on, all combined gatherings of the club's fifteen directors and the fifty council delegates will be held at the new offices, with the use of supplementary facilities in the church buildings next door. The meetings should become more efficient because the club's staff, resources, facilities and meeting

rooms are concentrated in one location. And costs will be lower—no fancy hotel rentals and no need to transport staff members to distant meetings. Further, these combined meetings should be more productive, and with the attendance of delegates from the forty-nine chapters—they should improve communications between club headquarters and the grassroots. The board itself, which meets more frequently than the council, will hold occasional meetings outside San Francisco, thus affording members in other areas the opportunity of seeing the club's top leaders in action.

CHAPTER NOTES

"A Marvelous Victory for the Environment," exulted Lone Star Chapter Chairman Richard N. Evans after the citizens of San Antonio, Texas, in a recall election initiated by his chapter's San Antonio Group, overwhelmingly revoked a city ordinance that would have allowed a large shopping center to have been built on top of an aquifer, the sole source of drinking water for 1,000,000 San Antonians.

* * *

"Feb. 14 National Love Carefully Day" That entry appeared on the calendar of events in the February issue of *The Bluestem Sierran*, the newsletter of the Bluestem Group of the Nebraska Chapter—no doubt sneaked in by some Zero Populationist.

* * *

Environmentalists are Better Lovers! If you agree and would like that message on a bumper sticker, it is available from the Pomo Group, Redwood Chapter, Box B, Calpella, California 95418. One sticker for 40 cents, or five for \$1.

UNITED NATIONS CONFERENCE ON HUMAN SETTLEMENTS, Vancouver, May 31-June 11

Habitat Forum, an international, grassroots variety of environmental conference and exhibition, will get under way at Jericho Beach in Vancouver, British Columbia, on May 27. It is being billed as an "alternative" or "parallel" conference to the official United Nations Conference on Human Settlements, or Habitat, meeting May 31-June 11 in downtown Vancouver. The Sierra Club is one of a number of the nongovernmental participants in the forum.

Habitat is an outgrowth of the 1972 Stockholm Conference on the Human Environment. Early on at that conference it became evident that any thorough consideration of urbanization and its effects on the environment was too large and complex a subject to be dealt with then.

Therefore, a Canadian delegate proposed a sequel, a "Conference on Human Settlements." It was approved, with Canada to be the host nation.

It will take up the urgent problems created by the worldwide rush toward urbanization—the impaction of mushrooming populations in overcrowded cities—as well as to assess the effects of that process on man and the environment. This "thickening" of human settlements everywhere carries with it a heavy burden of attendant problems: overcrowding, pollution and traffic congestion, depletion of resources, rural decay, underemployment, the breakdown of family life and the destruction of deep-rooted cultures.

Any conference with such an array of overwhelmingly cheerless Malthusian problems to tackle could well sink under the weight of its depressing agenda. Or it could "solve" the problems that defy solution by issuing a sheaf of high-sounding platitudes. We hope not, but it's a danger common to too many well-intentioned conferences. Habitat Forum seems to represent a serious effort to avoid this pitfall.

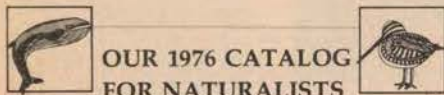
The selection of the setting was the first and most obvious of the encouraging indications that Habitat Forum was not intended to be a super-serious, stuffy sort of conference. The Forum's activities will be centered at a comfortable remove from the pomp and ceremony of the formal U.N. conference downtown. Jericho Beach is seventeen acres of wooded and grassy parkland on an ocean inlet commanding a spectacular view of the coastal mountains and downtown Vancouver, fifteen minutes away by ferry or bus. The five large hangars of this former seaplane base are being converted (with a great deal of recycled material) into meeting rooms, theaters, workshops, exhibition halls, eateries and lounges. Outside on the greensward, there will be exhibits such as solar heaters, wind pumps, city food-cropping systems and methane gas generators. Also on display will be Hope Village, designed to be an "innovative exhibition . . . of a self-sufficient, ecologically sound lifestyle. It would house . . . people from different cultures (with) different beliefs in a remarkably economical, environmentally balanced shelter system."

The second factor that sets Habitat Forum apart from its big, formal U.N. brother is its loose, relatively unstructured format, unfettered by protocol. It is free, and open to anyone. No advanced registration is required. Meeting facilities are available free to either organized or ad hoc groups. Lodging, for which prior reservation (but no deposit) is required, is available at the University of British Columbia campus, two miles away. Rates start at \$9.19 per night. Because of the open atmosphere and importance of this

conference, as many as 3,000 are expected to attend. They will share in the stimulation of face-to-face discussion and exchange of ideas with scientists, environmentalists, engineers, writers, religious leaders and, perhaps, politicians.

On the scene, both at the official conference and at the Forum, will be a delegation of Sierra Club lobbyists headed by Ted Trzyna, chairman of the Southern California Regional Conservation Committee, along with Pat Rambach, the club's New York International Office representative. At the U.N. conference they will be working to make sure that a firm commitment to the environment is injected into the final-draft "Declaration of Principles." The club's full International Committee also will be meeting in Vancouver during the conference. In addition, the Sierra Club will maintain a booth with a display of its books and an exhibit of photographs and other material (in several languages) that will tell the Sierra Club story. Club-sponsored programs include a workshop on nuclear energy, panels on rural land use and on environmental law and a symposium on religion, ethics and the environment.

For accommodation reservations and information on Habitat, Habitat Forum and Sierra Club activities at the conference, write Martha Lackner, Sierra Club Office of International Environment Affairs, 777 United Nations Plaza, New York, N.Y. 10017. She is in charge of the Sierra Club's role in a series of "mini-Habitat" meetings and workshops to be held in about a dozen cities as a follow-up to the Vancouver conference. The club's International Office and the United Nations Association are co-sponsors. The workshops, now in the planning stage, will be run by chapters and groups, but will invite local participation by the American Institute of Architects, city officials and civic groups. The first workshop will be held in Memphis by the Volunteer Group of the Tennessee Chapter. Lackner urges all those who are interested in such workshops to write her at the International Office (address above) or to phone her at (212) 867-0080.



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Correction, Correction!

In the two-column box in the February *Bulletin* with the heading, "Sources for Club Activists," two items unfortunately were incorrect:

- *International Report* is not free; a contribution of \$5 or more is asked. Also, it is available only from the Sierra Club Foundation, 530 Bush Street, San Francisco, California 94108—not from New York.
- *Somebody DO Something*, the club's bi-monthly for children, has raised its subscription rate to \$1.25 (from \$1) for six issues.

Reporters Wanted

If you have any news items from your group or chapter about people, unusual projects, little or big victories, or perhaps if you need feedback on some problem—anything at all that might be of interest or help to the general membership—please send them to me at my home address: 4173 Montecito Ave., Santa Rosa, CA 95404. I'll do my best to get your items in, subject of course, to the space available.

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SANGUINE / SEAFARER

GROVER ELLIS

PROJECT SEAFARER is a controversial, high-priority communication system designed to assure that, in the event of a sudden nuclear attack, instructions to retaliate would still get through to this country's far-flung fleet of nuclear submarines. As planned for the Upper Peninsula of Michigan by the United States Navy, Seafarer (a modified and recently renamed version of "Project Sanguine") would comprise a 2,700 square mile network of antennae and transmitting stations employing extremely-low-frequency (ELF) radio waves.* Though slower and able to carry less information than the much-higher-frequency waves used by conventional radio and television, ELF waves have the advantage of being able to penetrate deeply beneath the ocean's surface.

According to the Navy, "... Seafarer would be able to communicate with deeply submerged submarines worldwide, and [the waves] would be almost impossible to jam." Critics of the defense establishment claim Seafarer would not serve as a deterrent to attack and is really nothing more than an instrument of posthumous revenge, assuring an eye for an eye even if the United States were devastated. Environmentalists, who may or may not share this view, have warned that the system poses several serious environmental problems and have criticized the Navy for not adequately studying the potential impact of the system on the organisms that would have to live with it.

Partly because of these potential environmental problems, the Navy has never been able to find a home for either Seafarer or its predecessor, Sanguine. Few of the people from any of the states (Wisconsin, Texas, Michigan) where the system has been pro-

moted want it built on their soil. During the past fifteen years, close to \$100 million has been spent on Sanguine/Seafarer research, only a small fraction of which has been devoted to environmental problems. Plans to build the system have yet to be approved by Congress.



Charles Meyer

The Navy originally wanted to build Project Sanguine in the Chequamegon National Forest of northern Wisconsin. At that time, in 1968, it was considering a base-line system covering 22,500 square miles (forty-one percent of the state), with a power input of 500 million watts. The system would have included 240 underground transmitter sites and 6,000 miles of buried antenna cables, requiring 100-foot-wide cleared rights-of-way. The system was promoted as a kind of bonanza—something on the scale of Cape Kennedy, the missile center in Huntsville, Alabama, or the space center in Houston—but this is misleading. Although construction of Sanguine or Seafarer would provide a great many jobs, almost all of them would end once the project were completed.

As opposition to Sanguine grew in

Wisconsin, the estimated size of the project began shrinking—from 22,500 square miles to 10,000 square miles to 6,400 square miles to 2,500 square miles. The cost of the project decreased likewise—from \$1.5 billion to \$1.0 billion to \$750 million to \$500 million. The estimated power input fell finally to thirty million watts, roughly the amount of power it would take to run a town of 20,000 inhabitants.

On January 10, 1973, shortly before resigning his post as Secretary of Defense, Melvin Laird ordered the Navy out of Wisconsin (his home state) and directed them to concentrate on Texas "in their planning for the construction of Project Sanguine." Although the Navy refused to comment on Laird's reasons for ordering the move, there was little doubt as to what they were. After he left the Nixon Administration, Laird's political future was up in the air. He was returning to Wisconsin, and some observers speculated he didn't want to do so with the responsibility for an expensive and undesired defense project hanging like an albatross around his neck.

In the winter of 1974, shortly after the citizens of Llano, Texas, forced Sanguine out of the state (see "The Ant and the Elephant," page 44), the Navy changed its tactics and began conducting "site-independent" research, meaning that it was "designing the system so it could be placed anywhere once the decision was made to build it." Site-independent research has its advantages. In the past, opposition to Sanguine arose whenever the Navy declared its intention to build in a particular location. With site-independent research, the opposition relaxed, and the Navy was able to advance Sanguine to the "Design Validation Stage."

*Other sites proposed by the Navy include White Sands Missile Range/Fort Bliss in New Mexico, where the area covered by the system would be approximately 3,000 square miles, and the Nellis Air Force Base/ERDA Test Site in Nevada, where it would cover approximately 4,000 square miles.



Al Kaufman

Last spring, after a year and a half in apparent oblivion, Sanguine reappeared, this time with a new name—Project Seafarer—and new site possibilities in Nevada and New Mexico. A third possibility was added when Michigan's governor, William G. Milliken, gave the Navy a conditional invitation to write an environmental impact statement for the Upper Peninsula site. Michigan, which had once rejected Sanguine, was suddenly back in the running.

In most respects, Project Seafarer would be identical to Project Sanguine. In concept, they are twins. "Both systems would use exactly the same antenna grid," according to Lieutenant Commander Karns, a Navy spokesman. As now conceived for the Upper Peninsula, the Seafarer grid would consist of a 2,700-square-mile network of antenna cables, buried four to six feet underground. "They would both use the same receivers on the submarines, the same frequency portion of the radio spectrum, and

they would both have the same environmental impact," Karns said. "The only difference between Sanguine and Seafarer would be the transmitter system."

With Sanguine, more than a hundred transmitters would have been buried in concrete capsules thirty-five feet underground at the various points where the antenna cables intersect. The Navy claimed that the large number of buried transmitters would make Sanguine virtually bombproof, still able, under even the most devastating enemy attack, to bleep the counter-attack code to our nuclear subs. The modified system, Project Seafarer, however, would have fewer transmitters, no more than eighteen, and they would be located in buildings *above* ground. Under the least devastating bombardment imaginable, Seafarer would be blown away.

Because it is unlikely the Navy will be willing to tolerate such vulnerability, critics of the project view Seafarer as a foot in the door for Project San-

guine. The Navy admits that "to turn Seafarer into Sanguine, all we would have to do is increase the number of transmitters and bury them," but it insists that Sanguine is no longer under consideration—at least, "not under present consideration."

Seafarer's great size is necessary because low-frequency signals have very long wavelengths and the broadcasting antenna, if it is to work well, must be a significant fraction of one wavelength. The Office of Naval Research says that for forty-five cycles per second, a possible Seafarer frequency, "the wavelength is 4,140 miles and would require a single antenna many miles long just to constitute a small fraction of that distance." Another characteristic of low-frequency signals is that they carry much less information than higher frequencies. Therefore, it may take a lot of power to send a relatively small amount of information. The Navy believes such inefficiency is acceptable, however, "because once the signal is sent, it

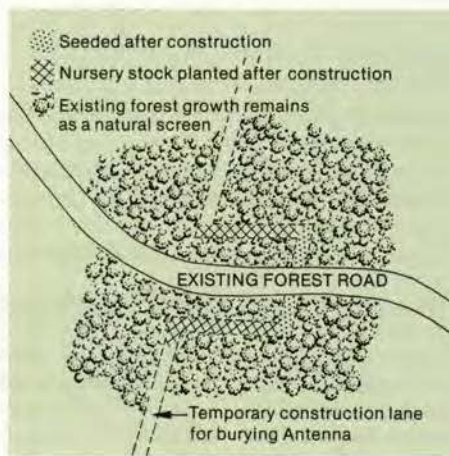
loses very little strength and penetrates water well."

Because Seafarer could not send long, detailed instructions, its use would be limited primarily to wartime situations. The signal to attack would consist of nothing more than an address in a strategy book, a series of clicks meaning something like "Book 2, page 3, paragraph 1," which would designate what target to attack. There are two drawbacks to *such* a limited system: first, it depends on predeveloped war strategies that would be documented and updated by normal communication channels; and second, a submarine commander would have no way of confirming an attack order because Seafarer would be able only to send messages, not to receive them. Such a system lends itself to neither subtle distinctions nor changes of mind.

Since 1968, when the Navy first began promoting Project Sanguine in Wisconsin, the controversy has centered mainly on the issues of technical feasibility and environmental compatibility. Some scientists in the field of electromagnetics said that Sanguine (even with its buried transmitters) could easily be jammed and that the explosion of hydrogen bombs would block it with interference. A special National Academy of Sciences Ad Hoc Panel on Sanguine disputed some of these charges, but one member, Dr. Charles Harrison, resigned in protest a week before the report was made public. Harrison, a physicist at the Sandia Laboratories in Albuquerque, expressed concern over what he felt was an attempt by the Navy to railroad Sanguine through Congress. "There is considerable evidence," he said, "that Sanguine may take 100 times more power than the Navy estimates and cost billions instead of the Navy's estimated \$750 million." At that time, the Navy was considering a system roughly the size of the current Seafarer system. Many of the technical questions raised have since been answered, but serious environmental questions yet remain.

Environmental problems could be expected from the installation and mere physical presence of the Seafarer system. The Navy is planning to acquire twenty-five foot cleared rights-of-way following the buried antenna cables, "an easement like those utilized by electric power and telephone companies." In a forested region such as

the Upper Peninsula of Michigan, a bulldozer would be necessary to clear a path for a machine that would "jimmy" the cables down into the earth. (At other possible site locations, such as in New Mexico and Nevada, where there is a considerable amount of surface rock, dynamiting would be required.) To hide the unsightly rights-of-way from the view of passing motorists, the Navy plans to zigzag its antenna cables before they approach country roads (see figure).



Following construction, the Navy promises to return the rights-of-way covered by the antenna grid to their normal use, but environmentalists are skeptical. They also point out that regardless what the Navy does to ameliorate the damage done to the region, the presence of the cleared rights-of-way would destroy the wild character of the region.

When Project Sanguine first surfaced as an issue in Wisconsin, some of its opponents circulated stories that it would wreak havoc on the northwoods—electrifying doorknobs and rain gutters, as well as causing various other bizarre effects. Although these particular stories were somewhat overdrawn, disturbances of both natural and man-made environments could be expected.

According to the Navy's environmental impact statements, mitigation techniques must be used to prevent Seafarer's huge electromagnetic field from inducing dangerously high voltages into long metal objects such as fences, railroad tracks, power lines, telephone lines and pipelines. The Navy acknowledges that "without mitigation, fences and railroad tracks would receive an electric charge sufficient to shock a person. The extra volt-

ages induced into powerlines would cause lights to flicker and home appliances to perform erratically. Telephones would ring whether anyone were calling or not (this actually happened at a Navy test facility in North Carolina). And underground pipelines in the Seafarer vicinity would be susceptible to corrosion due to the currents induced in them." Since even greater shock hazards would exist in the areas where the antenna cables were grounded, these areas would be fenced off to keep people and animals out.

Numerous studies have been conducted by the Navy, university researchers and other groups in an effort to discover how the electromagnetic field generated by Seafarer's vast antenna grid would affect the natural ecosystems of the surrounding area, but serious questions remain unanswered. What would be the subtle and long-term effects of passing an electric current through the earth? To take an obvious, but crucial example, would this current harm earthworms, thereby affecting soil conditions? Would it cause mutations in various animals or affect the growth patterns of certain plants? Would its extremely-low-frequency waves cause certain fungi to thrive, and if so, would trees be more subject to blight?

The Bio-Medical Subcommittee of the Navy's Inter-Techniques Advisory Group has said that "all living systems in the soil, on the soil, in the water . . . could be affected [by the Seafarer system] unless design goals were carefully selected to prevent biological reactions." A scientist at the Illinois Institute of Technology, working under a Navy contract, said these effects, if they did occur, would probably show up in the nerve tissue. Seafarer would therefore be more likely to cause subtle changes in the *behavior* of organisms, rather than obvious physical changes.

In 1969, the Navy began to conduct laboratory research on plants and animals, subjecting them to ELF radiation similar in some respects to that of Seafarer. A number of adverse effects were reported, including "indications of seed-growth retardation, genetic aberrations in fruit flies at an unusually high rate, high blood pressure in dogs, and avoidance of electrical fields by aquatic life." In a study sponsored by the Navy, K. D. Straub of the Veteran's Administra-

tion Hospital in Little Rock, Arkansas, found that ELF electromagnetic stimulation upset active transport of ions through living cell membranes, a fundamental life process essential to the function of nerve cells. Frog skins were used in this study. Although Straub's reported change was irreversible, the implication was dismissed on the grounds that "the experiments were conducted at electrical intensities so high as to have no bearing on Seafarer."

The "Sanguine/Seafarer Information Packet" issued by the Navy last year contains the following consolation: ". . . over 35 separate studies have been conducted by the Navy and independent research teams. To date, results show that there are no effects from Seafarer on humans, animals,

plants, or micro-organisms." Critics, however, question the ways in which the Navy has interpreted research results. The Navy has shown a tendency to attribute the adverse effects revealed by its experiments to errors in the design of some of the experiments or to the extra-high electric fields used in the experiments (as in the Straub example cited earlier). Consider the following case: a Navy report dated December 1973, which did not come to light until December 1975, said that nine out of ten humans, when subjected to Seafarer-type electromagnetic radiation, showed increased levels of serum triglycerides in their blood samples. Triglycerides have long been associated with high blood pressure and an increase in the likelihood of heart

attack. The panel responsible for this report recommended follow-up studies as "urgent and absolutely necessary," but the panel chairman, Dr. William T. Ham, reports he has received no indication from the Navy that the panel's recommendations are being acted on. When asked about the triglyceride study, Lieutenant Commander Karns blamed the results on "some factor or combination of factors associated with the experimental protocol. In other words, you know, with the way they did the experiment." Once again, adverse findings were blamed on flaws in the experimental design.

The irony is that the Navy itself rarely meets its own "minimum test requirements for Seafarer sponsored environmental research." Its own

The Ant and the Elephant

Rear Admiral R. Y. "Yogi" Kaufman walked to the front of the stage at the Llano, Texas, high school auditorium, his face radiant, smiling. He braced himself against the podium, his hands fixed to its sides, and looked out over a stage draped with red, white and blue bunting. Behind the admiral sat seven other high-ranking naval officers wearing white, heavily starched, summer uniforms. They had come to persuade these Texans—small-town people, ranchers and their families—that Project Sanguine should be built on their land.

Admiral Kaufman leaned toward the mike and assured the audience that his bald head was not caused by harmful Sanguine radiation. The room filled with nervous laughter. After a second joke, he leveled his eyes on the citizens of Llano; his tone was serious.

"I am the program coordinator for the new large Trident system," he said. "Trident is the on-coming submarine after Polaris and Poseidon, and it is the thing that will keep the Russians honest into the twenty-first century."

He paused. Silence.

"Now, I think I'm in the best position to say that we need Project Sanguine to get the word to our submarines."

He didn't say what word, but his audience knew what he meant.

"And I think the Russians believe we need Sanguine to make sure we can get the word to our submarines, no matter what they do to initiate the war."

He didn't say what war; he didn't have to.

"The fact that they know we can do this, the fact that they know our submarines are survivable, this means to them 'Hands Off!' . . . It's a mighty big club, and that's the whole name of the game."

His eyes roamed over the audience. Except for a few random coughs, the people were silent.

Our defense system—the submarine system, the missile system—will really have failed if we ever have to shoot. The whole name of the game is deterrent. As I said before, we've failed in our mission completely if we ever have a nuclear war. And we believe that the Soviets believe that we have to have Sanguine in order to contact our submarines and give them the signal to *knock 'em out!*"

When the Navy finished presenting their hour-long multimedia promotion of Project Sanguine, a country lawyer, sev-

enty-eight-year old R. E. Lee, took the stage. He had lived in the Texas hill country all his life, and the citizens of Llano had urged him to speak in their behalf. He spoke in a slow Texas drawl.

"In trying to follow these gentlemen's scientific talk," he said, turning to look at the officers seated behind him. "I'm reminded of the time the ant and the elephant was crossin' the bridge together. The ant looked up to the elephant and said, 'Now let's not step on each other . . .' Well, anything I say tonight, ladies and gentlemen of the jury, certainly will not be because I do not have a profound respect for the Navy."

"Friends and neighbors, I believe I owe you this. I think most of you know what's made our land values what they are today: the city folks are comin' out. The smog and crime and congestion of the cities makes it a little rough to live, and these fine people are comin' out to God's country."

"Now these Naval officers can disagree with me all they want, but if this Sanguine gets placed out here, y'all know what's gonna happen. The first time you go to a man in the city and say, 'I want to sell you a piece of land,' he's gonna look at you and ask, 'Well, where is it?' You'll have to tell him it's over in the vicinity of Llano and he'll say, 'Oh, no. No. No. I'm not interested. That's where that Sanguine is. . . . That's a prime target for a nuclear war!'"

When R. E. Lee left the stage, Herman Reisner and two other cattlemen walked up. Reisner spoke for the three of them.

"If I were the president of a large corporation, I'd certainly try to enlist each of these Navy officers as a salesman for my company. I guess as ranchers we may not always listen to reason, but if we listened to reason we probably wouldn't be ranchers in the first place. In other words, we don't think we're totally reasonable all the time—we know we aren't. But what we're saying is that if we could have our druthers—and in the case of Sanguine we *do* have our druthers—our druthers would be that we would druther not! Now if any of the rest of you feel that way, I'd like to ask you to stand up."

The entire audience rose to their feet. Their applause cracked like a thousand bullwhips on the rump of a stubborn mule. The naval officers remained seated; their faces registered nothing. Of course, they had a few trump cards up their sleeves—like time and a few other places such as Nevada, New Mexico and Michigan.

Seafarer and Michigan

In March, 1975 the Navy announced its choice of two semi-final candidate sites for the Seafarer system—the White Sands Missile Range/Fort Bliss complex in New Mexico and the Nellis Air Force Base Energy Research and Development Administration (ERDA) test-site complex in Nevada. At the same time, the Navy said that “because it would be less expensive to build the system in the Laurentian Shield area adjacent to the Great Lakes, consideration will be given to those sites if the members of Congress or the governors in that area make such a request within the next few months.”

The Navy was, of course, referring to Wisconsin and Michigan. It could not have seriously believed that such an invitation would come out of Wisconsin, where opposition to the project was as strong as ever. In Michigan, however, a few friends of the Navy and of Seafarer had been quietly working on the Upper Peninsula and among veterans groups throughout the state to gather political support for the project. Emphasizing the number of jobs the project would create on the peninsula, which has an unemployment problem, and implying that the leaders of the project's opposition were being paid by communist countries, the Seafarer proponents managed to gather sufficient support to convince the governor that the project was worth looking at.

Recognizing that the Seafarer issue was politically volatile, Governor Milliken appointed a task force to study the issue and make a recommendation as to whether the Navy should be invited to prepare an environmental impact statement on an Upper Peninsula site. After a brief study, a majority of the task force recommended that such an invitation, with certain qualifications, be extended; two members strongly dissented. Accordingly, on September 9, Governor Milliken conditionally invited the Navy to prepare an environmental impact statement on an Upper Peninsula site. Eight conditions were attached to this invitation, one of these being that the final impact statement must contain information from a planned National Academy of Sciences study to assess the research done on the biological and ecological impacts of Seafarer. Governor Milliken stressed in his letter to the Navy that he was not extending “an invitation to proceed with the project itself.”

The Navy is currently preparing the impact statement for the Nevada, New Mexico and Michigan sites. The National Academy of Sciences' review of the biological and ecological research has not yet commenced, although a preliminary public meeting to invite comment on the issues has been scheduled by the academy's national research council for March 25, in Washington, D.C. The Navy has projected that all studies will be complete and that the final environmental impact statement will be ready by early 1977. It has promised that hearings will be held at all three proposed sites and that final site selection will not be made before the spring or summer of 1977.

Meanwhile, in Michigan, and particularly on the Upper Peninsula, opposition to Seafarer has been growing. In a No-

vember 4, 1975, referendum in the Upper Peninsula community of Iron Mountain, residents showed their distrust of the project by a three to one margin. Referenda on Seafarer are scheduled for several other Upper Peninsula locations this spring; Congressman Phillip Ruppe, whose district includes the Upper Peninsula, has asked that the Navy abide by the results of these referenda and has been angered by the Navy's refusal to do so. Michigan's Senator Phillip Hart and Congressman Robert Carr also have expressed serious concerns about the possible environmental impacts that the project would have on the ecosystems of the Upper Peninsula. Milliken has become so uneasy about the project that he wrote to the Navy in December, seeking assurance that the project would not be located in Michigan without his concurrence.

Chief Deputy Secretary of Defense William Clements replied to Milliken by letter, stating that a decision “to add Michigan as a final candidate site along with Nevada and New Mexico” would be made only with Milliken's concurrence. Clements added, “In short, I can confirm, as you requested in your December 12 letter, that I would not recommend a Michigan site to Congress if you object.”

In spite of the Navy's assurances that final site selection is at least a year away and will not be made until after the final impact statement is prepared, and that Michigan will not be chosen without the governor's concurrence, the Navy's Seafarer budget request for fiscal year 1977 includes \$4.655 million for “full scale development.” Opponents of the project in Michigan have been astonished to discover that the Navy intends to use this amount to construct a 100-square-mile grid “test facility” for Seafarer on the Upper Peninsula. Since a test facility already exists at Clam Lake, Wisconsin, opponents see the Navy's proposal not as preliminary research, but as an aggressive move toward construction of the final full-scale project on the Upper Peninsula. These suspicions are confirmed by a Navy statement to Wisconsin's Senator Gaylord Nelson that Michigan is the “prime site” for the Seafarer project.

It seems clear that the Navy has every intention of constructing Seafarer on the Upper Peninsula and that if Congress approves this choice, whether the governor approves or not would likely make little difference. However, should the Navy be chased out of Michigan by political opposition as it has been chased out of Wisconsin and Texas in the past, it still can fall back on alternate sites in Nevada and New Mexico. The Navy spent several months in these states during the summer of 1975, conducting surveys and displaying its “propaganda van.” So far, there is virtually no organized political opposition to Seafarer in these states. Ironically, the strongest opposition to the Navy's proposal in those areas may come from its sister agencies. In particular, the Army and ERDA have their sites highly instrumented for research and development and are worried about Seafarer transmission interference with the operation of their instruments.

“experimental protocol” is often questionable. Although Seafarer would produce an electromagnetic field, the Navy rarely tests for the effects of an electric field *and* a magnetic field operating simultaneously. Most often it ignores the magnetic field and concentrates on the effects of the electric field by itself. Yet according to a report filed by the White House Office of Telecommunications Policy, preliminary Air Force studies indicate

that for frequencies as low as those of Seafarer, “the magnetic field is more biologically significant than the electric field.”

The Navy, for public relations purposes, likes to compare the electric field that would be generated by Seafarer with the typical electric fields found in urban environments. Such comparisons, by omitting the magnetic component, make Seafarer's radiation seem insignificant. The

Navy does not point out that the system's magnetic field would be twenty to two hundred times stronger than that found in private dwellings. Critics also point out that the impact of Seafarer's radiation on natural systems cannot be extrapolated from the effect of similar levels on urban environments. There are many elements in the urban environment, air-pollution levels for example, that would severely affect natural ecosystems.

Finally, although the electric fields generated by electric utilities are roughly comparable in certain respects with those of Seafarer, in other respects the analogy breaks down:

First, the Seafarer system is designed to maximize the dispersal of electromagnetic radiation, whereas utility systems are designed to minimize dispersal for the simple reason that energy lost cannot be billed to the consumer.

Second, Seafarer's frequency will not be exactly the same as that of electric utilities, but will vary from it by plus or minus fifteen cycles per second, depending on the exact frequency the Navy finally settles on. This difference might create a third frequency, called a "beat frequency," that is dangerously close to certain brain rhythms, dangerous because UCLA's Brain Research Institute has found that monkeys lose their sense of timing when subjected to frequencies similar to those of brain waves.

Third, the signal generated by the Seafarer system will be frequency modulated (FM); the electrical field generated by utilities is unmodulated. (In essence, frequency modulation means that the information carried by a wave is manifested as variations in the basic frequency of that wave.)

Navy literature states that "based on research at higher frequencies, it is generally accepted that a modulated signal may represent a somewhat different stress than an unmodulated signal. An unmodulated signal, if it is adverse, will most likely produce an immediate acute effect (such as a burn). A modulated signal, if it is adverse, will almost always manifest itself in subtle ways as a chronic biological effect—such as a change in behavior." Studies conducted by Ross Adey also indicate that modulated signals are more hazardous than unmodulated. Although Seafarer will have a modulated signal, most of the experiments in question have been conducted with an unmodulated signal.

So far, the Navy has conducted tests to determine only the possible short-term, acute effects of ELF radiation on the natural environment, ignoring the subtler, long-term effects that many scientists think are more significant. Because Seafarer would operate twenty-four hours a day, year after year, it is important that the Navy conduct tests to determine potential long-term effects. Furthermore, because Seafarer would operate not in a carefully controlled laboratory, but in a complex natural environment, Navy

testing also should consider possible synergistic effects, in both the short and long terms, of Seafarer radiation combined with the stresses normally found in nature.

The deficiencies in experimental design and interpretation typical of the Seafarer research which the Navy relies on are demonstrated in an experiment reported in their "Final Environmental Impact Statement." In this experiment, researchers attempted to determine if the nerve cells of rats' brains in test tubes would behave normally when subjected to Seafarer-type fields.

However, the violations of experimental protocol in this example are dismaying: First, the rats' brains were not subjected to an electromagnetic field, such as that of Seafarer, but to a magnetic field and then an electric field separately. Second, the experimental radiation was unmodulated. Third, the adverse effect produced by the combination of stresses, radiation plus cold, was virtually dismissed as insignificant. Although there were no acute effects from the magnetic field at normal room temperature, acute aberrations in neural response were observed when the temperature was dropped to freezing. Although rat brains in live rats would never get down to the freezing point, temperatures in Upper Michigan are known to drop below that point, and many organisms in that region, particularly cold-blooded animals, are especially sensitive to fluctuations in temperature. How then, can the Navy justify extrapolating from rat brains in test tubes to *all* living organisms?

Nevertheless, the Navy concluded from this experiment that fields of weaker intensity would not be expected to have an effect on live rats, and, therefore, that Seafarer fields "should produce no significant environmental stress on organisms." The Navy's conclusions are broad, unjustified extrapolations from narrow premises.

In the opinion of many scientists, the subtle and long-term biological effects of Seafarer radiation cannot be fully known until the system is in operation. By then, unfortunately, the damage would be done, and the problem would be how to recover.

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IF CROWDED campsites, domesticated wildlife, trampled meadows and dusty, horse-trodden trails are all that are left of your favorite wilderness vacation spots, perhaps it's time to strike out north to the Sierra Club Foundation's Talchako Lodge in the Coast Range Mountains of British Columbia. In this Nature Conservancy Area where wild animals far outnumber people, you are likely to share the trails with a caribou, a moose or a bear, the fishing holes with an otter or a bald eagle. The ruggedness of these mountains, rivers and valleys has restricted man's impact to a small part of this area, leaving the vast majority in a pure wilderness state.

Built and used as a home by Canadian pioneer T. A. Walker, Talchako Lodge was used by a succession of owners and operators as a big game hunting and fishing lodge until 1969. It was then given to the Sierra Club Foundation and has been operated by the Sierra Club of Western Canada ever since.

Talchako Lodge provides a base for Sierra Club members and other conservationists to enjoy and explore the exceptional wilderness of the surrounding area. A Sierra Club Wilderness Study Team visited the area in 1972, making the following comments in their report: "The Talchako wilderness study area is one of the least spoiled regions remaining in North America. . . . Its forests and lakes are in places reminiscent of Quebec, its glaciated peaks bring to mind the Alps, its canyons are similar to Yosemite's and its rain forests like those of the Olympic Peninsula. Most of the enormous floral and faunal fecundity of the region has been preserved. . . . Very few areas in North America offer such a diversity of sublime wilderness scenery."

The lodge is surrounded by terrain for every ability and interest. One can make flatland valley day hikes to Indian pictographs and petroglyphs, fishing streams, waterfalls, eagles' nests and swimming holes. For the novice backpacker and hiker, the Rainbow Mountains offer an extensive alpine region of meadows, lakes, gentle valleys and peaks. The more experienced backpacker might hike up the Atnarko Valley to the top of Hunlin Falls—one of the tallest waterfalls in North America—where one can rent canoes and paddle and fish in a chain of six lakes which stretch through twenty miles of coast range mountains. Finally, rugged backpackers can hike from the lodge directly up to timberline on Caribou Mountain. Rugged backpacking or easy mountaineering are possible in all directions, or one can follow a traverse to Hunlin Falls and back to the lodge via the Atnarko River. The peaks around the lodge offer a challenge to all abilities of rock, snow and ice climbers. For those capable of getting to the unexplored peaks up the side valleys of the Bella Coola Valley in which the lodge is located is reserved the thrill and adventure of being among the first to climb and explore them, a rare



Gary Tepfer

experience in this day and age. For those who might wish to explore the area in the snow, skiing and snowshoeing are possible from December until May. Float trips on the Atnarko and Bella Coola Rivers can be arranged at the lodge; the Atnarko challenges expert whitewater boaters, while the Bella Coola offers an exciting and scenic ride to boaters of all abilities. It is possible to charter a boat for the day or longer, to explore and fish in the saltwater fjords near the lodge.

These are just a few of the possibilities for those who visit Talchako Lodge, accessible by car, ferry or plane and open for summer season June 15–September 15 and on a limited basis through the rest of the year. The lodge offers hostel accommodations for up to fifteen persons, as well as four log cabins equipped with woodstoves and kerosene lamps, suitable for small groups or families. There is no electricity, but showers and hot and cold running water, as well as a few other amenities, are available, if at times scarce. Group use of the lodge, whose facilities can accommodate up to forty persons, is encouraged during the season from September until May.

The Sierra Club Foundation owns a slide show on Talchako Lodge which can be used by individuals and groups. Requests for this slide show should be directed to the Foundation office in San Francisco.

For more information and reservations, write to the Caretakers, Talchako Lodge, Bella Coola, B.C., VOT 1CO, Canada, or telephone (604) 982-2489. Reservations should be accompanied by a \$25.00 deposit.

Gary Tepfer