



Sierra Club Bulletin

May 1974

Solar Energy



... and whose house do you live in?

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Cover: Photographer Ed Cooper's budding aspen reminds us that since the Creation, plants alone have been able to tap directly the energy of sunlight. Now man has learned to do so as well. His first steps in putting solar energy to work are discussed in this month's lead article.

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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SOLAR ENERGY NOW

It's somebody's oil—
but everybody's sun

JAMES SPAULDING

ON THE DAY before the House of Representatives recently passed a bill to provide the first major practical test of solar heating and cooling, the *New York Times* commented that solar energy was "clearly an idea whose time has come." So it might seem. Not only does full congressional approval of the solar heating and cooling bill seem likely, but the federal government today is backing research and development of solar energy as it never has before.

The federal government's National Science Foundation already has begun trials of solar heating in schools in four states—Maryland, Massachusetts, Minnesota, and Virginia. The foundation's \$13-million research program for solar energy this year includes:

- Construction of three different kinds of solar-heated homes by different universities to find the most effective ways to substitute sunlight for other fuels in the home.
- Operation of a mobile solar heating and cooling laboratory to test the feasibility of solar energy in different climates and conditions in the United States.
- Construction of a 100-kilowatt generator to be driven by wind—a form of solar energy stored in the atmosphere.
- Testing or designing of two different kinds of systems for concentrating sunlight to provide high temperatures for driving steam turbines to generate electricity.
- Continued efforts to reduce the production costs of silicon crystals, which are used in solar cells that convert sunlight directly to electricity. Progress recently was reported in this effort.
- Development of a floating power station believed capable of generating large amounts of electricity from solar energy stored in the oceans as differences in temperature between the surface and the deep.
- Experimenting with making high-quality methane gas for use in homes and industries from sewage. Such bioconversion of wastes to fuels also could be applied to converting organic materials like algae—which quickly stores large amounts of the sun's energy—into fuel. More than 30 universities and such corporations as Westinghouse, General Electric, Honeywell, Martin Marietta, Exxon, TRW, and McDonnell-Douglas Astronautics are participating in the research.

Besides the National Science Foundation's solar-energy research program, the foundation is supporting extensive research in developing geothermal energy, in converting coal to gas and liquid fuels, in developing better ways to store heat and electricity, in reducing



energy waste, and in minimizing the harmful effects of energy production on the environment. Alfred J. Eggers, Jr., assistant director for research applications of the science foundation, told the House Committee on Science and Astronautics recently that the solar heating and cooling program was "moving expeditiously" toward practical trials this year. "The program is directed at achieving systems that will be cost-competitive in the marketplace in the earliest practicable time," he said.

Other groups also have decided to make practical tests of solar heating and cooling. For instance, both the National Aeronautics and Space Administration (NASA) and RCA have proposed to incorporate solar heating and/or solar cooling into buildings. The RCA experiment will be carried out in an addition to the RCA building in Rockefeller Center in New York City. So far, no actual designs have been submitted for the NASA project.

Solar energy enthusiasts—a few of them considered cranks—have been contending for years that solar energy should be given a trial. Why has the idea suddenly won influential friends? For a practical test program like the one called for in the solar heating and cooling act to attract broad congressional support would have seemed unthinkable five years ago. Today, however, millions of Americans have had to turn down their thermostats, slow their cars to 55 miles per hour, and wait for hours in service-station lines. The sun's energy has not changed, nor have scientists yet devised much that will improve our ability to capture solar energy. Instead, what long had been predicted finally began to happen: energy consumption in the United States overtook supply. The Arab oil boycott dramatized this dilemma. With world-wide demand for oil and gas rising, and the supply no longer unlimited, fuel prices began rising sharply.

Representative Mike McCormack (D-Wash.), chairman of the House Subcommittee on Energy, said at a Stanford University symposium on energy recently that the United States had moved in the last 24 months from an era of fuel abundance to an era of shortages that will last for decades. "The fundamental fact we have to live with," he said, "in arriving at a specific energy policy, is that we have already consumed more than half of all

the petroleum and natural gas that we ever had or ever will discover on this continent or its offshore shelves." McCormack is a former research chemist.

It is the impending shortage, then, of petroleum and natural gas, and the certainty that their prices will rise, that mainly make solar energy so attractive. There are other important reasons, of course; solar energy is incredibly abundant and for practical purposes limitless. Solar heating and cooling systems are essentially nonpolluting. Electrical power generation by direct solar conversion will cause some local thermal pollution, though at much lower levels than conventional fossil-fuel or nuclear plants. But the worsening outlook for gas and oil is the central reason that the federal government is spending money for research and development of solar energy. Economic and social factors ultimately will decide whether this program succeeds.

The most obvious sign that the economic climate for solar energy is improving is the burgeoning of government programs. In the 20 years before 1971, only token amounts were spent for solar-energy research, except in the space program. But in 1971 and 1972, the science foundation spent more than \$1 million annually for solar-energy research. The amount last year was nearly \$4 million, and this year it will be at least \$13 million. The Administration has proposed spending funds in 1975-1979 for solar-energy research that would total \$200 million.

Under the Solar Heating and Cooling Demonstration Act, which is separate from the Administration's proposals and the National Science Foundation's program, \$50 million would be spent in the next five years. A total of 4,000 homes—half of them privately owned—would be equipped with solar heating devices and some with cooling devices. Public buildings also would be so equipped. The National Bureau of Standards would specify the performance of the heaters. NASA would direct the manufacturing. The Department of Housing and Urban Development would be in charge of installing the heating and cooling units and monitoring their performance. So far, this legislation has passed in the House.

The goal of the government solar-energy program in the United States—

hedged with appropriate ifs about financing and technology—has become substantial. Solar energy, say the federal agencies, can economically provide up to 35 percent of the total building heating and cooling load, 20 percent of the nation's gas fuel, 10 percent of the liquid fuel, and 20 percent of electric-energy requirements by the year 2000. How much is all that? For the first goal alone—35 percent of the total heating and cooling load—the estimated energy cost in the U.S. next year will be 15,935 trillion British Thermal Units (BTU), which amounts to about 113 billion gallons of gasoline, and if solar heating and cooling could provide for 35 percent of this energy load, it would save about 40 billion gallons of gasoline yearly. Such conversions of BTUs to gasoline are more than theoretical because natural gas and petroleum not burned for electricity or heating can become gasoline, either directly or by substitution.

There appears to be considerable overlapping of the goal figures for solar energy, but in any event the amount of energy the federal science agencies say can be saved with sunshine is huge. The amount of energy to be saved by substituting solar energy to produce 20 percent of the electricity generated 25 years from now, for example, would be equivalent to 22 billion gallons of gasoline annually. The solar-energy goals do not reflect the amount of solar energy available—the science agencies acknowledge that far more solar energy falls on the earth than man needs—but the goals reflect an economic appraisal: the devices to collect, convert, process and store solar energy will be costly. The goal percentages reflect what scientists believe solar energy can provide in competition with fossil and nuclear fuels. Yet even though devices to store, convert, process, and collect solar energy will be more costly on a dollar-per-watt basis than current power plants at current prices, they will be a lot cheaper than fusion and are now competitive with breeder reactors.

The goals of the solar-energy program are long-range because of what seem to be substantial obstacles. Unfortunately, these are not so much technological in the case of solar heating—the most immediate goal for the solar-energy program—as they are economic, social and political. Solar

As oil and gas daily grow scarcer and more expensive, a conventional power plant, such as this one on California's Monterey Bay, will someday be as much a fossil as its fuel. Today, solar heating and cooling systems for the home provide a practical, economical alternative to fossil-fuel power. With sufficient funding for research, the direct conversion of solar energy to electricity could someday provide an endless source of energy without the hazards associated with nuclear power systems.



space-heating devices are essentially simple, but no U.S. manufacturer yet makes them. But even if a large solar-heating industry existed, solar home heaters could be expected to cost more to make than conventional heaters, which would still be required to supplement the sun-produced heat. So the initial cost of a solar home would be high. And builders, buyers, and lenders all judge homes by initial cost, rather than by the cost over the life of the home, which would favor solar heating.

Lack of codes, standards, practices, manufacturers, designers, and builders skilled in solar energy must be overcome before solar energy is used for heating on a large scale. The National Science Foundation has taken a step toward overcoming these deficiencies by financing research for a special chapter on solar energy in the *Handbook of the American Society for Heating, Refrigeration and Air Conditioning Engineers*. The handbook, which consists of 200 chapters in four volumes, is regarded as the bible of the industry. The chapter on solar energy, which will be published in June, is 20 pages. Eight are devoted to theory and fundamentals, the rest to applications. Carl W. MacPhee, editor of the handbook, said in a telephone interview that the new chapter simply summarized what had been done in

solar energy: it was not a chapter on design. "You couldn't design a solar heating system from scratch using the handbook," he said, "without reading an awful lot more and knowing much more about solar energy. But by 1978, the chapter will look much different."

Despite the obstacles to putting solar energy to work in home heating and cooling, the natural advantages of solar energy and the expected rise in oil and gas prices make solar energy appear competitive. One highly regarded study quoted by the National Bureau of Standards says that solar home heating already can compete with electric heating, and may soon compete with oil and gas. (Electricity rates in some upper-middle class homes in the Northwest have recently exceeded \$250 a month. At this rate, solar energy is a bargain.) Even without rising utility rates, solar heating could compete with conventional systems if it were subsidized to the same extent. The biggest roadblock to the increased use of solar energy is not a lack of know-how, but a lack of economic incentives, such as tax credits or FHA inducements to builders.

The National Bureau of Standards has computed that a typical U.S. residence of 1,600 square feet of floor space receives about 800 million BTUs in solar energy annually on its roof, an amount equivalent to more

than 6,000 gallons of gasoline. A home of this size typically requires only about 130 million BTUs for heating, but sunlight falls on the roof intermittently, and most of it in the summer months when heating needs are lowest. Because of this need to store heat when the sun fails to shine, the Bureau of Standards and other federal agencies have suggested that solar heating might be most feasible if it provided 50 to 75 percent of required home heat, with a conventional heater providing the rest. The equipment necessary to store solar-energy heat for periods long enough to provide 100 percent of the heat would be too expensive in the more northern latitudes of the United States. For the average-sized home, using solar energy to provide 50 percent of the necessary heat would save the equivalent of about 500 gallons of gasoline annually.

Lloyd O. Herwig, director of advanced solar-energy research and technology for the National Science Foundation, says that heating and cooling are the most promising immediate applications of solar energy because their technology—especially for heating—is most advanced. Solar hot-water heaters have been used for more than 25 years in Florida, and thousands are still in use there today. Nearly half a million are in operation

in Japan. Many of these devices, although effective, have been abandoned over the years because hot-water heaters fueled by gas or electricity have been cheap and more convenient. Recent skyrocketing electric bills in many parts of the country may make solar heating more attractive to many homeowners.

The typical solar collector for heating is a shallow box or tray covered with one or more layers of glass. Sunlight passing through the glass strikes a blackened metal plate in the back of the box, heating both the plate and the air around it. The plate is blackened to make it absorb more heat from the sunlight. Glass is transparent to the visible wavelengths of light that carry the most energy, but not to the wavelengths of heat radiated by the black plate when it becomes hot. Thus, the heat is trapped. This differential transparency of window glass is called the greenhouse effect. If it were not for this, the black plate would radiate back through the glass as much heat as it received from the sun, and solar collectors would work poorly. As it is, however, a well-insulated solar collector with three layers of glass can achieve temperatures inside of about 125 degrees above that of the outside air. Such a device can raise water temperature to 140 degrees—customary in a household water heater—when the temperature outside the collector is well below freezing. For maximum efficiency, flat-plate collectors are positioned to face south and are tilted at an angle of 15 to 20 degrees plus the number of degrees of latitude. Thus, the farther north the collector, the more it will be tilted.

Heat may be extracted from the collector by circulating water through thin-walled tubing soldered to the black plate or incorporated into it. Air also can be used to extract the heat. Both hot-air and hot-water systems, and combinations of the two, are in use now in some of the experimental solar homes in the United States. If the sun shone long enough every day in every latitude to meet local heating needs, solar heating might be widely used now. Because it obviously does not, a solar heating system requires a subsystem to store heat in darkness and in cloudy weather. The method most often used today consists of tanks of water or rooms of masonry that are heated in sunny weather by the solar collector. A solar house de-

signed for Washington, D.C., for instance, contains tanks for about 3,000 gallons of water, enough to keep the house comfortable for 21 hours when the air outside is zero degrees. The collectors cover 600 square feet of the roof, somewhat more than one-third of the roof area of the average-sized house.

Because hours of sunlight are fewer and the winter temperature lower, in general, as latitude increases, solar heating becomes increasingly expensive where it is needed most. More collectors will be needed in the north, and more storage capacity for the heat. From an economic standpoint, then, the federal agencies have categorized the United States into three zones: the southern, where solar energy can provide 100 percent of needed heat and where solar cooling will be most economical; central, where solar energy can provide a major part of the heat, but where standby heating with gas or oil will be needed; and northern, where solar energy can be counted on to provide supplemental heating for the conventional furnace in late fall and early spring.

How far north solar heating will be economically feasible will depend on the cost of solar collectors and heat-storage systems, how scarce and how costly heating oil and natural gas become, and whether incentives are adopted to encourage solar heating. For instance, some scientists and many environmentalists have suggested imposing a tax penalty on oil and gas, instead of the depletion allowance, to conserve the nation's dwindling reserves of these precious fuels. Similarly, a bonus might be paid for installing solar-energy devices, not only because they save fossil fuels, but because solar energy is nonpolluting.

Cost figures for solar-energy heating systems can only be estimated. Such estimates are discouraging, indicating that to equip a home with a solar energy heating system will add 10 percent to 20 percent to the total price of the home. The estimate that solar-heating can compete with electrical heat at the present time is based on the assumption that if solar collectors were mass-produced, they could be priced at two dollars to four dollars per square foot. It also is assumed that the solar heating cost will be discounted at six percent and depreciated over 20 years. An engineer who has studied solar energy for the prospect

of manufacturing heating equipment profitably said he doubted that costs of solar collectors could be reduced by mass production because little technology was required for manufacturing. Most of the expense, he said, was in the materials—mainly copper, aluminum, and steel—all of which are expensive and likely to become more expensive. The engineer said he was pessimistic, too, because Americans are accustomed to convenience and little maintenance. (For solar collectors to work efficiently, someone must wash the collector win-



dows occasionally.) He said solar water heating might economically be provided to large buildings by utilities as a way for the utilities to conserve their own supplies of fossil fuels.

If the expensive equipment for solar heating also could be used to supply energy for cooling, the federal agencies contend that the system might prove more economically competitive. The National Science Foundation granted \$238,000 last year to Professor George O. G. Lof at Colorado State University to build such a residential heating and cooling system. Lof, who has been president of the International Solar Energy Society, is building an experimental solar house at Fort Collins, Colorado. He said recently that both heating and cooling are needed to justify the cost of solar collectors.

The refrigeration system required for solar cooling already has been tested successfully. It is based on the gas-absorption principle used in refrigerators commonly found in campers today, which are powered by propane or kerosene. Heat from the burning fuel raises the pressure of the refrigerant, usually ammonia or lith-

ium bromide. The heat is dissipated in conventional coils such as those found in all refrigerators. The refrigerant then is allowed to vaporize—the key to the cooling process—into cooling coils. These coils turn cold and provide cooling for air conditioning or other uses. The vapor is then reabsorbed in a solution.

Solar cooling has been proposed for NASA's new engineering building, along with solar heating. Solar air conditioning is an alluring prospect because air conditioning has accounted for much of the increase in electricity use in homes in the last few years. Furthermore, solar energy ordinarily is most intense when cooling is needed the most.

Karl W. Boer, director of the University of Delaware's Institute of Energy Conservation, is experimenting at Newark, Delaware, with a more sophisticated system for extracting solar energy for home use. It is intended to heat and cool the home and supply some of its electricity. The Delaware house is, in effect, shingled with solar cells made of cadmium sulfide, which, like silicon crystals, generate electricity directly from sunlight. This electricity can be fed directly into the household circuit or stored in batteries. Heat collected in solar collectors behind the cadmium sulfide cells can be used for heating. Boer and his colleagues are also experimenting with various chemicals to store the heat by using it to melt certain salts—called heat of fusion. Large amounts of heat can be stored that way, and the reverse phenomenon might be used for cooling. Cadmium sulfide cells, which so far have only been manufactured on a laboratory basis, are far less expensive to make than silicon cells, but they are less efficient and reliable. The National Science Foundation is backing Boer's research because it is interested in cutting the cost of silicon cells. At today's costs, enough silicon cells to light a 100-watt bulb when the sun is shining would cost between \$5,000 and \$10,000.

The Science Foundation regards its windpower experiments as one of the kinds closest to commercial exploitation among all solar energy research. Windpower electric generators are in operation throughout the world today, particularly in Australia and Switzerland, from which wind machines are being imported by a few individuals in the United States. A

NASA report to Congress indicated that wind generators placed on the Great Plains could produce 50 percent of the electricity needed in the United States in 1985—equivalent to about 140 billion gallons of gasoline. The main problem would be the costs of transporting this energy from one centralized location to various, far-flung regions of the country. Much study is needed, however, before the wind generators could be placed to produce the maximum electricity. Power from wind increases with the cube of velocity, which means that doubling the wind speed increases the electricity produced eight times.

A 1,250-kilowatt wind generator with blades 175 feet in diameter was built at Rutland, Vermont, in the early 1940's to supplement power from coal-fired steam turbines. It cost more to build, maintain and operate than a coal power plant, so when a blade failed because of metal fatigue, it was abandoned. The windpower generator financed by the National Science Foundation, will have two blades 125 feet in diameter and produce 100 kilowatts in an 18-mile-an-hour wind. It will be installed within the next year, according to plan, at NASA's Plum Brook station near Sandusky, Ohio. At least five other windpower research programs are in progress, with a total budget of \$1 million this year. Next year, the wind-power research budget is expected to be \$5 million to \$7 million.

Wind, like sunshine, is intermittent, and batteries are not regarded as a practical way to store large amounts of electricity. The electricity could be stored by generating hydrogen by passing a charge through water. Then the hydrogen could either be burned for fuel or consumed in a gas fuel cell to make electricity directly. Such fuel cells have been operated successfully. An entire energy system based on hydrogen—including hydrogen-fueled automobiles—has been proposed by some scientists.

Not as far advanced as the windpower solar-energy program, but designated for testing within a few years, is a scheme for extracting solar energy stored in the oceans as heat. The amount of this energy is enormous—so great that a NASA study indicated that 100 percent of the electricity needs of the United States in 1985 could be met from Gulf Stream solar-energy generators. The proposed site

for a 400-million-watt solar ocean plant is in the Gulf Stream 15 miles east of the University of Miami Institute of Marine Sciences. Professor William E. Heronemus, of the University of Massachusetts engineering department, says that from this location, either alternating current or direct current could be transmitted to the mainland by cable. The power plant also could generate hydrogen gas for transfer to shore by tanker or pipeline.

Electricity can be generated in tropical sea water because the surface is warm and the depths cold. Typically, the temperature difference is about 40 degrees. In the plant designed by Heronemus and others, the warm water heats a gas—say, propane—that vaporizes to a high pressure at the surface water temperature. The high-pressure gas drives a turbine, then is cooled and condensed to a liquid by cold water from the depths. When again warmed by the surface water, it again drives the turbine. The whole idea originated with a French physicist in the 1880's and was tried successfully in the 1920's off the coast of Cuba. It produced little power then because water, instead of gas, was used as the forking fluid.

Whether the growing program of research and development in solar energy will soon usher in a solar era remains uncertain. Future possibilities include the production of electricity through direct solar conversion, which many experts say would take no longer to develop than the fast-breeder reactor. Where the Administration thinks the priorities lie can be told from its \$10-billion energy proposal for 1975-1979, which calls for spending \$2.175 billion to find and develop processes to turn coal into gas and oil. By contrast, it calls for spending approximately one-tenth that amount for exploiting solar energy. More than 40 percent of the \$10 billion is budgeted for nuclear energy. If the government is right, solar energy will make only a modest contribution to relieving the energy shortage in the next few decades. But if the advocates of direct conversion are right, solar energy might one day light the world.

James Spaulding teaches journalism at the University of California, Berkeley. He worked for 20 years as science reporter for the Milwaukee Journal and has served as president of the National Association of Science Writers.

CHAPARRAL MISMANAGEMENT

LESLIE CONNOLLY

Late summer in Southern California—you wake up one morning to discover that the smog, which had hung over the Los Angeles Basin for weeks, has suddenly vanished. The sky forms an intense blue field, against which stands the rugged profile of the San Gabriel Mountains. A gusty wind from the east rattles the windows of your house and whips the live oak in your backyard. When you step outside, this hot, searing wind hits you like a blast from a furnace. The sun has been up for only an hour but the thermometer on the back porch already reads 85 degrees. By the end of the day, your nerves will be frayed and your skin will feel like parchment. Fires will have broken out in the dry hills and canyons from perhaps as far north as Santa Barbara all the way south to San Diego. It is the season of the Santa Ana winds, when each year, with the certainty of the rising sun, Southern California is tried by fire.

WINDS AND FIRES have swept Southern California for thousands of years. They are as much a part of this land as blizzards are to Minnesota or hurricanes to the Gulf Coast. Each region of the country from time to time must endure its own homegrown variety of natural disaster; no place is immune. Today, men tend either to ignore the possibility of disaster or attempt to change nature to fit their custom; seldom do they willingly adapt themselves to natural realities. In the United States, the typical response to, say, flood damage has been to try to control the river through dams and levees, rather than simply to avoid building on the floodplain. So it is not surprising to learn that in Southern California the response to periodic fires has not been to avoid building in fire-prone areas. Now, the

Forest Service proposes instead to do away with the fire itself by replacing highly inflammable brush with less hazardous types of vegetation.

The vegetation to be replaced is chaparral, a thick, thorny, virtually impenetrable scrub that covers the dry exposed slopes of the California hills from Siskiyou County in the north, where it occurs spottily, south down the Sierra foothills and the Coast Ranges to the steep mountainsides of Southern California, where it becomes one of the dominant plant communities. Everywhere, it forms a miniature forest of highly resinous evergreen shrubs, such as chamise, toyon, mountain mahogany, coffeeberry, redberry, ceanothus, manzanita, and scrub oak. Chaparral is fire-adapted. Although resinous leaves and extraordinary density, combined with the hot, dry California summers, make fires inevitable, the entire chaparral community has

learned to live with fire, even to take advantage of it.

The frequent fires select against plants that require a long, uninterrupted growing and reproduction cycle. Trees, for example, cannot compete with the chaparral shrubs, which finish flowering and seeding early in the spring and are virtually dormant when the fires come. The seeds of many of these species do not even germinate unless fire sufficiently heats the soil. Underground portions of the plants soon will begin to send up new sprouts in the wake of the flames. This ability to reproduce from underground parts enables chaparral species to re-establish themselves quickly after a fire, though it may take 15 to 20 years for a stand to reach full maturity.

The animals and insects that inhabit the chaparral also have adapted themselves to the fire cycle. They, too, get to the business of breeding early in the year, when the chances of fire are slight. During the hot, rainless summer, the evergreen vegetation of the chaparral provides cover, forage, and even moisture. By summer's end, all the young have matured and are ready to fend for themselves should fire come. Many animals, of course, are trapped, but enough always manage to escape to maintain the population, and in two or three years, their descendants return to the ancestral home.

In January, 1973, the U.S. Forest Service announced a proposal to transform a half-million acres of Southern California chaparral into grassland through prescribed burning, application of herbicides, and mechanized equipment. The projected benefits of the Brushland Management Program (known as "type conversion") include (1) reducing public and private



losses resulting from wildfires and subsequent flooding, (2) increasing production of desirable forage for wildlife and livestock, and (3) improving the recreational value of chaparral lands. More likely results will be destruction of wildlife, loss of watershed holding capacity, replacement of native plants with undesirable alien species, buildup of herbicide levels in and around the project areas, further suburban sprawl, and the waste of thousands of dollars of public money in a program that mostly will benefit certain private interests.

Government agencies, conservation groups, and private citizens are all contesting the motives behind the creation of the project, the validity of its intentions, and the means designed to carry it out. The Forest Service has based its goals on the golden phrase of resource conservation, "multiple use." In the case of chaparral, this means grazing, recreation, and fire protection. But the real function of chaparral—if that is even a valid way of looking at a natural environment—is its provision of habitat for wildlife, its soil-holding ability, and its role in preventing erosion on steep slopes. Chaparral has developed in conjunction with the land, adapting to its uneven terrain and poor soils. It is unlikely that other plants will be found that can thrive in the hot climate and impoverished soil of this land and offer comparable protection from floods and erosion. Even if grasses can be found that are suitable to the hot, dry hillsides, they still cannot compete with chaparral in preventing earth slippage and mudslides on steep slopes.

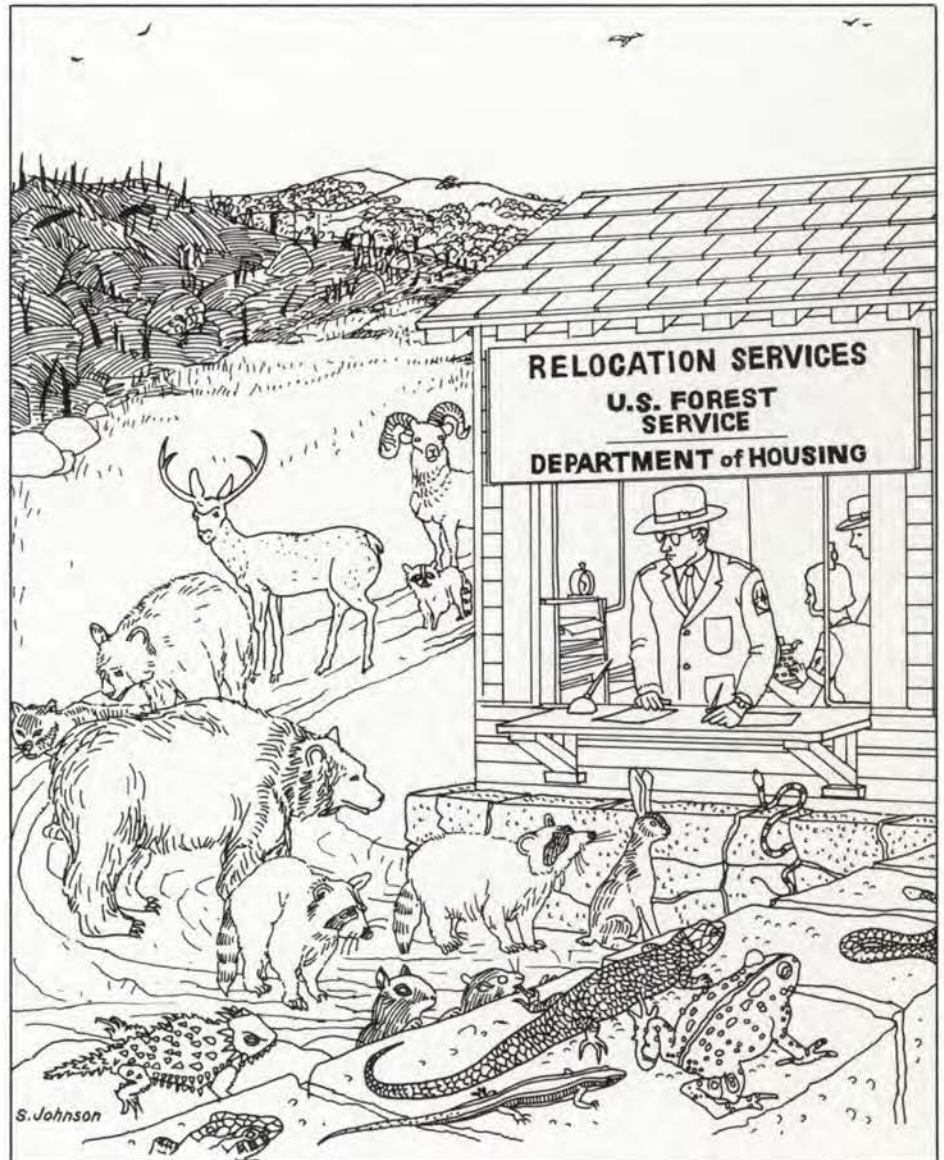
So the Forest Service's goal of reducing fire hazards and the threat of winter slides and flooding seems illusory at best. It is difficult to accept these goals merely in terms of "multiple use" and even more difficult to justify them as necessary safety measures. For one thing, very few Southern Californians live in the region's four national forests. Those who do, do not tend to live in or near the chaparral. Most of them live in the conifer forests at higher elevations, where summers are cooler; fires do occur there, though not with the same regularity and ferocity as in the chaparral. Indeed, most of the residences now endangered by brush fires lie well outside the national forests and would be little benefited by the brush-management program.

So why is the Forest Service engaged in a program to control brush fires? Ian McMillan, a noted California rangeland expert, has suggested that losses resulting from brushland fires in the past persuaded insurance companies to exert political pressure on the Forest Service to protect from fire future suburban developments contemplated for the foothills. If the Forest Service were to succeed in eliminating the fire-prone chaparral, it would encourage the spread of development into areas adjacent to the national forests—areas that might otherwise remain open space.

The Forest Service's second major goal—to increase forage for wildlife and livestock—seems as wrongheaded as its fire-and-flood-prevention idea. First of all, the wildlife does not need the government to help it survive in the chaparral. Deer, rabbits, gray

foxes, spotted skunks, raccoons, coyotes, bobcats, and birds such as the wrenit (which is endemic to chaparral), brown towhee, California thrasher, and quail all to some extent or another depend on the chaparral for food and cover. Replacement of the chaparral with grasses would reduce the wildlife in the Southern California hills and mountains, not increase it, as the Forest Service has implied. So when you get right down to it, the type-conversion program would help only domestic livestock and introduced game species that require a grasslands habitat. From the range manager's point of view, chaparral restricts grazing because it is impenetrable and inhibits the growth of understory grasses. Just so. If the land had been suitable for grasses, grasses would have grown there. Raising live-

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Challenge to the Throwaway Ethic

NANCIE FADELEY

IN OREGON, we buy beer, not bottles. Since the enactment of the Oregon Bottle Bill, which prohibits the sale of beer and soft drinks in non-returnable containers, we Oregonians have started to recycle the American Throwaway Ethic and, as a result have cleaned up our roadsides and parks, conserved natural resources and energy, and encouraged our kids to pick up our trash.

Contrary to the dire predictions of the Bottle Bill's opponents, beer and soda pop are still being consumed, and in increasing volumes. Those adversaries — brewers, soft-drinksters, grocers, and glass and metal manufacturers — maintained that, if passed, the Bottle Bill would close down breweries, bottling plants, and distributing operations; bankrupt grocers; and leave the citizens of Oregon high and dry. Relying on the revealed wisdom of the moment, the Bottle Bill's foes argued that since 60 billion disposable cans and bottles are produced (and disposed of) annually in the United States, a change back to returnables would, necessarily, cause economic disaster, widespread ruin, and the establishment of a State of Thirst where Oregon used to be.

Fortunately, the Oregon legislature didn't swallow those arguments; the Bottle Bill was enacted, and most Oregonians agree with Governor Tom McCall, who describes the Bottle Bill as a "rip-roaring success." The operator of Timberline, Oregon's famed ski resort, made an observation that has been echoed throughout the state: "Now that the spring melt is on, it has become obvious that the Bottle Bill worked extremely well. The amount of

litter which has always surrounded Timberline every spring is not in evidence this season. . . ."

Travelers leaving Oregon insist they can tell immediately when they cross the state line; the roadsides in Oregon's neighbor states are still littered with bottles and the omnipresent beer can.

As chairman of the Oregon House Environment and Land Use Committee, I receive many letters praising the Bottle Bill, others suggesting refinements in the legislation, but none asking for repeal.

The container-control law is one of the simplest, most workable, and potentially most significant legislative instruments available to help conserve both energy and resources. Moreover, it is self-enforcing. Understanding that good intentions alone do not keep the world clean, the drafters of the Bottle Bill devised a law that would work on more fundamental precepts — that you get your own, or (in the case of the thousands of kids who now comb the state collecting bottles and cans) somebody else's money back when you recycle the containers. It's a modest start on the widespread reuse that ultimately must include all sorts of containers, if we are not to be buried in our own garbage. Standardization of containers (begun with the Oregon Bottle Bill for beer and soda bottles) eliminates time-consuming and costly sorting according to brand names, and allows refilling at the nearest plant.

Rather than opposing the Bottle Bill outright, one brewery tried to change the proposal from a ban on non-returnables to a container tax, which would be used to finance litter pickups. Such a tax might appear an acceptable second choice, but, in fact, it evades the real problem: We do not need more

bureaucracy to collect trash; we need more consumers to pick up after themselves. The Oregon Bottle Bill is a self-enforcing measure that gets at the root of the solid-waste problem by assuring that litter is reused. A small boy eagerly collecting bottles to earn popsicle money is much preferable to squads of state employees putting in their eight hours a day toting litter to bigger and bigger dumps.

When the bill was being debated in committee hearings, high-level executives flew in from all over the country to warn of the dire economic effects such legislation would produce. Often this VIP testimony backfired. One executive announced that he was especially qualified to speak upon the subject of litter because he was his company's Western Region's Corporate Director of Environmental Affairs. But his credibility shattered like a beer bottle on concrete when he was asked how long he had held this position.

"Two days," was his answer.

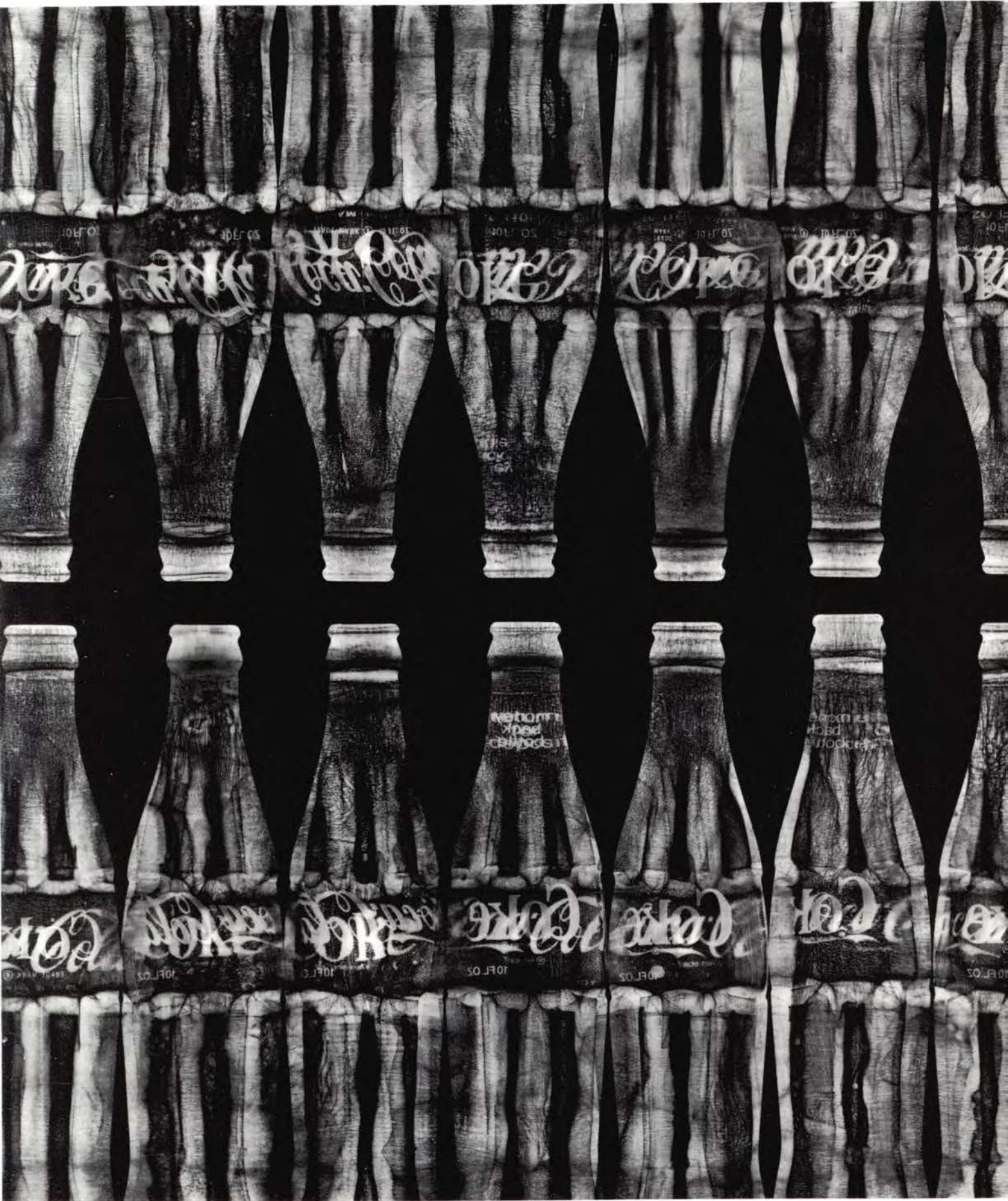
"And who was your predecessor?"

"There wasn't any."

The Madison Avenue types, the economic soothsayers, and the company "environmentalists" just weren't convincing.

But the citizens of Oregon were convincing. They had decided that the Bottle Bill was a good idea and they told their legislators so. Moreover, the issue appealed to all age groups. Even grade-school youngsters presented well-reasoned testimony to legislative committees.

A rockhound was particularly convincing; he held up an Indian arrowhead that was older than the pyramids of Egypt, yet still strong and sharp, and said, "This arrowhead is made out of the same stuff as a beer bottle." The archaeologist of the future, he implied, will find telling testimony about twen-



tieth-century culture when he excavates our roadsides.

The provisions of the Bottle Bill are straightforward:

- Beer and soft drinks cannot be sold in Oregon in non-returnable cans or bottles. All containers must be clearly marked with their redemption value.
- A dealer must refund deposits on any empty beverage containers of the kind, size, and brand he sells.
- A distributor must pick up and refund deposits to his dealers on any empty beverage container of the kind, size and brand he sells.
- Retailers, if they wish, can contract with private redemption centers that are registered with the Oregon Liquor Control Commission. Any person may return empty containers to such centers and receive payment of the refund value.

The 1973 legislature strengthened the original Bottle Bill in two ways:

- It changed the word "consumer" to "person" in all sections of the bill dealing with payment of refunds because some retailers refused to pay refunds on beer cans to minors because the minors were not the original "consumers."
- It amended the bill to permit a two-cent refund for standard reusable containers (those certified by the state and used by more than one bottler) in lieu of the usual five-cent refund for cans and non-standard bottles.

The U.S. Environmental Protection Agency studied the effectiveness and impact of the Oregon Bottle Bill, and published the first of two reports in April, 1973. (The second, joint report by EPA and the State of Oregon should be released in May, 1974.) The 1973 report, "Oregon's Bottle Bill: The First Six Months," uses data from industry and from monthly litter surveys made before and after the effective date of the Act (October, 1972) along randomly chosen one-mile sections of Oregon roadways. (Just which sections were used for the survey is a closely kept secret so no one can manipulate the results.)

The report shows a reduction in beverage-container litter along Oregon highways of at least 81 percent. The percentage jumps to 96 percent when non-returnables purchased out-of-state or before the effective date of the law are discounted. The report also shows a reduction in all roadside litter. Opponents of the Bottle Bill have circulated material throughout

the country alleging that litter "percentages" have increased. Governor McCall has called the opponents' material "a shockingly distorted view of what's happening."

The EPA six-month study estimates that the Bottle Bill has eliminated about 142 jobs in the can industry. It does not, however, estimate the number of new bottling or handling jobs that have been created by switching from 35- to 40-percent use of cans to about 95-percent use of reusable glass bottles.

Despite the EPA's positive findings and the governor's statements that industry spokesmen are distorting the facts, the misrepresentations continue to appear in trade magazines, in the popular media (like *Time* and *Newsweek*), and in legislative hearing rooms. Apparently this misinformation comes from lobbyists, press releases, and advertising sponsored by groups like the American Iron and Steel Institute, brewers and soft-drink associations, glass manufacturers, and some segments of labor—the same interests that vigorously opposed the Bottle Bill in Oregon.

These recycled rumors first came to my attention last spring when I attended a seminar in Washington, D.C., sponsored by the Council of State Governments and federal environmental agencies. I traveled to our nation's capital eager to discuss land-use planning, but soon discovered that everyone who found out that I was from Oregon was interested in only one thing—the Bottle Bill.

A freshman state congressman from the South sheepishly explained that he had introduced a bottle bill in his legislature before he realized how much the Bottle Bill had upset Oregon's economy. And was it really true, he queried, that people were drinking 30 percent less beer in Oregon than before enactment?

After trying to convince the doubtful Southerner that people still drink beer in Oregon, I was stopped a few steps farther along by the legal counsel for a legislative environment committee of a New England state.

"Is it really true," she asked, "that beer sales have dropped 30 percent in Oregon?"

So went the week.

When I returned home from the seminar, I did some research. Not being much of a beer drinker myself, I really had not been able to respond

with authority to all the rumors, rumors like "Budweiser has boycotted Oregon" and "Beer sales have dropped 30 percent." At my grocery store I found plenty of Budweiser, along with domestic and imported beers, all in returnable bottles.

According to the Oregon Liquor Control Commission, beer sales have actually increased in every month since the bill was enacted in October, 1972, except during December of 1972, when sales dropped 13 percent because of unusually cold weather. Our neighbor state of Washington (which has no bottle bill) experienced a 20-percent decrease in beer sales that snowy December.

While sales have increased, prices have stayed on par with those of Washington. Soft drinks have not significantly increased in price; beer prices have increased slightly. Most of the price rise went to help retailers with increased handling costs.

During the 1973 legislative session, a bill was introduced to require the distributor to pay the grocer a one-cent handling fee. This bill was defeated for a number of reasons. First, many considered that this matter should be handled in the market place, rather than by the law. Just as the state does not tell you to turn in your empties (if you don't, some little kid will), it does not and should not tell the distributor how much he should pay the dealer or what price he should charge. Second, although this amendment was proposed at the request of the independent grocers' lobbyist, opponents maintained it actually would hurt the independents since it would raise the price of their beverages by one cent. Such an increase would give a clear price advantage to chain stores that do not use distributors.

The constitutionality of the Bottle Bill has been challenged in the Oregon courts by a coalition of container and beverage manufacturers who argued that it favored local businesses at the expense of interstate operators, that it violated the equal protection clause of the U.S. Constitution by differentiating between carbonated and non-carbonated soft drinks and between reusable and non-reusable containers, and that it violated due process by lacking a real and substantial relationship to the objectives sought by the law. The plaintiffs lost their case in an Oregon Circuit Court on

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Nixon sells too soon

The Undersea Chase

WHEN THE ARAB OIL BOYCOTT was still in force and the American gas lines were longest, President Nixon announced the commencement of Project Independence, a national program to make America free from the volatile politics of the Middle East oil-producing countries. Project Independence called for expanded research on alternative energy sources (solar energy, the fast-breeder reactor, hydrogen fusion) and an intensive program of exploration and development of domestic petroleum and coal resources.

Although Administration spokesmen continue to cite the importance of energy conservation measures in the coming years, the President has chosen instead to emphasize the accelerated development of our remaining domestic fossil-fuel resources. Critics of the President's approach favor a more balanced program incorporating strong conservation measures.

In April, 1973, when the first gasoline pumps were beginning to run dry, President Nixon ordered his Council on Environmental Quality (CEQ) to "... study the environmental impact of oil and gas development on the Atlantic Outer Continental Shelf and in the Gulf of Alaska." At that time, the Administration's stated goal was to lease some three million additional acres of the Outer Continental Shelf (OCS) by 1975, for oil and gas exploration. But in the President's January, 1974, energy message, he proposed "to increase the acreage leased on the Outer Continental Shelf to 10 million acres beginning in 1975." This increase tripled his intentions of the previous April and meant that ten times as much OCS lands would be under lease by 1975 as were leased in 1972 and 1973.

Some light is shed on this decision by a curious remark contained in the first chapter of the CEQ's study of OCS leasing in the Atlantic and Gulf of Alaska:

"Last April, the Outer Continental Shelf — particularly on the Atlantic and in Alaska — was a promising intermediate long-range potential new source for oil and gas. Today [less than a year later!] the OCS represents one of the most important components of Project Independence."

The first chapter of the CEQ report, which is a summary of the findings and conclusions, was sent to reviewers after the other

chapters. Whether its release was held back, as some critics believe, to allow some judicious White House editing is uncertain. But one cannot help but be struck by the self-serving and disingenuous tone of the above excerpt. Are we really to believe that but a year ago no one in the oil industry or Administration had any idea that the OCS reserves would be as important as they are now claimed to be?

The message is clear: the accelerated leasing program officially has been declared part of Project Independence. It seems obvious that the oil boycott fortuitously provided the political occasion to increase OCS leases far beyond what first had been considered.

The increase is not merely a matter of quantity; it is such an enormous jump from

our previous goal and involves so many extensions beyond our present knowledge and technology that it completely changes the nature of the enterprise.

For example, the Administration now plans to lease for the first time OCS lands beyond a depth of 200 meters, which will require more sophisticated equipment and methods than we now possess. Deep-water operations will entail greater pressures on pipelines and drilling equipment and greater difficulty in detecting and repairing failures in the system. Yet plans to exploit these deep-water resources are underway in spite of our ignorance of the problems and hazards involved.

Similarly, among the new OCS areas to be opened to development are ones in the



North Atlantic and Gulf of Alaska, where storms are more frequent and seas far rougher than those of the Gulf of Mexico or the Santa Barbara Channel. To move into these northern coastal areas without sufficient study, and with equipment that has not even proved to be entirely safe in calmer waters, is to court disaster, especially in the Gulf of Alaska, where storms may suddenly appear from nowhere.

Several studies done on behalf of various governmental organizations have criticized existing offshore-oil technology. Pipelines, for example, have been found to be a chronic source of oil pollution both onshore and off. They pose an especial hazard to coastal estuarine systems. And, of course, oil blow-outs and tanker accidents remain a continual threat, especially in the rougher northern seas. But perhaps even more hazardous, over the long run, than large oil spills is the chronic day-to-day seepage of oil from the oil-water separators mounted on the drilling platforms. This "separator" oil is even more toxic than crude and is released at the rate of about three cubic feet per second. Over a year's time, this seepage amounts to just less than 1,000 barrels per platform. It forms small slicks in the vicinity of the drilling platform, which may or may not pose a danger to mobile organisms, which

can avoid them, but it does enter the marine food chain through plankton, which is carried willy-nilly by currents through the polluted sectors. As a result of this seepage, significant concentrations of heavy metals have been detected in the waters around platforms, a situation that could pose serious threats to human health as well as to marine wildlife.

The accelerated OCS leasing program also will entail a corresponding increase in onshore facilities—refineries, pipelines, ports, tank farms, and the like. For the most part, these ancillary facilities will be located in rural areas and small towns near the coast. In the absence of coastal land-use planning and thorough environmental impact studies for each area vulnerable to onshore developments, such rapid, unplanned industrial expansion will result, in the words of the recent CEQ report, in "... permanent degradation of the environment and unnecessary disruption of traditional values and lifestyles for those living there now." The report admits that adverse social, economic, and environmental impacts could be avoided "by siting and development policies that encourage environmental protection and good design," but it gives no assurances that such policies are forthcoming.

Among the several environmental problems posed by the rapid development of onshore facilities, environmentalists are most concerned about likely damage to coastal wetlands. Already, along Louisiana's Gulf Coast, some 200 square miles of salt marsh have been destroyed over the past 30 years, according to one estimate, by channeling and dredging activities in connection with offshore oil operations. The life of a coastal estuarine system depends on the flushing action of the tides and the salt-water gradients—from most salty to freshest—in various parts of the marsh. When these are upset by dredging, filling, or whatever, the marsh begins to die.

Coastal wetlands are also endangered by other activities that will only be accelerated by the contemplated development of onshore oil-processing facilities. Land-filling operations have already destroyed millions of acres of coastal marsh in the United States, and without either coastal land-use planning or the establishment and protection of estuarine sanctuaries, millions of additional acres will be lost to industry.

Onshore facilities are now being planned in the absence of comprehensive land-use planning that could assure that they are located in areas best suited to receive them. Coastal land-use planning has been delayed up to now by the Administration's refusal to use funds appropriated for the Coastal Zone Management Act of 1972. These funds were supposed to serve as incentives for states to undertake coastal land-use planning.

Part of these funds would be used as grants-in-aid to states for the purpose of

establishing estuarine sanctuaries. The draft regulations governing the management of these sanctuaries have been criticized by conservationists for allowing too much manipulation and too little protection, but in the light of the accelerated OCS leasing program they are needed more than ever if our remaining wetlands are to be protected. If the Executive Branch is sincerely concerned with protecting the coastal environment, as spokesmen for the Department of the Interior have recently claimed, it could offer no better sign of its good intentions than to release the coastal land-use planning funds.

The Department of the Interior, which has been charged with implementing and monitoring the OCS leasing program, has set up what it calls a "two-tiered nominations system" whereby both the oil companies and the public are invited to submit the names of specific OCS areas they believe should either be developed or avoided because of probable environmental hazards. Accordingly, a host of conservation organizations, including the Sierra Club, recently received a letter from Interior Secretary Rogers C. B. Morton inviting them to indicate which marine areas are "of greatest environmental concern," what "specific value ... may exist for each area," and "the location on maps of specific environmental features or hazards." At the same time, the oil companies were invited to submit their candidates for development. Interior has said it will consider both sets of nominations in finally determining which areas will be opened to leasing.

Although the two-tiered nominations system seems fair enough on the surface, in practice it is weighted heavily in favor of industry. Only the oil companies are in a position to submit an adequate reply within the one-month deadline established by the Department of the Interior. After all, they have been studying OCS potential for many years and have had millions of dollars and thousands of people at their disposal to conduct basic research. But conservation organizations lack both the funding and the staffs to pursue equivalent environmental studies, without which it is virtually impossible, except in a few instances, to delineate specific areas of well-known natural importance and environmental concern. More important yet, the federal government itself should be conducting such studies rather than asking the public to do so. In the case of the proposed OCS leases, it is Interior's responsibility, under the provisions of the National Environmental Policy Act, to conduct the necessary research and prepare the required environmental impact statements. *Then*, the public can respond. But to require conservation organizations to nominate OCS areas of environmental concern in the absence of sufficient data is to assure that the oil companies will have the louder

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WASHINGTON REPORT

Brock Evans

Environmental Outlook

THE INESCAPABLE FACT of pending impeachment proceedings looms larger and larger on the political map of Washington. As everyone's attention is riveted more and more on the dramatic historic events that everyone feels will soon take place, environmentalists are becoming more and more concerned about the fate of much good legislation.

Many bills that have received a great deal of attention and effort on our part in recent years are just about to come to a vote—impeachment may delay them all.

Here is a brief roundup of where we stand, and the best available prognosis of what may happen:

BLM Organic Act. This bill may be one of the major casualties of the impeachment proceedings. The House Interior Committee finally has held hearings and hopes to write a bill in May. Under normal scheduling, it could come to the floor in June, the same time when the House may vote on articles of impeachment. In the Senate the bill has dragged through successive markup sessions of the Interior Committee because of strong resistance from Senators Fannin (R-Ariz.) and Hansen (R-Wyo.), who have threatened to walk out if the wilderness review amendments are offered. The feeling is that Senator Jackson will mount a stronger push on the bill once the energy legislation is out of the way. But that action may not come until June or even later. If a Senate trial of the President begins, nothing else will happen this session.

Strip Mining. (H.R. 11500) The House Interior Committee has finally finished marking up Title 2, one of seven legislative titles. Opponents on the committee are succeeding in dragging out the markup sessions day after day, chipping away at the stronger sections of the bill. The crucial vote on the Seiberling amendment to set up a tax system that would favor deep mining as opposed to strip mining is expected to be very close. But the opposition's strategy is to drag out the markup so that by the time something is ready to go to the Rules Committee, the House will be debating the articles of impeachment.

Eastern Wilderness. (S. 316 and H.R. 13455) This bill is still tied up in the Senate Agriculture Committee, to which it was referred after an excellent report by the Senate Interior Committee. Senator Talmadge (D-Ga.) is apparently sitting on the legislation in order to make sure that nothing is put in of which the Forest Service and timber industry do not approve. Even so, there is a

chance that something may be reported out in early May and come to a vote in the Senate before the possible impeachment trial.

The situation is much shakier in the House, even though Congressman Melcher's (D-Mont.) Subcommittee on Public Lands has conducted hearings. But there seems to be a good deal of interest in the subject, and, with appropriate staff work in the House, it is possible that this important bill may see the light of day before the impeachment matter comes up.

Transportation. (H.R. 12859) The important mass-transit subsidy legislation, which was reported out of the House Banking and Currency Committee, has now been stymied by the Rules Committee, which sent it back, in a jurisdictional dispute, to the House Public Works Committee. Here, the Administration and rural highway interests are working to weaken and amend it, particularly to permit states to evade the National

Environmental Policy Act and Section 4(f) of the Transportation Act, which substantially prevent highway intrusions into parks and recreation areas. Opposition's strategy again is to delay until the impeachment process starts.

Emergency Energy Bills. (S. 3267 and H.R. 13834) This legislation has now become a political football, and the legislation, with its environmentally damaging coal-conversion provisions, may never be enacted. Senator Jackson and Congressman Staggers have apparently agreed to try to get a stripped-down bill through. Nevertheless, Senator Muskie of the Senate Public Works Committee has succeeded in getting the Clean-Air-Act coal-conversion provisions removed from the Senate version, with a promise to take up the whole matter in the near future. In the meantime, markup of the Emergency Energy Act, with coal-conversion intact, is proceeding in the House. The situation now is very confused, but as impeachment time draws near and the political tensions tighten, there is at least a 50-50 chance that this legislation will not pass both houses—or will be vetoed if it does.

Toxic Substances. (S. 426 and H.R. 5356) This bill has been in conference committee for many months, and has been held up by the energy situation. Congressman Staggers,

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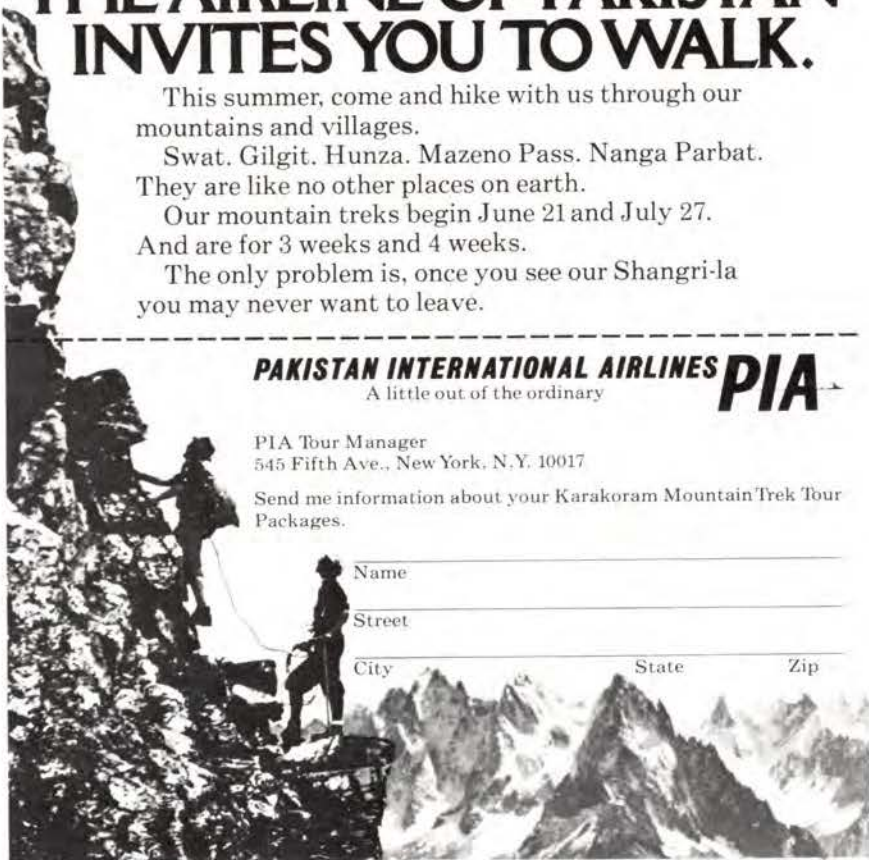
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chairman of the conference committee, has refused to permit meetings of the conference until some emergency energy legislation is passed. If something does happen in this field, there is still a reasonable chance that the nation will have a toxic substance bill this year, which will at least initiate the process of regulating poisons in this critical area.

Land-use. (H.R. 10294) There is a reasonably optimistic feeling that something should pass this year, since, apparently, Congressman Udall has agreed with the Rules Committee that he would hold three days of hearings in April, in return for his acceptance of several slightly weakening amendments on the House floor. If this is, in fact, the substance of the arrangement, then a land-use bill may actually go to the House floor sometime in May. Opponents' strategy again will probably be to attempt to postpone consideration by the Rules Committee by threatening a lengthy floor debate, and thus drag it out as long as possible.

There seems to be a reasonable chance of success in several of our major projects, especially the Big Cypress Preserve in Flori-

da (S. 334 and H.R. 46), which ought to be reported out of the Senate Interior Committee in May, and the Big Thicket National Preserve (H.R. 11546) in Texas, where Senator Bible is reported to favor a bill this year. These are both projects of long-standing interest for environmentalists and ought to have a good chance.

The total picture in mid-spring of 1974, then, is not too encouraging for many of the bills upon which we have worked long and hard. Even though logic would tell us that at least in the House, after they have voted articles of impeachment, they would go back to their business, that is probably not what will happen. Everyone expects the country to be in a great deal of turmoil during the summer, and since it is an election year, congressmen will want to be back with their constituents. The situation, however, is not entirely bleak. More than ever, members of Congress will be receptive to what ordinary people think. Now is the time to speak to them and let them know how we feel about the land, and about the bills we have worked for so long.

sary; what the Nixon proposal lacks is a clear statement that future development in areas with pollution problems should minimize dependence on autos and maximize other cleaner and more-energy-efficient transportation systems.

McCloskey rejected the idea that the Administration package was an attempt to "balance" the need for clean air and energy problems. "The two worst proposals, intermittent controls and an end to the policy of preserving clean air regions, have nothing to do with energy. They won't save a single gallon of gas or produce a single ton of coal. They have everything to do with the desire of major public utilities and energy companies to avoid the development and installation of pollution-control technology."

Club President Laurence I. Moss pointed out that the Administration proposals, like the amendments written into the House version of the Emergency Energy Act, "reflect a basic weakness in our present air-pollution abatement strategy. As long as resistance to pollution controls is profitable, industry will resist tough regulatory schemes in every way it can. We need to supplement the regulatory approaches of the Clean Air Act with a system of emission charges. That way, industries which dragged their feet on developing and installing pollution-control technology would lose money. Under the present system they make money, and money is the only thing they really understand. They've already shown they don't respond to legal pressures. We need to provide some financial ones too."

The House Commerce Committee and the Senate Public Works Committee are expected to consider the Administration proposals as one element in their full-scale examination of the Clean Air Act this summer. How much damage industry and its allies in the White House can do will depend largely on the feeling the Congress gets of what the public wants done about air pollution. Right now, the sense is still that the energy crisis has created fertile grounds for polluters. It's up to the public to change that feeling.

EPA bows on impact statements

The Environmental Protection Agency will "voluntarily" prepare and circulate environmental impact statements on its regulations and their economic and social effects, EPA Administrator Russell Train told the Senate Air and Water Subcommittee.

Subcommittee Chairman Edmund Muskie called the hearing to review the "basis for and implications of" EPA's reversal of policy on applying the National Environmental Policy Act to EPA.

"Those of us who helped formulate NEPA undertook to structure that statute to avoid

CAPITOL NEWS

Train derails White House policy

EPA Administrator Russell Train has effectively slowed down anti-environmental forces within the Nixon Administration in a bitter battle over Administration policy regarding revisions of the Clean Air Act. Train's resistance forced the Administration to abandon its idea of exempting energy-related projects from the provisions of the National Environmental Policy Act. He also persuaded the Administration to drop proposals for economic and social impact statements on environmental projects, and defended the ability of states to opt for stricter environmental standards than the federal government requires.

Train was also allowed to oppose two favorite proposals of big industry. One would authorize the use of so-called "intermittent" controls instead of installing anti-pollution equipment; such controls would allow factories to spread pollution over broad areas through tall smokestacks and to slow down production when air-quality controls are in danger of being violated. The other proposal would repeal the present requirement of the Clean Air Act that air quality in present clean-air regions of the country be safeguarded while cleanup goes ahead in metropolitan areas.

Both of these amendments are designed to permit polluters to meet legal requirements by spreading their pollution around more evenly, rather than by installing equipment

to actually reduce it. And both have been submitted to the Congress "for discussion" so that other executive agencies which still favor them will be free to lobby for their adoption. They are not, however, part of the official Administration package.

The Administration proposal still contains serious threats to the integrity of the air pollution abatement program. First, the auto industry would be rewarded for its recalcitrance and refusal to develop an effective pollution-control system with a two-year delay in the requirement to produce clean engines. Moreover, the tough .4 grams/mile standard for dangerous oxides of nitrogen written into the original Clean Air Act would be dropped under the proposal, which would permit EPA to substitute a standard of its own choosing.

As Sierra Club Executive Director Michael McCloskey pointed out, "extending the present auto-emission standards for another two years will delay the complete equipping of Detroit's production with catalytic devices which could save up to 10 percent on gas mileage." McCloskey also expressed concern about the delay in implementation of traffic-control measures and land-use planning requirements of the Act. The Administration proposal permits EPA to grant cities up to an additional 10 years to meet automotive air-pollution standards, "if necessary." Some additional time will be neces-

the confusion of applying an environmental review to environmental actions," Muskie said. "For three years EPA policy has recognized that intent. The courts have upheld that intent. Now, in a change of policy not preceded by a change in law, EPA proposes to abandon these precedents."

Train had yielded on the question after House Appropriations Subcommittee Chairman Jamie Whitten, of Mississippi, threatened to withhold funds from EPA.

Train, the federal courts, and leading sponsors of NEPA contended that NEPA excludes environmental standard-setting agencies from filing impact statements. Whitten put into EPA's fiscal-'74 appropriations bill an allotment of \$5 million for preparation of the statements.

Industrial opponents of pollution controls have urged EPA impact statements as another means of delaying implementation of regulations. Whitten has been an outspoken supporter of the chemical industry in its campaign against DDT curtailment.

AEC asks nuclear licensing speed-up

Atomic Energy Commissioner William Doub told a press conference that Congress will be asked to change nuclear powerplant licensing procedures to shorten from 10 years to a maximum of 6 years the time between initiation of the proposal and completion of construction.

One controversial aspect of the new proposal would give the AEC discretion over whether to require review of plant proposals by the Advisory Committee on Reactor Safeguards.

Under present law the committee must review each plant proposal, but the AEC-proposed amendments would allow AEC to sidestep this procedure. The new plan would authorize the AEC to approve "standardized" plants in advance, thus eliminating case-by-case review. President Nixon had outlined plans for the licensing speed-up in his energy message.

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EDITORIAL

Michael McCloskey

Pathways of the Common Cause

WHY ARE THERE SO many conservation groups? "Do these groups work together?" These are two questions that are often asked, and more so recently. New members particularly cannot help being confused by the profusion of organizations and wonder whether resources are being wasted by lack of coordinated effort and by competition.

At first glance, the diversity within the environmental movement may appear disorderly, and admittedly it is almost impossible to keep track of the myriad ad hoc groups that abound throughout the country. But just as organisms evolve into specialized roles and fit within distinctive niches in an ecosystem, so also does this happen within a system of organizations in a movement. Each group develops out of a special set of circumstances—usually a perception of a need that no one else is filling. It thrives to the extent that its perception proves to be correct and enough people come to have confidence in its ability to fill that need. While most conservation groups have interests that extend well beyond their specialty, they tend to acknowledge the specialties of others and to defer to them when they agree with their own approach. While there is some competition, there is also a great deal of cooperation among the major national organizations.

Most of them compete, to an extent, for membership, and all of them have some degree of overlap in their memberships (half of all Club members belong to some other groups, local or national). But the competition is not so great as one might imagine because the groups tend to draw people with different backgrounds and interests. The demographics of membership vary widely: Some draw urban members; others, rural. Some tend to attract young people; others, older persons. Some appeal mainly to those with high-school educations; others, to those with higher education. Some attract political activists; others, those interested in recreational pursuits or nature study. Membership tends to go where people find others with like backgrounds and interests. The conservation movement is stronger because people are drawn into it from so many different points of origin. No one organization could possibly satisfy so many different interests.

Thus, there are so many organizations because there are so many specialized needs, so much to be done, and so many different backgrounds that people bring to the work. The Sierra Club is the largest organization of environmental activists (drawing its membership mainly from urban professional people committed to influencing public policy—and fairly well balanced in age groups), but it is not the largest conservation organization. Both the National Wildlife Federation and the National Audubon Society are larger. The Wildlife Federation draws its members more from rural areas and concentrates on massive public education. The Audubon Society has a more urban membership base and leads in nature education. The Sierra Club works with both of them nationally, and also with many other groups such as the Wilderness Society (we jointly sponsor many mailings and probably have the greatest overlap of membership with them), The Nature Conservancy (which specializes in buying land), and the Izaak Walton League (which is an older group with broad conservation interests).

Most often cooperation grows out of a shared concern. In March, the leaders of the six largest membership organizations joined in a press conference to urge President Nixon to stand by commitments he once made to protect the environment. Ad hoc coalitions are formed to conduct various campaigns; the Club recently took the lead in forming a coalition to defend the Clean Air Act and brought such groups as the American Lung Association and the American Public Health Association into it. Coalitions were formed to pass the Clean Water Act of 1972 and to fight the Alaska oil line, the SST, the Public Land Law Commission report, and the Timber Supply Act. The Club was active in all of these, leading in some cases, and deferring to other leadership in other cases. A coalition affords the best way to harness sufficient support and to divide up responsibility for the work that needs to be done. The Club believes in coalitions and probably participates in more than any other major group. It also joins in efforts such as the Urban Environmental Conference in search of common interests.

All of the major groups have staffs in Washington, D.C., and cooperation comes naturally as they get to know each other. Familiarity is also fostered by the Natural Resources Council of America, which is a loose-knit association of nearly all of the traditional

Continued on page 23

NEWS VIEW

California Park Bond goes to voters

THE CREATION of an adequate state park system in California has been a continuing interest of the Sierra Club for many years, and Proposition One on the June, 1974, state ballot provides the residents of California an opportunity to flesh out a well-conceived system. Some of California's finest scenery and most interesting landforms are presently represented in the system but much remains to be done, and the developers' machines are ever busy. The Sierra Club has endorsed Proposition One on the June ballot and urges that you lend your assistance to its passage.

Proposition One provides for \$250,000,000 which includes:

\$75,000,000 for new projects and major additions to existing units—new parks, beaches, recreation areas, and historical units and riding, hiking, and bicycle trails

\$15,000,000 for inholdings and additions to existing units

\$60,000,000 for development of facilities and historical units

\$10,000,000 for preservation of wildlife habitat

\$90,000,000 for grants to local government for parks, beaches, and historical units

Many of the Sierra Club's priority areas are scheduled for acquisition as either new projects or additions to existing state park units. These proposed additions include such interesting and diverse areas as Rancho Guejito in the backcountry of San Diego County, Temecula Canyon in Riverside

County, beach and mountain areas in Santa Cruz and San Mateo Counties, and further additions to Humboldt Redwoods State Park in Humboldt County.

The Sierra Club, in a letter by Executive Director Michael McCloskey, recently asked that the State Parks Commission add several top-priority projects to the list of funding with 1974 bond-act money. They were:

San Luis Island
San Bruno Mountain
Tucker Property
Zuma Canyon
Los Leones Canyon
Garner Valley.

We also recommended that San Elijo Lagoon, the Tijuana Estuary, and Upper Newport Bay be added to the list if they are not being acquired by another agency for preservation purposes. The department has indicated that San Luis Island, a most important example of the natural state of the Great Valley, will be added to the list as a priority acquisition project.

During the past several years, the California Department of Parks and Recreation has attempted to overdevelop certain state parks. Only substantial campaigns by the Sierra Club and other conservation organizations have prevented the deterioration of the very natural values for which the parks were acquired. However, in a letter of November 16, 1973, and subsequent follow-up materials, William Penn Mott, Jr., the director of the Department of Parks and Recreation, has pledged an emphasis on landscape preservation with the acquisition money from Proposition One. The department's recommended projects for acquisition with the 1974 bond funds fairly well reflect this priority.

The state park system in California will become completely unable to satisfy the needs of California and many beautiful natural places will fall to development if Proposition One doesn't pass in June. Please lend your assistance.

Sending them a message: Mailers to Members

The response to a mailer on the emergency energy bill sent out to all members of the Club in January was extraordinary: the offices of key conferees reported that they were "swamped" with mail protesting the weakening of the Clean Air Act contained in the House-passed bill. In fact, even during the height of the energy panic, some legislators were getting more mail on air pollution than on the gas shortage.

The result? Conservationists provided the ten key votes that killed the first (and worst) version of the bill with a recommittal vote on the Senate floor. They generated enough energy to improve substantially the clean air section in the second conference, and came within one vote of making further progress when South Carolina Senator Fritz Hollings, one of those who received the heaviest conservation mail, challenged Senator Muskie's position in support of sections to weaken the Clean Air Act.

At this writing, it appears that the phoenix-like Emergency Energy Act may yet die altogether . . . in large part thanks to that timely mail.

Half of the members of the Club received a mailing on the land use bill. Because of very strong opposition mail generated by the Liberty Lobby and Chamber of Commerce, most offices have received more mail against the bill than for it. Because of this negative mail, the House Rules Committee has been able to hold up the bill and prevent it from coming to the floor. Letters from Club members peaked after the majority of the opposition mail, and a distinct increase in positive mail was reported after the mailer went out. It is vital, however, to keep the messages coming in in favor of this important bill.

Teton runway extension blocked

The National Park Service has recommended against extending the existing 6,305-foot airport runway at Grand Teton National Park in Wyoming, but did recommend some runway improvement and a transportation study of both Grand Teton and Yellowstone Park areas to "identify the extent, type, nature, location, and timing of airport development needed."

Californians initiate nuclear-safety petition for November ballot

The Sierra Club recently endorsed the California Safe Nuclear Energy Initiative, a measure which still needs signatures for inclusion on the June ballot.

The initiative's sponsors, a coalition of citizen organizations, are concerned with the AEC's failure to enforce adequate safety standards for nuclear fission generating plants and safe long-term plans for the safe custodianship and disposal of radioactive wastes. The initiative does *not* call for the

\$50,000 WILDLIFE AWARD

Members of the Club should know about and are encouraged to make nominations for a new major conservation award announced by Mr. J. Paul Getty of London, England. \$50,000 will be awarded to the person or group making an outstanding contribution to wildlife conservation prior to Dec. 31, 1973. An international jury of up to 15 conservationists will make the recommendations. Mr. Carleton Smith, an adviser to Mr. Getty and secretary of the selection committee, has consulted extensively with the Club on the proposal. Nominations should be sent to the International Union for Conservation of Nature and Natural Resources at Morges, Switzerland, before May 30th, 1974.

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elimination of nuclear generating plants, but rather, it insists on sensible regulation and control criteria established in the public view and with a public voice in the decision-making process.

The act requires that utility companies provide full compensation for accidents occurring as a result of an accident at a nuclear plant. By November, 1979, the emergency safety system used in fission plants must be tested, and means of safe storage of nuclear wastes must be developed that conform to standards set by the legislature after public hearings. If such testing and technology is not assured by 1979, no new plants can be constructed, and existing plants must cut down power generation at a rate of ten percent annually (down to 60 percent or less of licensed capacity) until the requirements are met. The Governor must annually update and release evacuation plans for communities that would be affected by a nuclear accident. Research and medical reactors are exempted from the act.

Sierra Club members are encouraged to support this environmentally sound initiative, both with signatures on the petitions and at the ballot box in November.

New dam for the St. John

Rising oil prices and an upcoming Congressional election campaign have revived the proposal to bring public power to New England by drowning the upper St. John River in northernmost Maine.

The issue gives New England Congressmen a chance to promise consumers cheap, "nonpolluting" electric power.

In past years, the Senate has included funds for the Dickey-Lincoln Project, and the House has deleted them by close votes, due largely to opposition of private utilities, who this year have softened their opposition.

Power proponents are now moving in for the kill. At stake are 100,000 acres of remote land with outstanding wilderness, natural resource and recreational value, and 57 miles of the upper St. John and its tributaries, one of the best free-flowing white-water canoeing rivers in New England and one of the top 100 brook-trout streams in the country. 17,600 acres of deer yards and a wildlife reserve from which other areas of Maine have been repopulated by moose and other animals are also threatened.

New England Sierra Club spokesmen report extravagant claims have been made for the project. Sierra Club Treasurer Paul Swatek charges that the *Boston Globe* has overstated, without correction, the petroleum savings by a factor of 1,000 and understated the cost of power from the dams by a factor of six. He reports that the dams would produce only one percent of New England's electric demand by the time they would come on line, and this percentage would diminish over time. Swatek said the cost-benefit anal-

ysis for the project assumes a ridiculously low 3.25-percent borrowing rate and ignores the loss of the wild river and wildlife habitat while counting recreational benefits for motorboats that would use the new lakes. At low water, there would be 30,000 acres blemished by "bathtub ring," he said.

Hickel's bid: Alaska land

Alaskan land will be the main theme of former Alaska Governor and one-time Interior Secretary Walter Hickel's bid to regain the Alaskan governorship, Hickel announced.

UN REPORT

Letter from Nairobi

NAIROBI, the starting point for safaris to the national parks of Kenya, became the center of departure on a new environmental journey last month when the 58-member-nation United Nations Environment Council held its second session, its first at the headquarters of the U.N. Environment Programme in the dramatic Kenyatta Conference Center.

The 26-story tower and cone-shaped conference hall look out onto a vast plaza of stone, tropical plants, fountains and an imposing statue of the nation's first and incumbent president, Jomo Kenyatta. President Kenyatta underlined the significance of this first session in Kenya in his welcoming speech to more than 300 delegates, international officials, and representatives of citizen organizations from all parts of the world. Arriving amid groups of colorfully costumed marchers, who broke into enthusiastic dancing to drums and cymbals as he passed, the president hailed the opening of the session as the beginning of a "new spirit of Nairobi." These words set the tone of the two-week session that opened on March 11.

UNEP Program

At the first session of the Governing Council in June, 1973, UNEP's Executive Director Maurice Strong received a mandate to develop a program based on seven major priority areas, and by early 1974, projects totaling \$5.5 million had been approved. In the space of nine months, Mr. Strong had to recruit a high-level professional staff of about 100, move the offices and personnel from Geneva to Nairobi, and prepare a detailed program describing projects already under way as well as planned.

Given such tremendous responsibility and

If elected, he said, he would consider a lawsuit against the federal government unless it allowed the state to select the full 103.5 million acres due it under the Statehood Act of 1958. So far the state has identified 68 million acres, of which about 25 million have now been conveyed.

Another 35 million acres identified by the state have also been included as part of the package of 83 million acres proposed by the Interior Department as new national forests, parks, rivers, and refuges.

Conservationists urge that the land be preserved in federal hands; Alaskan development interests want state control.

Patricia Rambach

limited time and resources, it is not surprising that there was criticism by UNEP delegates. Some international agencies attending the session voiced complaints that may have been prompted by the fact that they regard UNEP as a potential competitor for scarce government funds. But overall support—and even encouragement—for the program far outweighed the criticism.

When Mr. Strong addressed the delegates at the opening of the session, he asked them for guidance on what they felt should take first priority in the program, and for approval of his proposed budget allocations. In the nine days of meetings that followed, he received clear and reasoned responses to both of his requests.

To the majority of nations, the first program—human settlements, health, and well-being—was the most important. It was clear that the developing countries would continue to press for establishment of a voluntary fund for human settlements. Ever since the U.N. Conference on the Human Environment at Stockholm in 1972, the developing countries have voted in favor of such a fund, while the developed countries, which would have to supply most of the funds, have consistently opposed it. At the Nairobi meeting, however, intensive negotiating sessions produced a reasonable compromise. The governments agreed to establish a Human Habitat and Human Settlements Foundation that would allow for funding from private as well as government sources. The fund is to be used to provide technical assistance and training aimed at mobilizing resources for human settlement needs, including transportation, water systems, sewage disposal, schools, hospitals, and housing.

Delegates endorsed plans for the Human

Settlements Conference to take place in Vancouver, British Columbia, in June, 1976. Henrique Peñalosa of Colombia has been named secretary-general of the conference, which will be called Habitat 76. Visual presentations, especially films, will illustrate all forms of technology and design used to satisfy a variety of rural and urban settlement needs. It is not to be an industrial trade exposition—that was made patently clear. Citizen organizations will be able to participate, and Jan Van Putten of the International Union of Local Authorities is setting up a Non-Governmental Organizations Center at Vancouver to coordinate public input into the conference. The Sierra Club's International Committee has appointed a special working group, headed by Terry Simmons, a member of the committee from the Western Canada Chapter, to develop Club policy and participation at the conference.

Conservation Issues

The areas of special interest to the Sierra Club at the Governing Council session were tropical forests, the oceans, and conservation of natural resources. Canada, Kenya, and Australia, especially, urged a more active role for UNEP at the forthcoming Law of the Sea Conference, which takes place in Caracas from June 20 through August 28. This position had also been suggested to the Governing Council by the non-governmental group in recommendations put forward at the four-day meeting of NGO's that preceded the session. As the NGO representative on ocean issues, I was permitted to address the delegates. I urged the Governing Council to support the establishment, within the international regime to be constituted at the Law of the Sea Conference, of an international body with responsibility for evaluating and managing the marine environment as an ecological whole. My appearance marked the first time at UNEP meetings that a non-governmental observer was allowed to speak, thus establishing a precedent for this new U.N. body that will allow citizens' voices to be heard. Many government delegates expressed the view that since other U.N. organizations were dealing with exploitation, UNEP should concentrate particularly on protection of the marine environment. A paper on the environmental issues to be taken up at the conference, prepared by the Sierra Club in cooperation with other groups, was distributed to all delegates.

Questions on the continuing effort to save whales were raised by Sweden, Senegal, and the United States. But Japan, while encouraging UNEP to develop better management techniques for marine mammals, indicated that it felt whales were adequately managed under existing arrangements.

While the critical world food problems resulting from the spread of desert areas received the most attention during debate on conservation of natural resources, the dele-

gates quietly approved the UNEP's program aimed at better management of tropical forests. The Sierra Club's international program has been focusing attention on the need to develop sound environmental guidelines for using and protecting these forests. The Club's Task Force on Tropical Forest Conservation, headed by Lawrence S. Hamilton of the Finger Lakes Group, expects to be working on guidelines with Venezuelan scientists and environmental leaders in a study of forestry practices in Venezuela. Out of this study, the Club hopes to contribute to the work being undertaken by FAO, UNESCO, and IUCN for the UNEP program.

Delegates recognized that more effort is needed to protect endangered species and as one step toward this protection, governments were urged to ratify the Convention on International Trade in Endangered Species. So far only the U.S. has ratified the convention. Financial compensation and research on developing artificial products to replace animal products were suggested as means of reducing the incentive for trade. Spotted cats, crocodiles, and marine turtles were cited as being most threatened.

The protection of certain species presents special problems because they may "belong" in part to individual states, in part to broader geographical regions, and also in part to the world community. The problem varies according to the extent of distribution among several countries (the cheetah) or within a common-property environment such as the oceans (the whales), or according to migratory habits (certain bird, animal, and fish species). This problem of endangered "common-property resources" was discussed by the NGO's in one of the working groups that met before the Governing Council session. In their recommendations the NGOs urged that UNEP help develop a Convention and a Fund for the Protection of Species Comprising the Common Heritage of Mankind. Among the purposes of such a fund would be compensation for losses or burdens sustained by legitimate economic enterprises by reason of conflict with requirements for the protection of species.

Earthwatch—the global earth-monitoring system that will trace pollution trends and pathways—and the Information Referral System, strongly supported by the U.S. and other developed countries, received Council endorsement. Allocations of \$18 million for program activities were approved for 1974, and \$20 million for 1975. The U.S. originally pledged to meet 40 percent of the total five-year, \$100-million Environment Fund. At its last session, Congress authorized an allocation of \$7.5 million—a cut of \$2.5 million from the proposed allocation for the first phase of the program.

U.S. Policy

The U.S. delegation urged that priority attention be given to the following areas: ma-

rine environment, conservation of genetic resources, training and technical assistance (especially procedures for assessing environmental impacts of development projects), implementation of Earthwatch, research, environmental aspects of human settlements, ecosystem-management problems, arid lands, tropical forestry, and study of the cost of industrial pollution-abatement controls. Most of these concerns met with approval from the majority of Council members. The U.S. and most other countries have also come to realize that some UNEP projects should focus on particular regions or areas that are ecologically similar, rather than on purely global issues.

"Spirit of Nairobi"

In his opening speech, Maurice Strong had said that "the so-called energy crisis had dramatized to the governments and citizens of the world the central truth pointed out by the Stockholm Conference, that we must do a better job of managing and caring for the precious and limited resources of our 'only one earth.' Either we accommodate to this reality or narrow national interests will bring escalating division and conflict." Most delegates left Nairobi with a sense of movement toward international cooperation in sharing and protecting our global resources and improving our quality of life.

CHASE (Continued)

voice in the selection of leasing sites.

Furthermore, the Marine Protection, Research, and Sanctuary Act of 1972 empowered the Department of Commerce to establish marine sanctuaries and set up regulations governing their management, but so far, the department has done very little in this regard. Thus Interior is asking conservationists to do what Congress had already asked Commerce to do two years ago. If the marine environment is to be spared further degradation from offshore oil development (assuming that such development is even necessary in the first place), then it is essential that the Administration bring to questions of protection the same energetic commitment it has already devoted to offshore development.

The whole complex of environmental problems—both onshore and offshore—that are associated with the OCS leasing program has been raised in a recent lawsuit filed by the Sierra Club's Florida Chapter. The suit contends that the environmental

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impact statement on the Department of the Interior's lease sale of some 800,000 acres of OCS lands off Florida's Gulf Coast is clearly inadequate. The area abounds with a rich variety of marine life, and the coast contains some of the finest beaches, marshes, and estuaries in the nation. The Club contends that the inadequately planned OCS development in this area would not only threaten these habitats, but could substantially harm the recreation, tourist, and commercial fishing industries of the adjacent states.

As it now stands, the Administration is bent on pursuing the accelerated leasing program, even though it lacks sufficient data on marine ecology, technological requirements, and social implications, not merely for offshore development in general, but specifically for development on the vast scale proposed by the President. Congress is not far behind. Senator Henry Jackson, having introduced legislation to make available to leasing "prior to 1985 all OCS lands determined to be both geologically favorable . . . without undue environmental hazard."

Perhaps it is cynical to assume that the Administration has already decided to proceed with its accelerated leasing program come what may, and that its present over-

tures to environmentalists are after-the-fact attempts to lend an air of public participation to decisions made in private, but given the haste with which the Department of the Interior is implementing the program, it would be ingenuous to assume otherwise.

Steve Whitney

PATHWAYS (Continued)

conservation organizations and related professional societies. It does not take stands on issues, but its quarterly meetings bring top staff members together to informally explore opportunities for joint action. The Club is active in the council and has had a member on its executive committee for many years.

While there is no comparable council for the newer environmental groups, the Club finds occasion to work with almost all of them: Environmental Action, Friends of the Earth, Zero Population Growth, and the Environmental Policy Center (membership for these groups is a fourth to a half the size of the older groups and younger in age profile; the Center, it should be noted, does not have members). With Environmental Action, it co-founded the Highway Action Coalition; it alternated leadership with Friends of the Earth on the SST fight; it re-

tains the Environmental Policy Center to provide help on issues such as strip mining, land use, and the Everglades; and it has admired ZPG enough to hire some of its former staff members. The Club collaborates, too, with most of the public interest law firms and organizations devoted to environmental law, including the Natural Resources Defense Council, the Center for Law and Social Policy, the Environmental Defense Fund, the Center for Law in the Public Interest, and Public Advocates. Almost every lawsuit is a collaborative effort, with plaintiffs and support drawn from these groups, the newer environmental groups, and the older conservation organizations.

In this panoply of pragmatic cooperation, the Sierra Club is in a unique position to seek allies over the widest range possible. As one of the oldest groups, it knows its way around the traditional conservation movement. As the most dynamic of the large organizations, it knows what is going on among the newer environmental groups too. With the vitality of its well-developed membership structure, it is in a position to tap opportunities all over the country. With the challenges facing the movement today, cooperation has never been needed more. And no one is in a better position than we are to help it happen.

Announcing the 1974-1975 Oceanic Society Expedition Series

Here is a rare opportunity to experience the excitement and pleasure of exploring the oceans. The Society offers a working adventure where participants share the watches, chores, and the thrill of taking a vessel to sea. The experience is broadened by scientists, naturalists, and marine experts who act as group leaders. There is also individual instruction in seamanship and navigation. Oceanic Society expeditions are open to Oceanic Society members only. Membership: \$9.00 per annum. For membership information and reservation information, contact Mary Crowley, Director, or Raewyn Shenkin, Assistant, Oceanic Society, Building 240, Fort Mason, San Francisco, California 94123; (415) 441-5970.



MARABELL

The motor vessel *Marabell's* seven-leg voyage from British Columbia to Costa Rica will explore the Canadian Islands, fishing villages, San Francisco, the Channel Islands, and Mexican ports. There will be ample time for fishing, diving, nature study, and side trips. The leg from Ensenada to La Paz is co-sponsored by the Esalen Institute. Further legs from Central America to the Galapagos Islands are now being planned.

- Leg 1 (\$560) September 15-28: Vancouver, B.C. to San Francisco, Calif.
- Leg 2 (\$560) September 29-October 12: San Francisco to Ensenada, Mexico
- Leg 3 (\$650) October 15-28: Ensenada to La Paz, Mexico
- Leg 4 (\$560) October 30-November 12: La Paz to Mazatlan, Mexico
- Leg 5 (\$560) November 14-27: Mazatlan to Acapulco, Mexico

Leg 6 (\$560) November 28-December 11: Acapulco to Punta Arenas, Costa Rica

Leg 7 (\$560) December 12-25: Punta Arenas

TARA

The 60-foot timber ketch *Tara* will cruise the seldom-visited Melanesian Islands for seven months. On each leg of this voyage, participants will have a chance to learn sailing and navigation, explore coral reefs, study island wildlife, and meet the native peoples.

- Leg 1 (\$770) June 14-27: Sydney, Australia to Lord Howe Island
- Leg 2 (\$825) June 29-July 13: Lord Howe Island to Noumea, New Caledonia
- Leg 3 (\$1725) July 17-August 9: Noumea to Vila, New Hebrides
- Leg 4 (\$2100) August 13-September 11: Vila to Honiara
- Leg 5 (\$1040) October 12-27: Kiefa, Solomons to Losuia, Trobriands

Leg 6 (\$1105) November 1-17: Losuia to Townsville, Australia

Leg 7 (\$1170) November 20-December 7: Townsville to Heron Island, Australia

Leg 8 (\$660) December 10-21: Heron Island to Sydney, Australia

MOONWIND

The 36-foot, gaff-rigged sloop *Moonwind* will cruise coastal areas near British Honduras, exploring the reefs, atolls, and islands that comprise the second largest barrier reef in the world.

Voyage 1 (\$350) June 1-10, July 1-10, August 1-10, September 1-10, December 1-10.

Voyage 2 (\$350) June 15-25, July 15-25, August 15-25, September 15-25, December 15-25.

NEW WORLD

The 68-foot schooner *New World* is available for charter by groups for special projects.

Air fares are not included in the prices shown.

Cutting up in the Boundary Waters

H. E. WRIGHT, JR. & JONATHAN ELA

THERE ARE two worlds of wilderness. There is the world of loons and wolves, of rocks and trees, of endless water and the canoes of man. Such is the poetry of wilderness. But there is a prose world as well, the world of courtrooms and legislative chambers, of public hearings and angry debates, of laws and lawyers. To appreciate either world requires an understanding of the other, for wilderness itself will cease to exist unless the passion of the primitive adventurer becomes one with the competence of the civilized advocate.

At first, the only sound one hears is the swish of the canoe paddle. Then, suddenly, an unearthly hysterical screech pierces the morning mist. A couple of hundred miles south, in Minneapolis, such a cry would be unnerving, but here in the Boundary Waters Canoe Area, the sound is reassuring. For it is the call of the loon, the most primitive of all North American birds, and an enduring symbol for the vastness and remoteness of the northern wilderness. It is truly reassuring to hear that cry, to know that here, in this million-acre wilderness, loons abound, and that it is a toss-up whether your closest neighbor is a family of wolves or another human.

The loon commands a primeval for-

est empire that seems to stretch forever, a confederation of hundreds of miles of lakes and streams that lead the traveler past nations of birch, pine, spruce, and fir. The ancestors of this emperor loon used the same imperious tone in the same empire when our own human ancestors ventured into the land, when Indians inscribed the pictographs that are still visible in the Quetico-Superior country, when the French explorers and fur-traders wore down the portage trails that still are used.

Man, of course, asserts his own supremacy. Around 1850, men with names like Paul Bunyan began to invade the upper Midwest and reduce the loon's empire dramatically. By the 1920's, only a remnant of the seemingly inexhaustible red and white pine was left. Virtually all that remains of significance is the Boundary Waters Canoe Area, and since the turn of the century a kind of morality play has unfolded concerning its future.

Conservationists have made slow but steady progress in passing laws and regulations to preserve the Boundary Waters Canoe Area (BWCA) for its obvious natural, scientific, and recreational values. Commodity forces have also made gains by confounding the intent of those laws and regulations, by infiltrating the U.S. Forest Service (the agency charged with stewardship of the BWCA), and, ultimately, by the relentless use of their chainsaws and bulldozers.

Milestones in the conservationists' paper progress can be identified, and include creation of the Superior National Forest (1902 through 1909),

designation of a primitive area with a qualified prohibition on road construction (1926), protection from cutting on 400-foot-wide strips along lakes, streams, and portages (1930), establishment of a "no-cut" zone (1941), authorization to purchase in-holdings (1948), prohibition of low-flying or landing aircraft (1949), and inclusion of the BWCA in the National Wilderness Preservation System (1964). But the Wilderness Act of 1964 contains bedeviling language applicable only to the BWCA, language that instructs the Secretary of Agriculture to manage the area in a fashion to maintain "without unnecessary restrictions on other uses, including that of timber, the primitive character of the area, particularly in the vicinity of the lakes, streams, and portages." The meaning, if any, of the curious double negative "without unnecessary restrictions," lies in the eye of the beholder and has formed the basis of squabbles and litigation during the last decade.

Most ominously, in 1973, the Forest Service drafted a new management plan for the BWCA that rejects the congressional mandate of wilderness by calling for continued logging—indeed, for opening up the wilderness to a whole new class of timber extraction—and permitting other activities to invade the wilderness.

TREES ARE THE PILLARS of wilderness, and the BWCA contains temples of all styles and ages. A visitor to the area has half a million acres of virgin timber from which to select his own personal shrine, whether he pre-

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fers the majestic simplicity of the red pine, the elaborate elegance of birch, or the dark, primitive mood of the black spruce. Each dominant species implies a distinct natural community, and the variety within the BWCA is one of its most impressive features.

Within the heart of the area there are no stumps. The only evidences of man are a few rotting weirs and traces of passing canoeists. Nowhere else east of the Rockies can one find an old-growth forest that even begins to compare with the BWCA.

But one man's tree is another man's board, and the very quality of the forest may be the curse of the wilderness. With the connivance of the Forest Service, the forest-products industry is closing in for the cut. The record of invasion of this great wilderness in the past has been catastrophic, and the 1973 management plan calls for full speed ahead.

The year 1940 can be chosen as a watershed divide for contrasting the bad old days of the timber barons with the theoretical protection of the Boundary Waters wilderness. At about that time, the Boundary Waters area was divided in roughly equal parts, consisting of an Interior "no-cut" Zone and an outer Portal Zone. In 1940, about 365,000 acres of the Interior Zone was virgin timber, and about 165,000 had already been cut. In the Portal Zone, the proportion of virgin timber was actually higher, with about 100,000 acres of the 500,000-acre total having been cut. These ratios show the arbitrariness of the distinction between the Interior and Portal Zones.

Since 1940, the Interior Zone has been largely left alone, but the Portal Zone has been decimated. Nearly 140,000 acres of this last stand of virgin timber has been logged since 1940 in areas where timber operations have been completed. Another 65,000 acres are currently committed by timber sales: of this latter acreage, some has already been logged, and contracts have been let out on the rest. In other words, roughly half of the virgin timber of the Portal Zone of the BWCA, or about 20 percent of the total million acres of supposedly protected land, has been destroyed under the auspices of the U.S. Forest Service in less than 35 years.

The contempt of the Forest Service for public values can be seen in another statistic. In 1965, the Secretary

of Agriculture instructed that something over 100,000 acres be transferred from the Portal Zone to the Interior Zone by 1975, thus affording that land more protection. Such generosity seems rather hollow when one discovers that only about 25,000 of those acres will be virgin timber, and the remaining great majority will be cutover land. Indeed, nearly 15,000 acres of land to be transferred by next year are currently tied up in active timber sales.



Like the mythical phoenix, a jack pine forest in the Boundary Waters Canoe Area has risen from the ashes of a fire that swept the land only three years earlier. Most of the virgin forest of the region originated in precisely this way.



The Forest Service revised its management plan in 1973, and faced at that time the frustration of still having about 150,000 acres of uncommitted virgin timber in the Portal Zone, and over 350,000 acres of uncut land in the Interior Zone. In spite of its solid efforts, the Service still had the sole significant block of old-growth timber

east of the Rocky Mountains, and it had not yet managed to destroy the wilderness. With predictable zeal, the Forest Service's 1973 plan set about to correct that deficiency.

With the exception of narrow strips along waterways and portages, the Portal Zone is to be classified as "unregulated commercial forest land," even though the entire BWCA is protected under the terms of the Wilderness Act and the distinction between Portal and Interior Zones is a mere administrative contrivance. Over 150,000 acres of virgin timber are to be liquidated: it would be an interesting exercise to compare that figure with the total old-growth timber throughout the entire eastern two-thirds of the United States.

The Forest Service has also proposed to cut in the Interior Zone for the first time since the "no-cut" area was established in 1941. This proposal comes under the guise of "administrative cutting," and is justified by the old theory that clearcutting saves the forest. The plan states that the Interior Zone will be managed to "establish and maintain a variety of plant composition and diversity of vegetation communities by vegetation cutting, wildlife control, site preparation, seeding, and planting." The policy will make it possible to cut down much of the forest to improve deer habitat or to plant commercially valuable tree species, such as red pine.

All of this cant ignores the fundamental fact that the Boundary Waters Canoe Area is wilderness, pure and simple. Whatever Congress may have meant by the qualifying language in the 1964 act, it certainly did not contemplate that half the wilderness would be subject to clearcutting in perpetuity, and the other half to management plans that ultimately will be as destructive to wilderness as those the Forest Service customarily employs in many of the western national forests.

The blatant illegality of the agency's interpretation of the Wilderness Act was stressed in a successful lawsuit brought by the Minnesota Public Interest Research Group to temporarily halt most timber cutting in the BWCA. In a landmark decision handed down last year (before the Forest Service issued its revised plan), Judge Miles Lord declared: "Where there is a conflict between maintaining the primitive character of the BWCA and allowing logging or other uses, the former

must be supreme. Thus, if the conclusion of the Forest Service's upcoming impact statement is that logging irretrievably destroys the primitive character of the area involved it must act to halt such logging pursuant to the specific terms of the Wilderness Act."

AS THE CANOEIST glides along the Boundary Waters' fabled and enchanting names—Kawishiwi, Saganaga, Ge-Be-On-E-Quet, Kekekabic—he will read the landscape. Perhaps there is a moose wallow here, an old beaver dam there, and if he is lucky, the signs of wolf someplace else. A bald eagle may soar above him. Along the clear waters he will attempt to predict where he can find trout, bass, walleye, or even sturgeon.

More subtle perhaps is the reading of trees. The great variety in types and ages of vegetational communities in the Boundary Waters is due to varying combinations of topography, soils, moisture conditions, microclimate and other ecological factors. But the great variable that traditionally has shaped the area has been fire. The casual visitor to the BWCA may not realize the importance of fire, for he seldom has the opportunity to view its effects. In recent decades, suppression of fire in the wilderness has become a fetish with all land-management agencies. The consequences in the BWCA have been dramatic.

In the natural history of this area, lightning fires were a common occurrence. When fuels were sufficiently dry and winds favorable, a fire would sweep large sections of forest until it burned out against a natural fire break or until the weather changed. In the areas of the great red and white pines the fires would generally only remove the understory, without killing the mature trees themselves, thus enriching the soil and preparing the way for young trees. Other species, such as jack pine, are genetically prepared for the cataclysm of fire, and are well adapted for regeneration. It is estimated that in the past an average of about one percent of the Boundary Waters area burned each year, although with wide variability, thus leading to a complete replacement cycle of about 100 years. In this way, a constantly dynamic diversity was maintained throughout the area.

Suppression of fire changed all that. In the absence of the normal fire cycle, shade-tolerant species, which nor-



"It is difficult to feel anger in the wilderness. But the canoeist in the Boundary Waters Canoe Area must also become competent in the world of argument and politics. The struggle to save the empire of the loon will be won, but only if lovers of the North Woods settle in for a long, hard fight."

mally were only transient within an area, became entrenched and forced out the normal species. Thus, pine, aspen, and birch are being choked out by balsam fir, spruce, and northern white cedar. Diversity is being lost, with consequences not only for the tree species themselves, but also for the intricate communities of plants and animals that depend on varying mixes of trees.

This situation is serious, and the Forest Service basically has three options. First, it can simply let present trends continue, a policy that will result in severe forest degradation along the lines described above.

Second, it can substitute artificial management techniques for fire's natural role, which is what the Forest Service intends to do throughout the Interior Zone with the administrative

cutting proposed in the 1973 management plan. The forest would be manipulated so as to clear out "undesirable" species and replicate, to the extent possible, natural conditions. The trouble with this approach, of course, is that it will fail. Logging and fire are two different phenomena, and resemble each other only to the extent that live trees are killed. Logging would tend to deplete nutrients rather than build them up, would have different and generally deleterious effects on native wildlife, would cause erosion and degradation of water quality, would ruin the area for significant ecological research, and would generally compound rather than cure the synthetic man-made situation caused by fire suppression. It would also violate the very concept of wilderness by introducing new massive artificial manipulations and intrusions of disruptive activities. The Forest Service's proposal makes little sense in natural terms, and one suspects that the only advantage it has is to best prepare the way for the tree farms of the future after all public wilderness values have been thoroughly sabotaged.

The third alternative is to reintroduce fire, the natural means of maintaining forest ecosystems. The BWCA, with its vast network of interconnecting lakes, streams, and wetlands, is ideally suited for a program of prescribed burning. When weather is favorable, a fire can be set to burn up against a natural fire break, and the burn can then serve as a fire break for further fires upwind. Although such a program must be experimental in the early years, to guard against threats to public safety and outside property, preliminary work done in western wilderness areas indicates that no insurmountable problems are likely to arise. Through the prompt adoption of a wise fire policy, the ecologically damaging management mistakes of the past can be rectified in the relatively near future. Unfortunately, the 1973 management plan barely mentions the possibility of fire as a management tool.

ROCKS, AS WELL AS living things, constitute wilderness. Veins of quartz intrigue the Boundary Waters visitor, as do the evidences of glaciation that abound along the many exposed rock faces in the area. These features are all natural pictographs that spell out the region's prehistory

in the same sense that Indian reminders tell us of the nature of early human habitation. One can profitably traverse the area looking at nothing but rocks, piecing together the turmoil that once occurred far below the earth's surface, the pressures that determined what formations became visible, the burial under glaciers, and the more recent erosion. There is a romance in rocks that spans eons, and in the Boundary Waters Canoe Area one can appreciate that romance in an undistracted fashion.

But the BWCA's rocks, as well as its trees, may lead to its downfall. Small amounts of copper-nickel ore are found within the area, and, tragically, many of the subsurface mineral rights are still privately held. In 1969 a mining company announced that it intended to develop the mineral resource and demanded that it be permitted access for major mineral exploration equipment. The Izaak Walton League of America sued to prevent this violation of the wilderness.

In a ringing defense of the wilderness concept, the late Judge Philip Neville granted a permanent injunction in early 1973. He stated: "As of today but few true wilderness areas remain. Once penetrated by civilization and man-made activities, it cannot be regained for perhaps hundreds of years. The recovery period is meaningless for generations to come. The destruction is irreversible. So with mining, logging off and other activities, they are anathema to all wilderness values." The case is currently being appealed, and the status of mining, perhaps the ultimate threat to the BWCA, is uncertain.

WINTER COMES EARLY to the Boundary Waters. Ice locks in the lakes, and up to several feet of snow cover the ground. The wilderness is quieter than ever, and snowshoers tramp their way into the back country. The loons are gone, of course, and in the winter the silence is broken by far less congenial screams.

According to the Forest Service, a snowmobile is nothing more than a winterized motorboat. The Wilderness Act of 1964 contains a specific provision permitting the continuation of motorboat traffic along established routes, mainly the large lakes along the Canadian border. The Forest Service contends that this provision applies to snowmobiles as well, and

accordingly all areas that are open to motorboats in the summer are available to snowmobiles in the winter. There is no way, of course, to enforce route limitations in the winter, so the entire wilderness is subject to invasion.

Not only does this use of snowmobiles fly in the face of any reasonable interpretation of the Wilderness Act, it also specifically violates President Nixon's 1971 executive order banning off-road vehicles in wilderness areas. Since the BWCA was the only wilderness area in the country that had off-road vehicle use, one might assume that the executive order was meant to apply there, but the Forest Service is just as capable of flouting an order from the President as a law passed by the Congress.

The 1973 plan essentially concedes that the agency's current snowmobile policy is illegal, but it proposed to continue snowmobile use until 1980. No explanation is given for why an illegal and destructive policy is being extended for seven years. Perhaps the Forest Service hopes that enough pressure for snowmobile use will develop during that time to convince Congress to liberalize the Act.

THROUGHOUT the eastern United States, the Forest Service is supporting, with qualifications, the concept of wilderness for small and unusual enclaves within the national forests. Such support is laudable, but it must be borne in mind that the BWCA is nearly six times larger than the combined total of all the proposed wilderness areas farther east. Indeed, logging and ongoing timber sales in the BWCA will demolish over a third as much virgin timber acreage in one swoop as the total lands, virgin and second growth, proposed for wilderness in the Administration's eastern wilderness bill.

Where is the logic in the Forest Service promoting small wilderness areas even while it proceeds to destroy one of the largest statutory wilderness areas in the United States? The agency's commitment to logging, its reluctance to fight hard against mining, its toleration of snowmobiles, its refusal to consider seriously the use of fire to maintain the integrity of the ecosystem, and, above all, its explicit determination to thwart the wilderness intent of Congress—all point to a

Continued on page 30

Talchako Lodge

GARY TEPFER

THE SIERRA CLUB Foundation's Talchako Lodge in British Columbia's Coast Range offers unparalleled nature, wildlife, and sporting opportunities for Club members. The lodge sits in a sea-level valley surrounded by high granite mountains 50 miles inland from the ocean, on the confluence of the Atnarko and Talchako rivers. The rivers (which combine just below the lodge to form the Bella Coola River) are well known both for the quality and plenitude of their fish—trout and salmon—and for the fast rushing waters, which make them a stimulating challenge to kayakers, canoeists, and rafters. The lodge itself is only 100 yards from the banks of the Atnarko.

Halfway up the British Columbia coast, the Bella Coola Valley is encircled by craggy granite tors and high glaciers, alpine valleys and unspoiled meadows. The countryside is largely unexplored and still relatively undamaged by man's intrusion. Grizzlies and black bears yet wander in the forestlands; moose and caribou drink from crystalline fjords; mountain goats and sheep graze on rocky shelves. The woods and grasslands are alive with small mammals and birds, and wildflowers bloom in radiant profusion.



Last July, a group of Sierra Club members on a dayhike identified almost 100 different kinds of wildflowers in an afternoon's time.

The Coast Range, which surrounds this vibrant valley, is known for its rock, ice, and mountain-climbing potentials. In any direction from the lodge, the experienced mountaineer and the tenderfoot hiker can find slopes that suit his ability and interest.

The large population of Native Americans that originally inhabited the Bella Coola Valley left behind extensive petroglyphs and stone carvings. When Sir Alexander McKenzie became the first white man to cross the North American continent by land in 1793, he passed through the valley and carved his name on a rock which can be visited by boat from Bella Coola. Norwegian emigrants from Minnesota settled in the valley in the 1890's, and the descendants of these farmers, fishermen, and loggers still make up about one-third of the area's population.

The Talchako Lodge's season begins in June and continues through the summer months. The rustic outpost's accommodations include dormitory space, a community "do-it-yourself" kitchen, and hot and cold running water. Nearby there are four cabins equipped with running water, a wood stove for cooking, and outdoor toilets. Each cabin accommodates four to six people.

A husband-wife team, Roy and Barbara Schubert, oversees the lodge's operation and answers guests' questions about trails, rivers, mountains, and backcountry around the valley. Also, guides who know the area are usually available to conduct tours into the backcountry. The lodge owns an inflatable raft which guests can take down the rushing Atnarko and Bella Coola rivers.



The Bella Coola Valley and Talchako Lodge are accessible by air and coastal ferry from Vancouver, and by land on Canada Highway 20 from Williams Lake. Highway 20 is gravel for approximately 230 miles, and although standard model cars and trucks can negotiate the road, vehicles that have either high clearance or stiff springs are preferable.

For more information on Talchako Lodge write to Roy and Barbara Schubert, Caretakers, Talchako Lodge, Bella Coola, B.C., Canada. Reservations, which should be made as soon as possible to insure lodging, can be made by sending a \$25.00 deposit to the Schuberts.

The Sierra Club, the Foundation, and local chapters have been providing wilderness shelters, lodgings, and facilities for members since the building of the LeConte Memorial Lodge in the Yosemite Valley in 1902. It is now used as a library and information center. The Club has lodges and land holdings throughout the Sierra, and the 1969 acquisition of the Talchako Lodge in British Columbia marks the first extension into foreign territory.

THROWAWAY (Continued)

September 1, 1972, one month before the effective date of the law. The Oregon Court of Appeals upheld the lower court's decision.

Although the Bottle Bill is usually thought of as the Oregon Bill, our state was not the first government to ban non-returnables. Twenty years ago, Vermont passed a bottle bill that never took effect because the bill's opponents took it to court. Vermont now has a new bottle law that is likewise involved in court challenges. In 1970, the one-house parliament of British Columbia unanimously passed a litter law requiring deposits on all beverage containers sold in that province.

Just before the passage of the Oregon Bottle Bill, an initiative measure in the state of Washington banning non-returnables came within two percentage points of passing. The victim of a tremendously expensive counter-campaign, as well as poor drafting, the Washington initiative showed the Oregon supporters and drafters the kind of work and care that would be required for passage. Hard work in campaigning and great care in draft-

ing the Oregon bill resulted in a 54-6 vote for passage in the Oregon House and a Senate vote of 22-8.

At last count, at least 39 states were considering bottle bills, but Vermont is the only other state besides Oregon where such legislation has been enacted.

The Oregon Bottle Bill is significant not only as an anti-litter measure, but it also has important implications in the current energy crunch. Every year we throw away vast amounts of both natural resources and energy along with the 59.9 billion disposable containers we discard—the equivalent of 1.7 billion gallons of gasoline, or enough electricity to supply the electrical needs of 9.1 million relatively affluent Americans.

The Oregon Bottle Bill is creative legislation. It prevents needless waste of resources and energy, significantly reduces litter, and does not cost the taxpayer anything but his deposit. If he does not want to retrieve his investment, the popsicle corps is ready and waiting to reap the rewards of cleaning up Oregon.

Nancie Fadeley is chairman of the Oregon House of Representatives Environment and Land Use Committee.

empire of the loon will be won, but only if all lovers of the North Woods join together, combine their passions and their brains, and settle in for a long, hard fight.

CHAPARRAL (Continued)

stock in chaparral country is going to be a marginal operation at best, certainly not profitable or desirable enough to justify the costs of the type-conversion program, much less the inestimable loss and possible unfortunate consequences of destroying a natural habitat well suited to the peculiar conditions of the region.

The Forest Service's third major goal is to facilitate public access to, and use of, the lands now covered by chaparral. Increased access means, in effect, opening up areas to off-road vehicles, a questionable goal in these steep, tinder-dry hills and mountains. Motorized recreation in the chaparral country is likely to produce increased erosion and stream siltation, and increase the likelihood of fires and floods. For the most part, chaparral lands are not suited to recreational uses no matter what is growing on them. They serve man best as watershed and wildlife habitat. But in pursuing its multiple-use philosophy, the Forest Service seems to have overlooked such useful natural functions. Southern California needs recreational lands badly, especially near the large metropolitan areas, but it will not be well served by replacing the chaparral with other vegetation. The environmental costs of this program will be too high, and more lands will be lost to development than are gained for recreation.

One of the chief costs, both economically and ecologically, will be that of controlling the regrowth of natural brush. Among other things, it is likely that the use of chemical fertilizers and other additives will be necessary to aid the growth of exotic grasses unadapted to this land. Some contouring of steep slopes may be necessary as well if these species are

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CUTTING UP (Continued)

negligence that cannot be excused in an agency that is theoretically committed to protecting public values. Similar negligence in the past has caused the Forest Service to lose the faith of the public in such areas as the Bitterroot and Monongahela National Forests. It is very likely that both of those scandals will seem pallid compared to the public rebellion that is brewing over the BWCA. If the Forest Service cannot manage the area responsibly, it should be taken away from it and turned over to another agency.

It is difficult to feel anger in the middle of a wilderness. The cry of the loon, the rush of the waters, the magnificence of the scenery, the fortunate sighting of the furtive timber wolf (which is found in the United States in significant numbers no place else outside of Alaska)—are all experiences that breed more healthy passions. But the canoeist in the BWCA must also become competent in the other wilderness world, the world of argument, politics, and the campaign against greed. The struggle to save the

to grow in certain areas. But the most alarming measure will be the widespread use of chemical herbicides, in particular 2,4,5-T, in order to keep the chaparral from reinventing its former home. Because of unresolved questions about the potential effects of this chemical on human health, the Environmental Protection Agency has canceled any registrations for its use near homes, food crops, aquatic areas, or recreational lands until further scientific evidence is available and further public hearings are held. There is also reason to suspect that 2,4,5-T is dangerous to both land and aquatic animals, according to the State of California Division of Water Quality Control. This view is shared by a number of conservationists and wildlife experts.

Critics of the Forest Service's type-conversion program point out that the service itself is partly responsible for whatever degree of fire hazard is posed by chaparral lands. The service has traditionally advocated a policy of strict fire suppression, and as a result, an unnaturally large amount of plant

material or fuel has accumulated in the chaparral. Small regular fires would have prevented this buildup. As it is, this increased volume of fuel will, according to a recent study, result in major conflagrations that will threaten some suburban developments, as well as pine forests. In such areas, controlled burning to simulate natural conditions seems indicated, rather than a program of wholesale defoliation. It makes no sense to compound the ills of past mistakes in land management by embarking on a future program involving even greater misunderstandings.

The Sierra Club maintains that the Forest Service is proceeding with the program without having taken time to assess adequately its environmental implications. The service does not even possess enough data to make intelligent, long-range decisions. Consequently, the Club has recently begun litigation contesting the Forest Service's region-wide-program environmental-impact statement, which the Club contends omits much of the necessary information called for under

the terms of the National Environmental Policy Act (NEPA). The suit also contends that the Forest Service has further violated NEPA by failing to process environmental-impact statements for individual type-conversion projects in the national forests. Finally, the Club contends that the environmental impact statement contains no comprehensive land-use planning studies as required by both NEPA and the Multiple-Use/Sustained Yield Act.

The chaparral is not among the most scenic natural habitats, nor is it particularly useful for recreation. But if we insist that natural environments must justify themselves in terms of their utility to man, then the crucial role of chaparral in preventing mudslides and providing watershed in an arid land should argue favorably for its conservation. The time is past when we can tolerate ill-advised meddling with our natural systems merely to secure some transitory private advantage. One would think that in Southern California the Forest Service would have something better to do.



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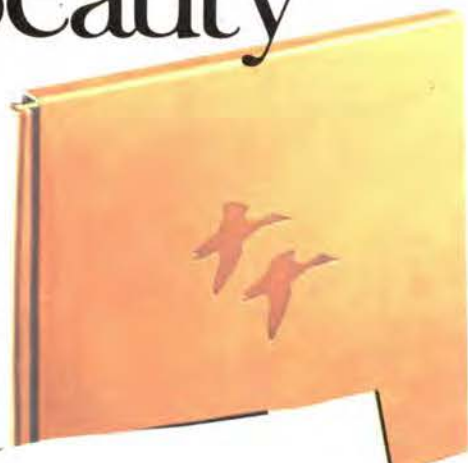
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To Ride the Wind

The story of *To Ride The Wind* is as old as life on earth. It is a timeless tale of birth, life and death as played out in the marsh and in the sky across the vast expanse of the North American Continent. Starting with their return flights from their wintering grounds in the United States the author brings the Canvasback, Mallard, Green-winged Teal, Lesser Scaup and all the other ducks, as well as the Canada Geese and Whistling Swans, home to the Delta Marsh. With pen and brush, he vividly recreates their arrival, mating, family habits, and summer life. As autumn draws near he describes how they organize their return to the south, documents their preparations and traces their departure.

The goal of Hockbaum's life and this book is to underline the importance of man in the survival of all marshes and their wildfowl.

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