SIERRA

THE SIERRA CLUB BULLETIN

MAY/JUNE 1980
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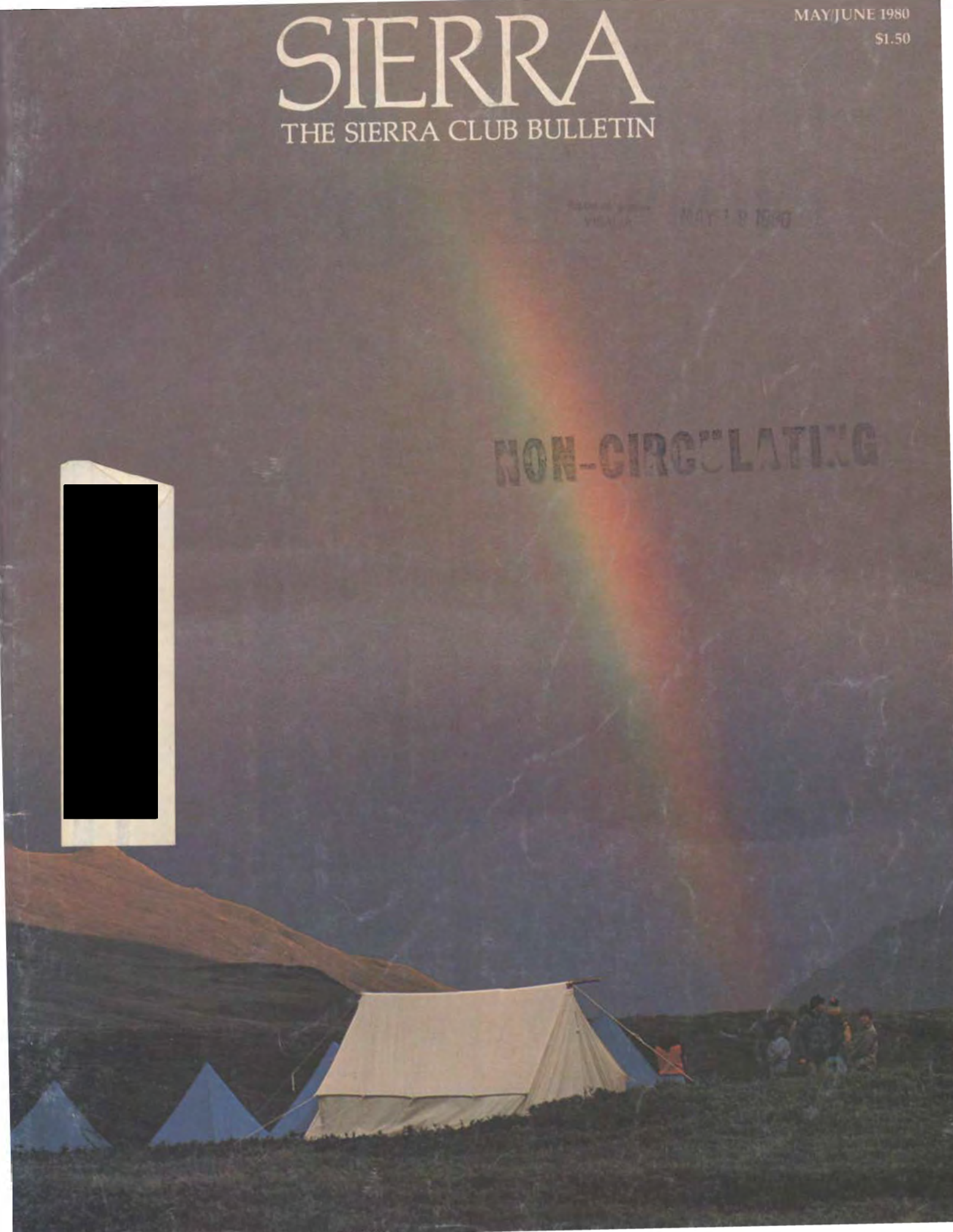

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MAY/JUNE 1980 **VOLUME 65/NUMBER 3**

Cover: On February 29, 1980, President Carter proclaimed "that the Arctic National Wildlife Range shall henceforth be known as the William O. Douglas Arctic Wildlife Range, in memory of a great American statesman and environmental leader." Photo taken in the newly named range by Galen Rowell.

On Preserving the Sipapu

It is regrettable that a photo of the Hopi Sipapu was published with William Kemsley's article in the January-February issue, "Step by Step Through the Grand Canyon." The Sipapu is a shrine for the Hopi people, and it plays an integral part in a number of their ceremonies and sodality functions. It is considered the entrance to their Underworld, and pahos, or prayer feathers, are placed within it as the need arises. The Hopi do not often visit it because it is a holy place, inviolate to them except for the properly initiated.

The United States government has seen fit to allot this particular spot of ground to the Navajo nation, who never frequent the inner canyon but enjoy twitting the Hopi about it. In the past, the policy of the Park Service had been to totally discourage all non-Indian visitors, following reports of trash in the Sipapu and photos of a visitor urinating in it.

Geologically, the structure is formed by an iron- and limestone-impregnated hot spring depositing an ever-increasing dome about its orifice. The Park Service has withdrawn similar structures in Yellowstone National Park to prevent visitors from walking upon and damaging them—it would seem that the Sipapu requires a similar prohibition, despite its isolated location, but the Park Service has not recommended this to the Navajo nation. The salt stalactites nearby are also a shrine, and also are endangered by visitors. The Hopi are well aware of the many river trips run nearby and that these tours visit the Sipapu as an added fillip to a commercial jaunt, and this is offensive to them. They simply do not react, as would Moslems if someone stood on top of the Black Stone in the Kaaba at Mecca, but the feeling is the same.

I realize the picture cannot be withdrawn from a published magazine, but it is a poor reflection on the policies of the Sierra Club. Despite this criticism, it is a good magazine.

Barton Wright
San Diego Museum of Man

The Editor replies:

Judging from the large number of letters we received on this subject, there is a great deal of confusion about regulations that affect the Sipapu. As we understand the situation: The Sipapu is not part of Grand Canyon National Park but is located on the Navajo reservation. There are no laws or regulations that prohibit anyone from visiting the Sipapu. The Park Service does recommend that visitors treat the Sipapu with reverence, since it is a Hopi religious site. A Park Service spokesman told us that climbing on top of the Sipapu was "not irreverent"—though climbing inside it or removing objects certainly would be.

The requirements of reverence must be, in the final analysis, left to the individual. Bill Kemsley, a long-time hiker, law-abiding citizen and editor of *Backpacker,* assures us he would not trespass on lands closed to the public.

Dangers from an LNG Terminal

We are much disturbed by the news item in the November-December *Sierra* on siting the liquefied natural gas (LNG) terminal at Point Conception rather than at Oxnard. Mention is made of the need to preserve the pristine area around Oxnard, but no mention is made of the danger to people there. Many thousands of people would be in jeopardy in the event of a gas cloud accidentally released over Oxnard, Port Hueneme and nearby Ventura County areas.

The Sierra Club is already condemned by many for appearing to believe that people come second to pristine areas and wildlife. Although we, too, would like to see pristine areas and wildlife preserved, it must never be at the expense of putting people's health or lives in jeopardy.

Ted and Hilda Salzberg
Port Hueneme, California

The News Editor replies:

The Club has opposed both the Point Conception and Oxnard sites for a proposed LNG plant on several grounds. First, the need for additional LNG imports has not yet been adequately demonstrated. Second, the Club opposed the Point Conception site not only because it is one of the two remaining undeveloped stretches of coast in southern California, because of its high seismic potential and because of the richness of its marine biota, but also because on a sunny Sunday afternoon more than 100,000 people may be on the Santa Barbara beaches downwind from the site. The same number might be exposed at the Oxnard site, which the Club also opposes.

The Club is encouraging decision-makers to reexamine the justification for the plant and the risks at both sites, and to look more carefully at the possibility of constructing a facility offshore at the Ventura Flats area. A floating facility here, in the vicinity of existing oil platforms, would not pose as much risk to humans as it would at either Point Conception or Oxnard.

Trust in Scotland

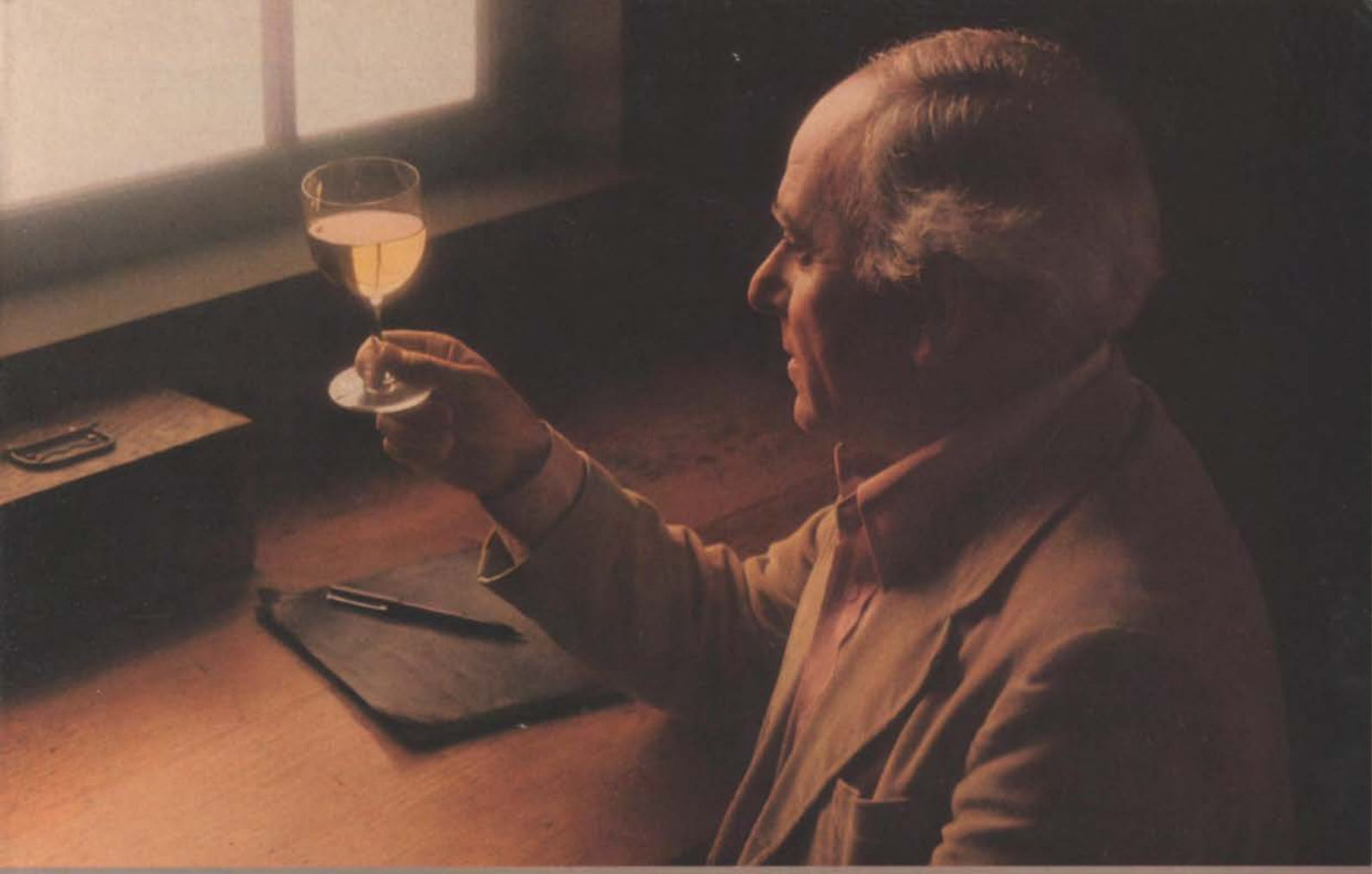
I am surprised to see that in your November-December issue you virtually wipe the ancient Kingdom of Scotland off the map. There is no British National Trust, as described in the sidebar to "Reserves, Preserves and Land Trusts." There is the National Trust, which serves England, Wales and Northern Ireland, and—an entirely independent body—The National Trust for Scotland. Because Scotland has a land area equal to roughly half that of England and Wales, the error is considerable in geographical terms.

Both trusts owe much to the U.S.A. The Scottish trust, with 90,000 members and more than 80,000 acres, is younger than the National Trust, on which it was modeled. The National Trust, founded in 1895, in turn borrowed much of its constitution from that of the Trustee of Public Reservations in Massachusetts, incorporated four years earlier.

Philip Sked
The National Trust for Scotland

The Biblical Argument

I found Wendell Berry's article not only thoughtful and eloquent, but a moving statement for "unheroic" Christians to take to heart. His message seems particularly appropriate for this great nation of skilled and productive workers, so many of whom are genuinely devout.



BECAUSE the pale golden glow of our fragile Sauvignon Blanc is an indication of its taste, the winemaker must judge with his eye as well as his palate. Every step we take, we take with care because THE WINE REMEMBERS

THE WINERY OF ERNEST & JULIO GALLO

Sauvignon Blanc of Calif.
Ernest & Julio Gallo, Modesto, CA

On the political front, I wish Mr. Berry's piece could be required reading for every Christian politician and industrialist whose practical application of faith ends with the advocacy of prayers in schools.

Thank you for publishing the piece.

Neal G. Thorpe
Mont Clare, Pennsylvania

Wendell Berry attempts to establish a basis for "ecological responsibility" by arguing from dogmatic theology. While it is sometimes difficult to know the Bible's meaning—there being so many contradictions in it—the tone of the whole Bible is directed against being ecologically responsible. A case can be made for ecological responsibility without recourse to the Bible. Making a case for it using the Bible, however, only degrades the concept of ecological responsibility, because the Bible was written by men ignorant of science and human values.

Although Mr. Berry never defines what he means by "ecological responsibility," presumably it would include a respect for life and its interrelationship with the land. Yet the God portrayed in the Bible seems to have little concern for land and life, let alone for ecological responsibility—he causes a deluge to destroy both man and beast (Gen. 6:5, 7); sends plagues of frogs, lice and flies (Ex. 8); and murders all the first-born of Egypt (Ex. 12:29, 30; 11:4-6). So, to answer Mr. Berry's question, "Is it Christian to profit from violence?" Yes, if one follows the example of Mr. Berry's God. It is hard to categorize a God who is all-powerful and yet does nothing to alleviate human suffering and ecological disaster as anything but a monster.

The Jesus of the New Testament is no better than his father. He casts devils into swine (Mark 5:2-14; Luke 8:26-31; Matt. 8:28-32) and curses a fig tree for not bearing fruit out of season (Mark 11:12-21). Mr. Berry is, of course, entitled to believe in the sayings of Jesus, but Jesus was so intolerant that he relegated to damnation all those who did not believe in him and his views (Mark 16:26; John 3:36). One can, thus, see the danger of basing one's principles on faith when one considers some of the things believed by the men who wrote the Bible. They believed in slavery (Lev. 25:44-46); in the existence of mythical creatures such as witches (Ex. 22:18), unicorns (Job 39:9-11), cockatrices (Isaiah 11:7, 9) and satyrs (Isaiah 34:14); and believed that a child should be punished for his father's sins (Ex. 34:7; Num. 14:18). None of these beliefs is in accord with science or with any decent conception of human justice. Many of the beliefs derived from the Bible, such as the belief in witches, in the earth being the center of the universe, in special creation, and in disease and mental illness being caused by devils, have caused great suffering and persecution of innocent people.

If humanity saves this world from ecological disaster and alleviates human suffering, it will be by people helping each other, by people preserving beauty and resources. It certainly will not be by waiting for mythical deities, whether Zeus or Yahweh, to perform some celestial hocus-pocus that at the last moment will extricate us from disaster.

John Fritz
Los Altos, California

I do not find Wendell Berry's article a very convincing argument for "ecological and agricultural responsibility." Apart from the fact that there are far more compelling arguments in favor of the conservation ethic—those of survival—the whole process of Biblical exegesis is suspect.

For a Biblical argument to have real clout, one must believe that the Bible is divinely inspired in the sense that the early Christians did. How many people do, today? Another problem is that any position on any subject can be supported from Bible texts. "The devil quotes scripture for his purposes" is the old saying.

Certainly Christianity's most outstanding defect is the lack of any conservation teaching. As Berry says, Christianity is an other-worldly philosophy. If we are destined for eternal life in a better world, there seems to be no good reason to conserve this world, and there is nothing in Christianity, as opposed to Judaism, that suggests we should.

Primitive life had primitive hit-or-miss responses. But we have the ability to analyze our circumstances, to judge what action is to our advantage and to pursue that course. Judging by our present record, this is more easily said than done. In the unlikely event that we do not wipe ourselves out with a nuclear war in the next few years, we could easily poison ourselves into extinction with chemicals, starve ourselves off the face of the earth by overpopulation or, if we escape these fates, we will probably bury ourselves in garbage.

Ninety percent of the world's population is too ignorant to appreciate these dangers; and many of those who do, do not much care. It is more important to be Number One in nuclear weapons than to avoid nuclear war. Most of us are not yet sufficiently frightened by our plight to take it seriously. Why is this? One factor relates, I suspect, to the attitude that induced Wendell Berry to write the article.

Religion, all religions, are part of humanity's attempt to explain its relation to the universe. Christianity postulates the existence of a supreme being who is both good and all-powerful. Even a slight acquaintance with this world should lead one to question this. We fight each other, bomb, bayonet, starve, poison and persecute each other. Any fair-minded person should forgive us for asking what kind of a good and all-powerful God can be responsible for all this?

The dilemma is what theologians know as the problem of evil. If there is a God, he is obviously not good, or he would not allow all this evil—or if he is good but cannot prevent the evil, he is not all-powerful.

Most of the proofs of God's existence, in addition to being unconvincing, are beside the point. Only a "personal" God, one who will interfere in the orderly running of the universe to answer our prayers, to help us, punish us, or in some way to intercede in our lives, is of interest to us. A God who created the universe, set up the laws by which it was to run and then left it to itself is, to us, of no more value or interest than no God at all. At least we cannot disprove the existence of a personal deity, but there is not one shred of valid evidence that such a God exists.

This means that we are on our own. We succeed or fail by our own efforts, and if we fail, there is none to care but ourselves.

However, there is an advantage in this. If we are not the puppets of some all-powerful being, we truly have free will. Our decisions make or break us—a terrifying thought to most Christians. That pretty blue sphere with its swirling cloud patterns is all we have.

Obviously our ultimate success, even our survival, depends on a correct assessment of our situation. Belief in a supreme being, one who is personal, loving and prepared to intervene on our behalf,

is a poor reading of our circumstances.

Recently I heard an intelligent, successful businessman and engineer say, in connection with an argument about digging canals in Florida's coastal wetlands, "I do not see why I should not have a waterfront property if I want one. I believe in God. He is not going to let all those doomsday predictions of yours come true." This, I admit, is exceptional, but at the back of every sincere Christian's mind there has to be something of this attitude.

Quentin G. Whishaw
Gulfport, Florida

Wendell Berry replies:

Messrs. Fritz and Whishaw make substantially the same argument, so one response will do for both.

At no point did I raise the question of the scientific accuracy of the Bible, or that of the existence of God. The first question is not one that greatly matters, so far as I can see. The second is, in the factual sense, unanswerable: "not one shred of valid evidence" can be produced by either side—though the atheistical faith seems a great deal more dogmatic and dead-certain than the Biblical.

The purpose of my effort was to see if it might be possible to produce a Biblical argument for ecological responsibility. I believe that I did so, and that if the Devil undertook to quote scripture in rebuttal he would have a harder time than I did.

Among the reasons for making such an argument, I see two that I think are very practical. The first is that the Judeo-Christian tradition exists, survives and has adherents. If those adherents can legitimately, through their tradition, be joined to the cause of ecological responsibility, then much will be gained.

The second reason is that science, at least in the popular version apparently espoused by Messrs. Fritz and Whishaw, tends to look upon the unknown as potentially knowable—to see it as a "challenge" or a "frontier," and therefore to hold it in a kind of contempt. The unknown, to this sort of science, is simply a "territory," to which a confident (some would say an audacious) claim has been staked. Religion, on the other hand (in common with some scientists), holds out at least the possibility of perceiving the unknown as, or as joined to, mystery—that is, as an unknown that is ultimately unknowable. The religious response to this mystery is humility and, implicit in

the humility, restraint and care.

It is not "celestial hocus-pocus" that has got us into our present mess, but scientific hocus-pocus: the result of an overweening confidence in human intelligence. The threat of nuclear catastrophe, for example, is precisely the result of the simplistic belief that "We have the ability to analyze our circumstances, judge what action is to our advantage and pursue that course." Among the creatures of superstition, it seems to me that unicorns, cockatrices and satyrs are greatly preferable to "the peaceful atom."

The idea that science is equal to or interchangeable with religion, which is implicit in both of these letters, is bad for science and religion both. The two ways of thought are different and are concerned with different kinds of truth. To propose the substitution of science for religion is as absurd as to propose the substitution of screech owls for door knobs.

I cannot see how it is possible, in reason, to discard the Judeo-Christian tradition because it is unproven or unscientific (a test that *all* cultural traditions fail), and then propose to save the world by "justice," "love," "love for all mankind," and "preserving beauty." From what laboratory did these notions come?

The Bible, as I acknowledge in my essay, is indeed a difficult book, obscure in places, in places self-contradictory; it contains some episodes and some ideas and some emotions that I find distasteful; and it is true that a lot of bad history has been justified by the Bible, and that a lot of Christians and Jews have been bad people. But such are the characteristics of *any* human enterprise. (It is desirable to keep in mind that "science" has sponsored and committed crimes against love and justice as readily as any religion ever did.) But the Bible also contains much that is precious, and much that is necessary to our understanding of ourselves and to our survival.

The business of critical intelligence is to deal with these difficulties that are invariably present in what we inherit: to consider them again in the light of new knowledge, experience and need; to attempt to distinguish what is true or universal from what is provisional, arbitrary or accidental; to understand what remains true and thus to renew its power. It is neither critical nor intelligent to discard one's entire inheritance because it is imperfect or "not modern" or "not scientific." □

Editorial

Alaska: The View From the Senate

FOR SEVERAL YEARS, *Sierra* has regularly included updates on the Alaska lands campaign; this issue again features important news about Alaska—and a special appeal for action. The Senate will vote on Alaska this session; debate is set to begin on July 21, and will focus on a series of crucial votes on individual amendments—not just on a single big vote on the "Tsongas-Roth substitute" (as we had in the House vote on the Udall-Anderson bill).

The situation in the Senate has changed significantly this spring. Because the Sierra Club strongly values the experienced advice of a Senate leader, we have asked Senator Alan Cranston (D-California), Majority Whip of the Senate, to outline the situation. Details of the amendments and specific needs for action are outlined on pages 16-17.

—J. Michael McCloskey

Mack Emmons

Executive Director Mike McCloskey with Senator Alan Cranston

No one needs to remind the Sierra Club, the Alaska Coalition and other conservationists of the historic victories you achieved in 1978 and again in 1979 with the votes for the strong, balanced Udall-Anderson-Seiberling "Alaska National Interest Lands" bill, H.R. 39. Many House members tell me it was the outpouring of strong support from back home that made the crucial difference.

The same strategy is the key to winning the fight we are now waging together for an acceptable Alaska lands bill in the Senate.

There have been repeated false starts in the Senate. The first was in October 1978, when the threat of a filibuster blocked action. And since the House again passed its bill last May and the Senate Energy and Natural Resources Committee reported its much-amended version of that bill in November, there have been several more false starts.

But now the Senate has firmly set its schedule. On February 7, the Senate adopted by unanimous consent an agreement stipulating the parliamentary terms for debating and voting on the Alaska lands bill. This time agreement sets a firm limit on debate (thus preventing a filibuster at that stage of the process). The time agreement also fixes July 4 as the earliest date for debate to begin. I have obtained Senate Majority Leader Robert Byrd's assurance that we will begin on July 21, the first day the Senate is in session after July 4, barring only some true emergency legislation, in which case the Alaska legislation would be considered immediately thereafter.

The debate and votes could occur sooner than July 21, but only if all 100 senators unanimously consent to changing the time agreement. Thus far, Senator Mike Gravel (R-Alaska) has indicated he will not agree to an earlier vote. The Senate will be debating the Energy Committee's much amended, much weakened version of the Alaska bill (also "H.R. 39," but best referred to as "the Energy Committee bill" to avoid confusion).

The Senate time agreement also limits the number of amendments that can be offered to the Energy Committee bill. These amendments will be circulated in advance and will be the main focus of debate and votes. Thus, you will know what specific issues to concentrate on with your own senators during this last two-month build-up period. At the very end of the debate, there may be a vote on the overall Tsongas-Roth substitute bill—a complete alternative to the Energy Committee's bill—which I'm cosponsoring. But key votes will occur earlier on a series of amendments.

I have been working very closely with Interior Secretary Cecil Andrus and the Alaska Coalition in coordinating efforts to amend the provisions of the Energy Committee bill that need significant improvements. Our amendments will deal with 1) improved national wildlife refuge boundaries, 2) improved national park boundaries and management, 3) larger wilderness areas in parks and refuges, including in the newly renamed William O. Douglas Arctic Wildlife Range, 4) larger national forest wilderness in Southeast Alaska, and 5) improvements in the bill's management provisions and inclusion of additional scenic rivers.

I have also organized a Senate Steering Committee, which I am co-chairing with Senator Paul Tsongas to lead the fight for a strong Alaska lands bill. Those working with us include Senators William Roth, Gaylord Nelson, Gary Hart, Patrick Leahy, George McGovern and others. We will be meeting in the coming weeks to frame the strategy for the floor fight and to enlist the support of other senators.

Senators respond to the will of the people. However, you must clearly express your views in effective ways. Some very effective steps are outlined in this issue of *Sierra*. The key is to begin right now, to keep Alaska prominent in the work of your local chapter or group, and to follow through until the votes are taken.

For the wildlife, the wilderness, and the spirit of our national interest lands in Alaska, your individual effort in this stage of the long fight is absolutely crucial.

Alan Cranston

SIERRA

The State of the Parks

A new survey reveals that threats to the national parks are more severe than they have ever been.

ROBERT CAHN

NEW DECADES are fair game for those who want to look back and look forward, to assess the past and predict the future. In problems concerning the environment, this particular time is of great significance and not a little danger, for the 1980s will present a clear and distinct challenge.

As we begin the new decade, we will confront a set of conditions entirely new to this nation, conditions that will require a reordering of priorities, some changes in our system of values, and a willingness to alter our lifestyles and even some of our very basic philosophies. What I see as the conservation challenge of the 1980s is to reshape our attitudes, values and our practical approaches so that we can live in an era of scarcity without ruining the life systems on which we depend.

It was the seemingly endless frontier and boundless resource base that allowed our nation to achieve world leadership in the brief span of two centuries and to give full vent to individualism, ingenuity and freedom of movement and action. Now we are within sight of physical boundaries. We are feeling restrictions closing in on our use of resources. We are beginning to recognize that conservation can no longer be the pet province of an aware minority; it is now an absolute and universal requirement.

I am not suggesting that the limitations we now face will rob us of the individualism and freedom that are so basic to the American psyche, but that these ideals will have to stretch their bounds to include a wider acceptance of community interest—sometimes at the expense of personal self-interest—and an enlightened sense of our relationship with the planet and its inhabitants that could be called an environmental ethic.

This conservation challenge is nowhere greater today than in one particular area of interest that is a microcosm of the resource problems and issues confronting us—our national parks. These great crown jewels of our nation constitute perhaps the country's best example of an emerging environmental ethic.

About 12 years ago, while traveling 20,000 miles visiting national parks in preparing a 16-part series of articles for *The Christian Science Monitor,* I became aware of a rare attitude among park visitors. Despite the traffic jams, crowds, noise, pollution and other disturbances in many of the popular parks, such as Yosemite and Yellowstone, visitors felt fiercely protective of the parks as a part of their heritage.

I learned that to harm or threaten a national park is to touch a sensitive nerve in the American public. Many visitors, as well as park employees, seemed to live by a set of values rarely seen elsewhere, values they themselves might not live by outside the park. They appreciated the natural beauty around them. And what's more, they showed a regard for other people's chance to share the park experience. They seemed to feel they were part of a whole natural system. Most of them behaved as if they did not want to leave that system any worse than they found it so that others and even future generations could enjoy and share it. And in answer to a questionnaire in my newspaper series, a majority of readers gave responses indicating that they wanted national parks preserved, even at the cost of limiting their own personal use of the parks.

The instincts of the people followed the hopes of those early explorers who visited the Yellowstone area in the late 1860s and early 1870s and worked to have it protected. "It seems to me that God made this region for all the people and all the world to see and enjoy forever," wrote one of the explorers, Cornelius Hedges. "This great wilderness does not belong to us. It belongs to the nation. Let us make a public park of it and set it aside . . . never to be changed, but to be kept sacred always."

Imagine vision like that in an era when people were pushing to tame the wilderness as quickly as possible. Those founders of the national park concept were undoubtedly guided by the environmental ethic that has been present in greater or lesser degree in this country for three centuries—even before that, if you consider that the continent's original inhabitants, the Indians, lived in cooperative harmony with the natural environment.

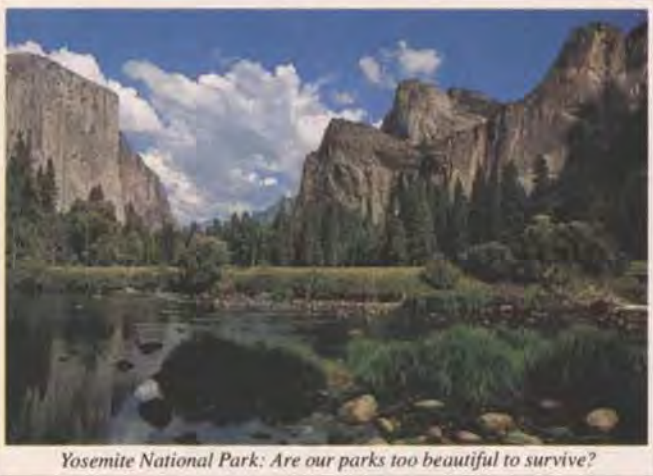
The national park idea, which was officially established in 1872 with the Yellowstone Act, has now spread to more than 100 countries throughout the world. But here at home, U.S. parks have from the beginning been influenced by two persistent factors. First, people—the constant pressures to manage the parks for recreation by ever-increasing numbers of people. The other factor is development—the incessant pressures on parkland or adjacent lands for commercial development and other non-park uses that intrude on natural park resources and may irreversibly damage or detract from the values for which the park was set aside.

The people problem was foreseen as far back as 1864, when Congress gave public lands in Yosemite Valley and the nearby

Mariposa Grove of Giant Sequoias to the state of California for preservation in what some historians claim really amounted to the first "national park." Noted landscape architect and Yosemite preservation advocate Frederick Law Olmsted warned that the few hundred annual visitors to Yosemite Valley and the Mariposa Grove would in a century be "counted in the millions." Olmsted advocated in 1865 that construction be limited to the "narrowest limits consistent with the necessary accommodation of visitors."

He added: "An injury to the scenery so slight it may be unheeded by any visitor now will be one of deplorable magnitude when its effect upon each visitor's enjoyment is multiplied by these millions. But again, the slight harm that the few hundred visitors of this year might do, if no care were taken to prevent it, would not be slight, if it should be repeated by millions . . . ."

National parks today are more than just places for vacations or outdoor recreation. They are valued as examples of the nation's ecological variety and as habitat for wildlife. And as the highest embodiments of the nation's environmental conscience, they constitute a harbinger of the future and an early warning system for what we are doing to our entire habitat.



Galen Rowell

Yosemite National Park: Are our parks too beautiful to survive?

What do our parks tell us about the quality of life today —are they giving us an early warning signal? The answer may come as a shock to some people, but information compiled recently by the National Park Service reveals that threats to national park resources and values are the most serious they have ever been.

The evidence to support this conclusion has been assembled in a first-ever comprehensive "State of the Parks" report requested by Representatives Phil Burton of California and Keith Sebelius of Kansas, the ranking majority and minority members of the House Interior Committee's Subcommittee on National Parks. In July 1979, Burton and Sebelius asked the Park Service to prepare a major assessment of all existing and potential activities and forces that may be damaging or threatening the natural and cultural resource integrity of all units within the system. This report lists all threats, both inside and adjacent to park areas—such threats as specific kinds and effects of air, water and noise pollution; esthetic degradation or actual damage to resources from mineral exploration, logging, grazing and land development; and effects of visitor use. Each park also reports whether specific threats are only "suspected," or are adequately documented by research, and whether they are addressed in the park's resources management plan.

The findings, from 310 of the 323 National Park Service areas, reveal that:

- Land development adjacent to the park areas is threatening the natural resources in 132 areas, and private landholdings within park boundaries cause problems in 40 areas.
- One or more of a dozen water-quality problems are already evident or suspected of being threats in almost every park area. For instance, toxic chemicals from sources outside the parks threaten water quality in 21 areas and are suspected of causing damage in 43 others. Acid rain is damaging resources in 20 areas and is suspected of harming 62 others.
- Exploration for gas, oil, geothermal energy and hardrock minerals on adjacent lands threatens 56 park areas and is suspected of causing problems for 32 other units.
- Logging next to parks is causing damage in 25 areas.
- Threats to air quality are evident at 140 areas, 94 of them reporting visibility problems due to smoke or contaminants coming from outside the parks.

This information was compiled by superintendents and staffs of almost all of the 323 Park-Service areas (most of the new Alaska national monuments created in late 1978 are not yet staffed and could not supply information). The statistics therefore include parkways, recreation areas, cemeteries and other historic and cultural sites. They thus fail to reveal the full significance or extent of the threats to the large natural areas.

Before one jumps to the conclusion that the national park system is in a shambles, it must be pointed out that the State of the Parks study is only a first draft of what is expected to become an annual state-of-the-parks report, and there may be flaws in the superintendents' analyses of their parks' problems. The majority of these threats are not documented, nor is the extent of the damage known, based on the limited research so far. From the visitor's standpoint, except for some air pollution and occasional overcrowding in some areas, almost all national parks appear to be in reasonably healthy condition. But the State of the Parks report should be taken seriously for the early warning signals it gives of potentially serious disruptions that may lie ahead. It should at least flash yellow caution lights to Congress and the Park Service.

Some of these yellow warning lights seem ready to turn red. For instance:

- A major oil company, without notifying the National Park Service and with no studies to determine potential impacts on geyser activity nearby, drilled a 4000-foot geothermal test well on privately held land within the boundary of Lassen National Park, very near a large, continuous steam vent called Terminal Geyser, and only a mile and a half from Boiling Springs Lake, the largest hot lake in the world.

The national parks are an early-warning system for what we are doing to our entire habitat.

• On the western border of Yellowstone National Park, 145 applications have been received by the BLM to commence geothermal operations in the U.S. Forest Service's Island Park Geothermal Area, not far from Old Faithful. Very little is known about the "plumbing systems" beneath geyser basins and whether exploration or extraction could dry up or otherwise damage these natural wonders. One expert on geothermal matters, Dr. Donald E. White of the U.S. Geological Survey, has warned that "we cannot exploit the geothermal energy of an area and also preserve its geysers," and he cites four major thermal areas where natural geysers became inactive because of geothermal exploitation.

• Everglades National Park is seriously threatened by intense competition for the scarce water supply that is essential to its survival—and that of the habitat of several endangered species. Farming interests, flood-control agencies, urban users, public utilities and industrial firms in Florida all covet the park's water supply.

• We have only recently discovered, after eight years of archeological digging, that Chaco Canyon National Monument in New Mexico is a treasure ground that may tell us the story of the Chacoan people, a culture earlier than that of the inhabitants of Mesa Verde. Chaco Canyon, in fact, could surpass Mesa Verde in significance. Yet we may never unlock the mysteries of this prehistoric civilization, for the canyon is in the San Juan Basin, which has one sixth of the world's uranium and one quarter of the U.S. coal reserve. Three prehistoric roads have already been disturbed by uranium exploration. A producing oil well three quarters of a mile outside the park boundary has seriously disturbed fifteen acres of land known to contain Chacoan structures and artifacts. Uranium mining, with its resultant erosion and potential seepage of toxic chemicals, is also a threat to vegetation and animal life in the large (21,510-acre) national monument, which has significant natural as well as cultural features.

National Park Service Director William Whalen ranks air pollution and deteriorating visibility as the most important threat to the parks. He claims that visibility—so vital to enjoyment of the Grand Canyon—is impaired there about 100 days a year, largely because of nearby power plants. And although the 1977 Clean Air Act Amendments are supposed to guarantee against deterioration of air quality in Class I areas (which applies to national parks), Whalen says that he cannot guarantee good visibility for Grand Canyon or for eighteen other national parks, among them Acadia, Canyonlands, Capitol Reef, Crater Lake, Glacier, Great Smoky Mountains, Mesa Verde, North Cascades, Olympic, Redwood, Shenandoah and Voyageurs.

The rapidly increasing energy-development program in the Southwest will exacerbate the parks' air-pollution problems, experts predict. One example: a complex of coal-fired power plants is scheduled to be built within the airshed of Bryce Can-

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yon National Park, and a major coal stripmine is planned just three miles from—and directly in the line of sight of—Yovimpa Point, a vista that attracts 400,000 people a year who come to see the array of colorful pinnacles and spires. Also, some of the delicate rock formations would be threatened by the blasting activities at the nearby mine. Park Service Director Whalen says, "A scenic vista is just as much a national resource as coal in the ground." Whalen's view, however, is not currently supported by government energy policy.

The sacrifice of the Southwest's scenic vistas for production of electricity carries a note of irony. Most of the power is being produced to satisfy the energy demands of Southern California; yet many people who value these scenic areas as vacation spots live in Southern California. But public officials and power-company executives unquestioningly assume that people will continue to consume at a growing rate, so they automatically push onward to produce new supplies, whatever the environmental cost.

It is the same assumption that underlies the decision by the President and the Congress to rush into a multibillion-dollar synthetic-fuel production program without first assessing the potential environmental damages caused by acid rain, water shortages, air pollution, toxic substances, ruin of the land and running roughshod over environmental laws without giving at least an equal priority to equally massive energy conservation programs, which could have an immediate effect, while synthetic fuels are at least ten years from being a major source of energy, if ever.

These and the multitude of other specific dangers outlined in the State of the Parks report are certainly serious. There are also some park conditions the study does not address that are equally troubling.

First among these is the need to save the nation's last great wilderness frontier, in Alaska. When Congress failed to enact legislation in 1978 to protect these lands permanently, President Carter issued a series of executive orders designating these areas as national monuments.

Meanwhile, Alaska Senator Ted Stevens has also used his position as ranking minority member of the Appropriations Committee's Interior Department Subcommittee to effectively block the use of any funds for hiring rangers to protect and manage the Alaska lands the President declared as national monuments.

This funding restriction contributes to another basic problem: the National Park Service is severely understaffed. The parks have grown from 187 units in 1960 to 323 units today, with about 265 million visits last year. Although the number of visitors has tripled, the number of employees has not even doubled. Instead, established park units are raided for personnel to plan, administer and protect new areas, diluting the maintenance, protection and visitor services and resource management at the older parks.

Another problem is the difficulty of planning, protecting and managing the natural areas of the large national park system for their specific ecosystems. The range of the caribou and grizzly bears in Alaska—or of the grizzlies, elk, deer and other large animals in the "lower 48"—or of migratory birds—extend far beyond the boundaries of any one national park unit. Also water (both quality and availability), air, soil and vegetation are subject to conditions that rarely, if ever, can be corrected within park boundaries.

The planners who developed boundaries for the massive new Alaska park areas sought unsuccessfully provisions for coordination of management among the Park Service and those owning adjacent lands—the Bureau of Land Management, the native corporations and the State of Alaska. Ecosystem management through coordination of landowners is even more of a problem in the lower 48, where park areas are smaller, where there are long-established traditions of "turf" protection, and where intense rivalries prevail among neighboring land owners, be they the U.S. Forest Service, Interior's Fish and Wildlife Service or the Bureau of Land Management, or states, timber companies, stockmen or other individuals. Adding to the confusion are the paucity of knowledge about the workings of the ecosystems and the present strictures on basic research in the parks. What little research goes on has slight relationship to the problems outlined in the State of the Parks study, except for a disproportionately large share going to monitoring air pollution, which in 1981 will receive more than 25% of the total budget for scientific research.

Although every park is supposed to have a resource management plan, few if any parks have adequate plans or are carrying them out well enough. One reason is the scarcity of knowledge about the status of the resources. Another is that natural-resource management is a secondary activity for the Park Service: most of its attention is devoted to the protection of visitors and facilities. The number of resource managers in the parks trained to deal with all the new resource threats is extremely small, and the budget for resource management is a low-priority item and one of the first to go. It is hoped that the State of the Parks report will persuade the Park Service and Congress to raise the priority and funding for research and for managing resources.

One final problem is the need to upgrade the interpretive and environmental education programs of the Park Service, which have declined deplorably in recent years as funding and personnel have been directed toward the squeaky wheels. In addition to the failure of recent national-park directors to give interpretation high priority, many superintendents also fail to appreciate its importance.

The national parks are uniquely suited to educating. Families come to a park mentally open to ecological ideas that they might not listen to elsewhere. Yet understandably, it is difficult for the interpretation and education programs to com-

Our decisions as individuals, taken together, determine the hopes and quality of life for everyone.

pete with the more obvious and demanding priorities in a seriously understaffed Park Service. But ignoring these programs is a short-sighted policy that could work to the political disadvantage of the parks in particular and conservation in general in years to come. The parks were established both for the conservation of the natural features and for the enjoyment of future generations. We are wasting the opportunity to use the parks as unique classrooms in which to impart a broader understanding of an environmental ethic. The parks' perpetuation will be in the hands of today's children and their children. Unless tomorrow's citizens have an ethical awareness of the true ecological values of these great natural areas, it bodes ill for the future.

Despite these problems, the national parks, as the natural crown jewels, are relatively untarnished. And they are loyally supported by the public. The danger is that in thinking of the parks mostly as places to visit to satisfy our recreation or wilderness needs, we will forsake our responsibilities as citizens to safeguard the basic natural resources and the ethic that underlies the park idea.

I see national parks as a microcosm of the conservation challenge that confronts the world, and as an early-warning system for the state of the environment. In order to meet the conservation challenge of reshaping our attitudes and values so that we can live in an era of scarcity without ruining the life systems on which we depend, we will need to understand and practice an environmental ethic.

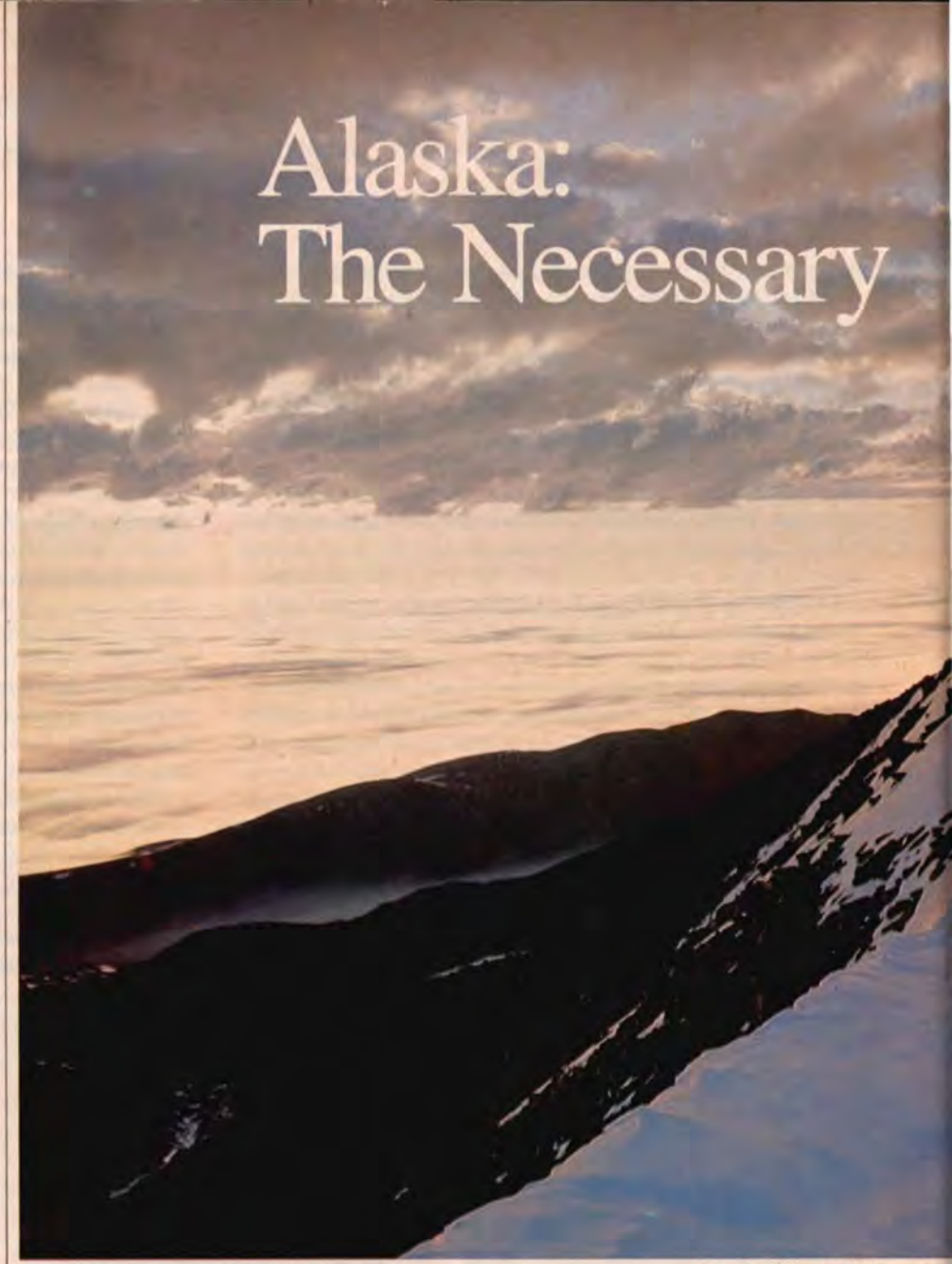
The values leading to an environmental ethic will become increasingly important in the decade of the 80s. The presence of an environmental ethic in our everyday decisions could be more important than we realize. Our decisions as individuals —at home and at work, as citizens, workers, professionals, or corporate or public officials—taken together, determine the hopes and quality of life for everyone.

With the predominant values in society weighted toward narrow self-interest, the role of those who seek the environmentally ethical route is difficult and often unpopular. Yet if we do not make our choices on the side of the environment now, our options will narrow rapidly as the pressures of population growth, resource depletion and pollution irreversibly alter the quality of living on the planet. Each of us, individually, can look for ways of making fewer demands on natural resources. We can seek to live in harmony with the natural order. We can replace a self-only, short-range outlook with universal, long-term values. And we can bring environmental considerations into our decisions, from the smallest to the greatest.

That is the hope. And therein lies the conservation challenge of the coming decade. □

This article is adapted from the Horace M. Albright Conservation Lecture, presented by Mr. Cahn at the University of California, Berkeley. Copies of the complete lecture may be obtained by writing the Chairman, Department of Forestry and Resource Management, 145 Mulford Hall, University of California, Berkeley, CA 94720.

Alaska: The Necessary



Atop a peak in the William O.

The Senate debate on the Alaska public lands legislation, as Senator Cranston explains on page 9, will focus on a number of specific amendments. Following are the amendments that conservationists feel are necessary.

1. Improving National Wildlife Refuges

The Energy Committee bill would cut the heart out of the National Wildlife Refuges that were passed by the House of Representatives. The bill would shift millions of acres of essential habitat to less protective classifications under the administration of agencies less expert than the Fish and Wildlife Service. Proposed expansion of the William O. Douglas Arctic Wildlife Range and the Yukon Flats National Monument, one of Alaska's most productive waterfowl areas, would be particularly hard hit. Senator Gary Hart (D-Colorado) and others will propose an amendment to correct these problems, restoring 15 million acres of the most vital land to national wildlife refuge designation.

2. Improving National Park Boundaries and Management

The Energy Committee bill shifts 5 million acres from national parks into lesser classifications, opening much of this land to mining. Vital sanctuaries for Dall sheep in the Wrangell Mountains would be reclassified from park to "preserve" status, open to trophy hunters. The 8-million-acre, all-wilderness Gates of the Arctic National Park in the Brooks Range would be halved in size, its heart thrown open to nonpark uses. An amendment will be offered to restore biologically sound park/preserve boundaries and to prevent mining within these parklands.

3. Increasing Wilderness Protection

The Energy Committee bill cuts nearly in half the total acreage designated by the House within new parks and refuges. Wilderness in wildlife refuges would be slashed from 27 million acres to just 4 million. Wilderness protection in the existing William O. Douglas Arctic Wildlife Range would be cut entirely, and oil and gas exploration would be mandated for the coastal plain caribou-calving area. In all, 30 million acres of House-approved wilderness would be cut. Senator Gaylord Nelson (D-Wisconsin) and others will offer an amendment to restore some of the most important wilderness areas within parks and refuges, including 9 million acres in the Douglas Arctic Range, and to delete the Energy Committee's mandate for oil and gas exploration.

4. Southeast Alaska Forest Wilderness Improvements

Despite completion of a Forest Service plan demonstrating that 5.8 million acres of forest wilderness can be designated within the Tongass National Forest without adverse impact on existing levels of timber or jobs, the Energy Committee cut 1.5 million acres of key wilderness lands out of the House bill. The Committee reduced the size of the West Chichagof, Admiralty Island and Misty Fjords wilderness units by nearly half. Senators Paul Tsongas (D-Massachusetts) William Roth (R-Delaware) and George McGovern (D-South Dakota) will offer an amendment to restore important forest-wilderness boundaries.

5. Administrative Policies and Scenic Rivers

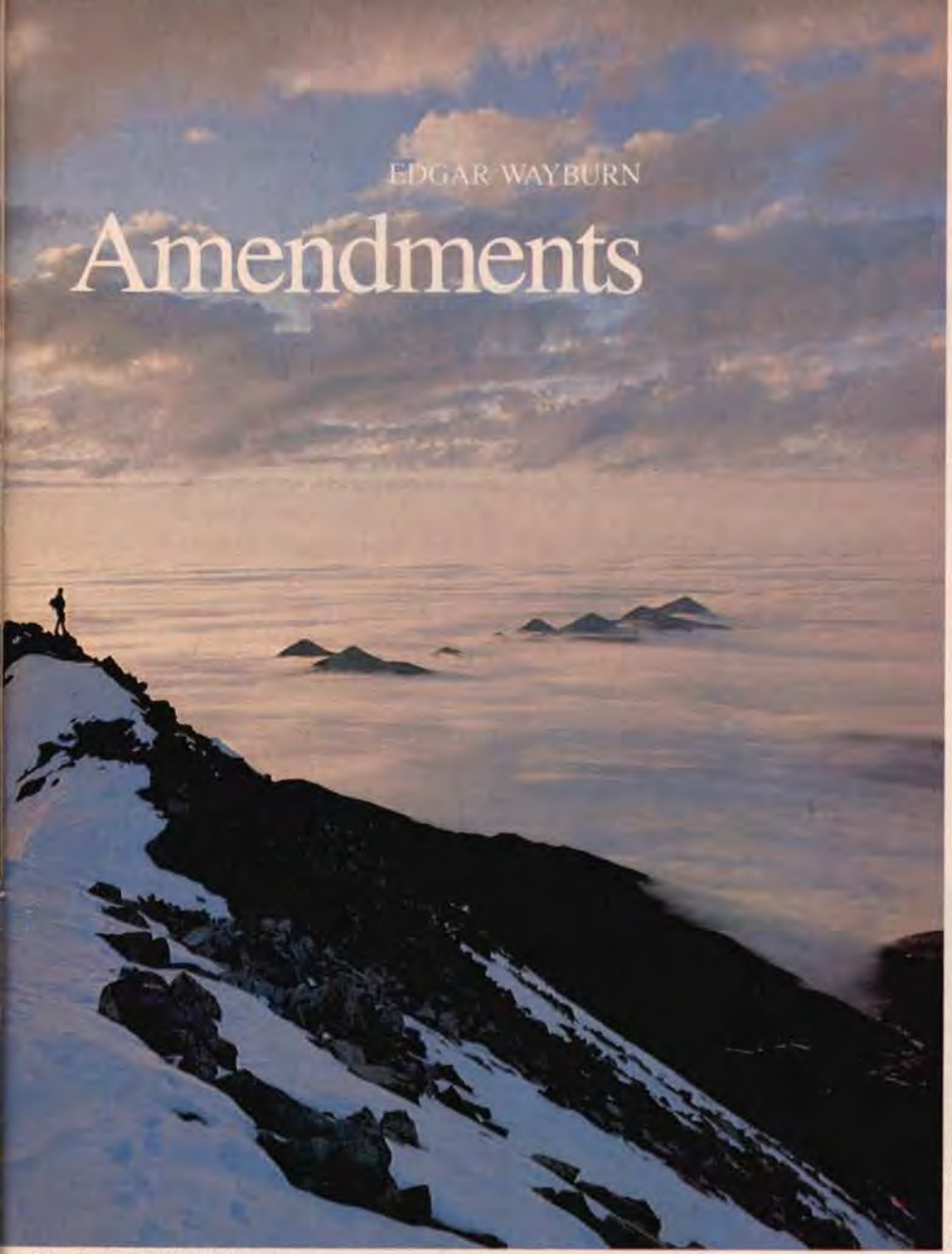
This amendment would make a series of badly needed improvements in the administrative and management policies outlined in the bill. More scenic rivers would also be added to the bill by this amendment.

Grassroots Action Needed

Vested interests, fighting hard against any strengthening amendments, have encouraged the state of Alaska to set aside as much as $10 million in state funds for an intensive lobbying campaign, including advertisements and other efforts to pressure "swing" senators. Advertising will be poured into newspapers in the states of these swing senators, stressing the theme that America needs Alaska's

EDGAR WAYBURN

Amendments



Douglas Arctic Wildlife Range

Clyde H. Smith/AlaskaPhoto

energy resources. "It's one issue that transcends state boundaries," says the state's chief lobbyist. There are a number of important steps conservationists can take.

FIRST, plan to take personal action on a continuing basis:

Write your two senators, outline the problems with the weak Energy Committee bill and make the case for strengthening amendments to make the Senate's bill more like the House-passed Udall-Anderson version. Ask your senators to support these five specific amendments. In addition, ask your senators to oppose further weakening of the Energy Committee bill by voting against any weakening amendments offered by Senator Stevens (R-Alaska) and Senator Gravel (D-Alaska) or other senators.

Evaluate your senators' responses. Call the Alaska Coalition to report your senators' responses and to discuss additional suggestions for effective follow-up. If the senators are noncommittal, write again, expanding on your original correspondence and following up on comments they may have made.

Second, most senators will be in their home states during the Senate's July recess, which begins July 2, until July 21, the date the Senate begins the Alaska lands debates. Start now to line up a meeting.

Arrange for a group of Sierra Club members and other conservationists in your community to hold a series of evening "learning sessions" to study the Alaska issues in preparation for meeting with your senators. Call on the Coalition or the Sierra Club for help in preparing for "learning sessions" and for materials to help create a "briefing book" to summarize your concerns and the issues.

Third, keep up with the Alaska issues. There may be new twists and changes, and there is even a chance the votes could come earlier than July 21. The best information can be obtained by regularly calling the Alaska Coalition Hotline, a 24-hour recording updated daily. For special help, call the Alaska Coalition or the Sierra Club Alaska Campaign desk.

Fourth, the state of Alaska is appropriating millions of dollars for the Senate struggle; watch for the planned grassroots advertising campaign, which will concentrate on newspaper ads. If advertisements appear in your state, it's an indication that the state of Alaska's lobbyists think one or both senators are "swing" votes. React to any ads that appear by visiting editorial writers of the newspapers involved (they may even run editorials based on your information contradicting the state's hyped-up energy arguments), by writing letters to the editor, and by writing letters to your senators taking issue with the state of Alaska's well-financed advertising campaign. A Junior Chamber of Commerce group from Alaska will also be touring the lower 48, explaining the Alaska business viewpoint especially in swing states. Conservationists might want to discuss with the JCC representatives the importance of making sound environmental decisions in Alaska.

KEY CONTACTS

Your senators:
Hon. _____
Senate Office Building
Washington, D.C. 20510

Capitol switchboard: (202) 224-3121

Find your senators' state offices by checking the phone directory, asking at the local library or courthouse, or calling their Washington offices.

Alaska Coalition 24-hour hotline recording: (202) 547-5550

Alaska Coalition:
330 Pennsylvania Avenue, S.E.
Washington, D.C. 20003
(202) 547-8300

Sierra Club Alaska Campaign Desk:
530 Bush Street
San Francisco, CA 94108
(415) 981-8634 (ask for Winky Miller)

A Conversation With John B. Anderson

FRANCES GENDLIN

Frances Gendlin: *My first questions have to do with how important the environmental community is to you and to your political future. Can you tell me how you feel the environmental community fits into your constituency and possibly into a presidential administration?*

John B. Anderson: The conservation community is very important in my political future because, in the first place, its members are very issue-oriented. If there is one thing I have prided myself on in this campaign, it is that I have tried to clarify issues and to address them very specifically, including trying to see how they impact on society and what our responses should be. With respect to solutions, I think I have some new, creative and imaginative ideas that can be used to address the issues.

That universe of potential voters you classify as the environmental community is composed of people who vote, who are well-informed. They are people who probably make their judgments on candidates not on a purely partisan basis. They are more interested in specific stands on very specific issues. I think it would be a very congenial group as far as my kind of candidacy is concerned.

In this campaign, I have maintained that the environment is not an issue that should simply be submerged owing to our concerns about energy, productivity and the economy generally. Some people suggest that we have to trade off environmental concerns if we are going to make any progress in these areas. I don't happen to feel that way. I think environmental values ought to be just as important—and in many cases more important—in our hierarchy of values as some of the things I mentioned.

As someone who would like to believe he has a vision for the future of this country, I have from the outset tried to put in place policies and programs that will answer the needs of the future, and that will not be oriented just on a very short-term basis to meeting an immediate need, without reference to what the consequences might be for future generations.

FG: *You've been a great and active supporter of the Alaska public lands legislation, for which conservationists now are grateful—as I think the whole nation ultimately will be. There are constituencies you've had to alienate to maintain that stand.*

JBA: Yes.

FG: *To what extent might you be willing to alienate other constituencies to gain support from people concerned about the environment? I mean, would you be willing perhaps to forego support from producer interests, such as the timber and oil industries, to get support from conservationists?*

JBA: Yes, I would. I believe that business interests are often shortsighted in their policies. Particularly with respect to the oil industry, and concerning the Georges Bank controversy, for example, it strikes me as shortsighted and foolish to try to wring the last drop of oil out of the crust of the earth to meet an immediate need, without any consideration of all of the other interests that are going to be affected by taking that particular action.

In the case of the Georges Bank, you have the legitimate concern of the multi-billion-dollar oil industry employing, I guess, many thousands of people, and then there is the fishing industry. But even beyond those who are offended by the oil companies' attempt to go in with a minimum of regulation to do exploratory drilling in Georges Bank, I think also of the literally millions of people who would be affected by despoiling that very beautiful area, people for whom recreational values are important, along with economic values.

So, without being a person who wants to follow a strategy of confrontation, I still think it's inevitable to have a clash of some of these competing interests. And you have to take a stand and you have to decide which side you are on. In the process, you have to assume the risk, I believe, of offending some economic interests.

FG: *You talked about tradeoffs a minute ago. Conservationists don't believe that protecting the environment is bad for the economy.*

JBA: No. I realize that argument is made

by the environmental community, and I believe it stands up under critical analysis and scrutiny. Some people who say it doesn't hurt to breathe a little dirty air, or who want to use coal-fired plants without scrubbers seem to forget that the real economic costs will be borne by a future society that will live on a plundered and polluted planet; and these costs will far outweigh, for a long period of time, the economic gains that might be reaped in the short term. You can make a good economic case for protecting the environment.

I've never bought the idea that we're just favoring a very elitist group in our society and nobody else. There's a wide range of legitimate interests that require environmental protection. People who make remarks about backpacking elitists have never stopped to analyze the problem and realize how important the biosphere is to all 225 million Americans.

"Environmentalism encourages new love and reverence and respect for the land."

FG: *I want to talk a bit about energy. Conservationists have been advocating the soft path, with emphasis on conservation and renewable energy sources. What is your view on the overall mix of hard- and soft-path technologies, and the direction that we should pursue in the next twenty years?*
JBA: I have definitely been converted to the view that hard technologies are much more destructive to the environment than the soft-path technologies—renewable forms of energy. In general I believe that is the direction we ought to be moving. That's the one that ought to absorb an increasingly larger and larger share of the monies we devote to research and development and to demonstration projects.

The payoff is there. We sometimes forget the literally billions of dollars that we have spent developing hard technologies—much of it government-sponsored research. Up to this point, we really haven't begun to make any even remotely comparable effort to develop the alternatives of which we speak.

So yes, I am increasingly of the belief that is the direction my administration would want to take.

FG: *That's an important question to us because your voting record has been so mixed.*
JBA: Yes.

FG: *You were a strong advocate of nuclear power.*
JBA: Right.

FG: *The League of Conservation Voters reports that you voted against measures to increase funding for solar energy in 1975, 1976 and 1977. So you see this as a new direction in which you're going?*
JBA: I can't simply take refuge in Emerson's famous saying that consistency is the hobgoblin of little minds. But I realize that some of my ideas have changed. I hope people will accept my assurance that I am a student of these questions. I became a student when I was senior member of the House Ad Hoc Energy Committee several years ago, and I began really to delve into the literature. With the growing awareness and knowledge that I've acquired in these areas, I quite frankly confess to having changed some of my ideas.

Prior to the oil shock of October 1973—I think that, like a lot of other people, I was pretty unconscious, I regret to say, about the developments that were taking place in the energy area. Some of the votes I cast are evidence of that.

But I *have* developed a much sharper awareness, particularly during the last three years, when my involvement with that committee began. Ever since my campaign began—almost a year ago—I have had to brief myself more intensively on these issues, and I have talked to a far wider range of people around the country. These experiences have helped to mold and to shape some opinions that would be at variance with some ideas I once held.

FG: *We know that you have changed your apparent position on nuclear power. But how about on synfuels?*
JBA: I was critical almost instantly of the idea of an $88-billion corporation rushing into an untried and unknown kind of technology that could have harmful effects on the environment. I think my public statements will indicate that I have been very cautious in my approach to the whole question. I've said we cannot ignore 300 years' worth of coal reserves, and we must start putting them to good use, but we must do it in a way that is consistent with environmental values. We simply cannot build huge plants that spew noxious fumes, in the process of converting coal to liquid hydrocarbons and that sort of thing, without environmental concerns. In the last few years people have begun to talk more and more about synthetic fuels, and I have been careful to try to raise those concerns.

FG: *You have favored a 50-cent gas tax rather than gas rationing. Why is that?*
JBA: Fundamentally, I think a gasoline tax will reduce consumption, whereas a rationing plan will just try to distribute what's available. I think we ought to consume less gasoline in this country. If we ever want to get a handle on the energy crisis and the use of imported oil, it's got to start in the transportation sector, which uses 40% of the imported oil. I just think a tax would achieve far more conservation than rationing.

FG: *But aren't taxes like that always regressive?*
JBA: They would be regressive, except that my plan includes cutting the Social Security tax, which is a regressive tax, because it's a flat 6.13% on anybody, no matter how much they make. Everyone pays the same, and I want to cut it in half by using the proceeds from the excise tax to do that. So I think it introduces some fairness to the Social Security. But the real, fundamental purpose is conservation. Really, all the rest of this is incidental. What I really want to do is affect the amount of oil we consume in this country. Every economist I have talked to says this is the best way to do it, and I've talked to a lot of them.

FG: *Why can't we get better mass transit?*
JBA: We certainly can and should. I'm very disappointed with the tentative decision that was made on the disposition of the windfall-profits tax, to have only 15% going to alternative forms of energy and

mass transit. That's a disgrace. I think we ought to do far more. I mean, why is it that as economist Gar Alperovitz, I think, points out, we manufacture 5000 buses a year in this country, yet all of the countries of Western Europe, whose combined GNP is not much more than ours, or about the same, manufacture 100,000? We have just not emphasized the right forms of transportation in this country. We have got to change our lifestyle; we've got to change habits and patterns of consumption. Unfortunately, that involves attitudinal changes, and they are the most difficult to bring about. But we must have more emphasis on more efficient, available and rational forms of transportation, and that's got to include mass transit.

FG: *It always seems that attitudinal changes take a generation, wherein a generation must obey a new law, and then the attitudes change after that.*
JBA: Hopefully, under the stimulus of the crisis we can shorten the time. We can't afford to wait a generation, we simply cannot afford the luxury. It was so simple to go from the clipper ships, wind and sail, to whale oil, and then to go to coal, and then to convert from coal to oil. We did those things gradually, but we can't have that gradual a transition period now because we are under the gun of this dependence on imported oil from the Middle East. It's wrecking our economy, and we simply have to move more quickly to make the transition and to try to get off the oil addiction and on to new and alternative forms of energy within a much shorter time frame. Attitudes will have to change.

FG: *There was a good article in* Harper's *recently that asked why people equate the level of civilization with energy—asking why people think we have to sacrifice in order to cut back on energy. We're using twice as much energy now as we did twenty years ago, but the standard of living is not twice as high.*
JBA: No, and the West Germans have about as high a per-capita income now as we, yet we use twice as much energy per-capita as they do. And industry has shown that there is no inevitable correlation between using more energy and achieving more production. Factories are lowering the input of energy into industrial output, as a result of conservation measures that it has now become economical to undertake. So we can progress; we could have a 30% to 40% savings of energy without reducing our standard of living—if we do it the right way.

FG: *I'd like to talk about the western public lands. A major issue is the struggle between traditional producer interests, such as grazers, timber interests and mining companies, and people seeking a broader approach to public-lands management. Generally, environmentalists believe that the public lands of the West should be managed for long-range benefits rather than for short-term economic gains, and that the federal government should manage land for public and not for private values. What is your position, say, on the Sagebrush Rebellion and other efforts to minimize the federal role in managing public lands in the West?*
JBA: I've heard about the Sagebrush Rebellion, of course, although I'm not as familiar with it as perhaps I should be. It all grows out of the general frustration that people feel today. Because of inflation, there's a new pragmatism. People have turned inward, and they lash out, looking for somebody to blame, and they see the federal government—the big, burgeoning, overgrown, bloated bureaucracy of the federal government that's taxing and regulating us to death. The Sagebrush Rebellion is an outcropping of that general attitude of revolt.

But we have to be careful that we're not swept away. There are discrete actions that can be taken, you can be sure, to reduce the federal bureaucracy. I'm not going to justify everything that's done in the name of government, but on the other hand, I'm not going to say, like one of my opponents for the nomination, that government is a parasite, that government lives off the people. I believe, with Edmund Burke, that government is a contrivance of human wisdom designed to solve human problems. That is a much more salutary definition of government, I think, than the parasitic definition of some of these anti-government types.

So sure, maybe you can simplify regulation, maybe you can issue fewer regulations, but to translate that into an abdication of responsibility on the part of the federal government to represent the public interest, rather than surrendering to narrow economic interests that want to exploit for personal gain resources that belong to the nation—not only to this generation, but, pray God, to many generations to follow—I think is a wrong way to express the feeling that maybe government has become too intrusive.

I hope very much that we can maintain our perspective. I would agree that public lands are not simply for private exploitation. They are what the term implies, something to be kept and managed in a way that is compatible with the interests of all the people.

FG: *As the private timberlands of the West become logged out, more and more pressure has come from the timber industry to cut more heavily in the national forests. Have you any opinion on the role of the national forests and the overall timber supply?*
JBA: I'm not an expert on forest management, but I do know that we are currently exporting logs to Japan. If we are really so short of lumber in this country that we're driving up the price of plywood and the cost of housing, perhaps we should consider conserving that natural resource, even at the expense of profitable sales of logs to Japan.

But I'm not a protectionist. I don't believe in export bans. Yet, if it's so critical that we have to choose between that and going in and chopping the national forests, there's no doubt in my mind that we ought to do the former and not the latter.

FG: *Some people in Congress suggested that Congress ought to preclude the consideration of lands for wilderness where the Forest Service has opposed wilderness designation.*
JBA: No, I don't agree. My tendency as a rational person is to rely on expert judgment and to try to acquire a proper data base before I make a decision; so, with all due respect to the Forest Service, I don't want to make just one agency of government the supreme and only arbiter of a decision of that kind. I think we need a little more participatory democracy in an area as important as the preservation of an important and substantial part of the environment, namely, the national forests.

FG: *Are you talking about the RARE-II process?*

JBA: Yes. There's always the danger of an almost incestuous relationship that sometimes grows up between agencies of government that have to deal rather exclusively with one element of society—in this case, it would be the timber industry. I think that it's a pretty good idea to factor into the equation a broader range of opinion. Broader interests ought to be represented in the preservation of national forests.

FG: *What is your position on Congressman Foley's bill, on release legislation which says that anything that is not wilderness now or under wilderness designation soon will never be so designated?*

JBA: Oh no. If we had made a decision of that kind a few years ago, just think of the vast areas that would be lost to future generations. We've got to have a reverence for the land that extends beyond our own time. We've got to have enough vision to understand that this is a young country, that we could exhaust its resources very quickly—to the detriment of the generations that will follow us.

FG: *In the last ten years, major efforts have been made to establish a framework of environmental regulations requiring industry and other economic sectors to operate in an environmentally sound fashion. In the last several years, a major assault has been made on this framework, claiming that such regulations represent an excessive intrusion of government, costing too much and threatening the nation's economy. What is your general feeling about the overall level and effectiveness of environmental regulation at the moment?*

JBA: We hear those complaints, particularly from the utility industries that don't like air-quality standards requiring the installation of expensive scrubbers. We hear those complaints from people who want to exploit public lands, not only for timber, but also for oil and other minerals. We hear from those companies that the environment is a kind of luxury, one that can be given up. I don't agree with that. I think that is a very short-sighted, myopic view of the intrinsic importance of environmental protection.

There may be excessive regulations in some areas, but as I look at the environment, I think that we have to accept the economic costs. Sure, it costs something. Anything worthwhile is going to cost something. The air we breathe is not free, really, for it costs something to maintain its purity. It costs something to retain the purity of water. It costs something to retain resources that could otherwise be depleted. But it depends on your value system. The older I get, the more appreciation I have of what a short span I occupy on this planet, and how much more concerned I ought to be that I make some contribution to a future that will be brighter and happier for future people than it's even been for me.

You've got to have that kind of almost-theology when it comes to the environment, to accept what many people are unwilling to accept—that these goals are important and that if you want a rich and abundant life, you've got to be willing to accept the costs—and there is some cost. Let's be honest about it.

It is a price I think is worth paying, to believe in the basic values of protecting and preserving the land against pollution and against exhaustion and depletion of irreplaceable, nonrenewable resources.

FG: *At the beginning of the conversation, I mentioned that conservationists don't believe there is a tradeoff between the economy and environmental preservation. Everything costs, but these things will be made up.*

JBA: Yes, that's true. But, you see, in this country, we act on everything in terms of short-range interests. Congressmen vote for or against something because they calculate what they do in terms of its effect within about two years, until the next election. Well, we've got to have more people who are willing to look at the problems of this kind as a larger concept and in a longer time frame. Then we will recognize, as you have pointed out, the economic benefits that can flow from wise, sane conservation policy. But it's going to cost something now, and the ultimate payoff will not come immediately; some people are just so myopic that they just look at the short-run costs, and they don't see the longer-term economic advantage to be derived. That's also why we make a lot of foolish investment decisions. Because of inflation, it is sometimes more economically advantageous in the short run to invest in something that can produce a quick payoff than to make a sounder, more basic investment decision that over a longer period of time will work out financially and be profitable.

Even inflation has taught us to cheat ourselves of the future.

FG: *I have one more question about voting. You usually vote very well on waste-*

ful water projects. But why did you support the Duncan amendment to override the Endangered Species Act to fill the Tellico Dam?

JBA: I made up for that in the vote following that one. It was an amendment on the final conference report, by Jim Jeffries of Vermont. I wish you would check that. I think you would find out that in the final vote, I conceded that the arguments being advanced against the dam were superior. On that final bill I did vote against the Tellico Dam.

FG: *Why do you think the President signed it? His own blue-ribbon commission said it was not economical. It had nothing to do with the snail darter.*

JBA: I think probably the snail-darter argument—which was a red herring, really—may have influenced my original vote. But my final position was based on the fact that the dam was not cost-effective. This argument alone was reason enough to vote against completing the project. It simply was not economical. But why the President did what he did—I don't know. Probably it was a little political in his judgment. It was not a popular vote.

FG: *No, it certainly wasn't.*

JBA: Recently, a woman was questioning me about nuclear power. I said that I don't apologize if I've changed my mind on questions where new evidence comes to light, and I become convinced that I've been following the wrong track, or I read a new report and new evidence comes to hand.

Some of these issues are very complex. The knowledge required to make a correct decision is very arcane, and sometimes you don't act with as much information as you should have. On nuclear power, I really have changed a lot of ideas of mine on that subject because I have gotten into the subject more and more with the Kemeny Commission and the Rogovin Task Force reports.

FG: *Do you have anything you'd like to say to our readers that we haven't covered?*

JBA: Well, let me thank you for this invitation that I can scarcely refuse. Going back to President Carter's July 15 speech, I don't agree with him as to whether or not there is a crisis of the spirit that is pulling our country down.

We do need a new spirit in this country, in the sense that we should turn away from some of the excessively materialistic values that have shaped our culture. But that doesn't mean we should retreat

into some simple pastoral age where we renounce every creature comfort that our society has supplied us with.

I do believe the great value of environmentalism is that it is fundamentally one of the most healthy influences in encouraging the development of a new ethos in our society, one that ultimately will make all of us a lot healthier and happier than only materialistic values.

Environmentalism encourages new love and reverence and respect for the land and for our natural heritage and resources. And it is, more than any other movement I can think of, capable of transforming the whole spirit of our society—and doing so in a very positive and beneficial way—because its goals are not selfish. I think, as I say, particularly in this inflationary age we are going through, there is a new selfishness and a new privatism that I find profoundly disturbing. Everyone is on a treadmill, and they think they're running faster and faster to stay in the same place, and the only goal that really counts any more is whether you can make enough money to keep up the payments on a car or some other material possession.

FG: *How do we get out of this?*

JBA: It's an educational process. Only as people come to know organizations like yours that are really devoted to spreading information about what kind of a society we could be, will we build a value system that does not exalt the material over the spiritual. That kind of educational process is going on in this country, and I think it is taking root, particularly in the minds of young people. Those are my most perceptive audiences, when I talk about cutting down on gasoline, and how we've got to change our whole concept of a society built around the private motorcar. They are willing, I think, to find a different system of values.

So that's the parting message. You cannot become weary in well-doing; even though it's a slow process, I think more and more people are beginning to understand that there are some pretty basic, fundamental and important things that are capable of bringing great joy and of giving a new appreciation of what a beautiful land this can be if we restrain some of our more greedy impulses in this disposable, wasteful kind of society we have created. There has to be something more to life than simply trying to squeeze out every material advantage we can acquire during the brief span of years that we have.

FG: *Thank you.* □

Disabled People Want Wilderness, Too

Going It Together

Sue Belanger/B.O.R.P.

Courtesy of Environmental Traveling Companions

KERRY A. DRAGER

BOB AND DENNIS are white-water enthusiasts from way back. They often run the Stanislaus River in California's Sierra Nevada. Bob is physically disabled; his friend Dennis is blind but otherwise ablebodied. So Dennis does the rowing and Bob sits behind and gives directions, and when they go down the river together, it looks like a ballet.

Such scenes are becoming more common these days. Until recently, park agencies geared their programs and trails to the "typical" visitor, who invaribly had full use of physical and mental faculties. As a result, quite a few people—the disabled—were left out.

William J. Whalen, director of the National Park Service, explains: "The traditional role of the National Park Service has been to stand at the park gate and welcome visitors. Since a lot of people came, we were not overly concerned about those who didn't. Today, we are becoming acutely aware of those who don't come—or who can't. Among them are the economically, the socially and the physically disadvantaged."

Since Whalen wrote that in 1978, more and more agencies—federal, state and local—are at work providing opportunities for the disabled, who desire outdoor experiences just as much and perhaps more than the physically fit. And various private organizations are helping the disabled benefit from this new sensitivity.

The Sierra Club's Inner City Outings (ICO) program, for example, sponsors trips for disadvantaged people—mostly urban youths, although ICO works with many special-needs groups. The program has arranged trips for both blind and deaf hikers, and is developing more such outings.

ICO often works with Environmental Traveling Companions (ETC) of San Francisco, which sponsors backpacking and skiing trips and a lot of river rafting with the disabled. Why the emphasis on rafting? Because, ETC's Rick Reynolds explains, it's a good way for people with physical disabilities to get into the wilderness with maximum independence.

River trips, though, do take special planning. Deaf rafters, for example, need both a guide and an interpreter. The paddle guide sits in the back of the raft and the interpreter in front. The guide gives directions to the interpreter, who in turn relays them to the deaf paddlers.

"We do our trips a little differently than a lot of other groups," Reynolds said. "We really involve everyone. It's not us taking them on a trip, we all do it together; otherwise, why go? They help plan the trip, and once we're there, they do a lot of the work. It's designed to help some of them eventually travel independently."

The Stanislaus is a favorite river with the disabled. It's within a few hours' drive of millions in north central California, it's not overly dangerous or difficult, and it has convenient overnight campgrounds.

Many disabled persons are involved in the fight to preserve a stretch of the Stanislaus as a white-water river. A dam has been built, but so far its reservoir has not been allowed to fill completely. Need for the water has not been proven. No other river in that region is as accessible. The Stanislaus affords one of the few ways disabled people can be totally away from civilization without using paved pathways or other adaptive measures.

Groups throughout the nation sponsor programs similar to those of ETC. Bedford, New Hampshire, for example, has Camp Allen. Its activities include camping, nature walks, swamp walks, pond study, swimming and many more. About 75 disabled people of all ages attend Camp Allen at a time, about half of them in wheelchairs.

And in Minnesota, the Outward Bound School sponsors courses for the disabled. There the main mode of travel is canoeing. The school establishes a home base

Kerry Driver

Sue Belanger/B.O.R.P.

Disabled people enjoy a wide variety of outdoors activities. ***From left:*** *river-running, hiking, bird-watching and skiing.*

and, nearby, offers rock climbing, white-water canoeing and a rope course. Other activities are camping, hiking, backpacking, map and compass work and swimming.

And do disabled participants enjoy the course?

"The Outward Bound course is not always enjoyable," says Susan Kaplan, coordinator for disabled persons. "It can be hard, but I think they have a sense of accomplishment after it's completed that isn't readily available in everyday life. And the course gives the disabled a chance to learn that they can be outdoors on their own, doing what some have said they couldn't do."

At Outward Bound, disabled students are not segregated from the others. Groups of eight—four ablebodied and four disabled—participate together. The reason, according to an Outward Bound policy statement, is:

> "We believe that when the ablebodied and the physically disabled share in stress and adversity, three things happen. First, it becomes clear that every person has a disability—it's just that some are more obvious than others. Second, it demonstrates that a disability is frequently not as limiting as a person assumes it is. And third, both the ablebodied and the disabled recognize that they have more in common with each other when emphasis is placed on abilities rather than disabilities. The question, then, is not whether you can or cannot do it, but whether you are willing to try."

Another group, Berkeley Outreach Recreation Program, Inc. (BORP), originated because few of that city's programs were available to disabled people. BORP is designed to offer innovative kinds of recreation programs. For many years, recreation for the disabled meant only crafts, which participants came to loathe. So BORP concentrates on active events.

On BORP ski trips, one woman uses a walker with skis attached. She can ski and steer it and, according to one BORP member, gets up quite a lot of steam going downhill.

More common—for amputees or people with partial paralysis—are "outriggers," also known as Canadian crutches. With short skis attached, they provide support and can be steered. Another device, the "pulk," similar to a toboggan, has been developed for paraplegics. For blind skiers, a guide is necessary. A sighted person skis behind and gives directions and warnings of bumps, trees and other skiers.

BORP participants include their friends on outings, so not all people on the trips are disabled, a situation that's encouraged. Desegregation of this sort is a goal of many parks, because most disabled visitors neither need nor want exclusive trails.

Hiking trails designated for the disabled frequently are paved for 100 to 200 yards around, and are essentially foolproof. But, as Rick Reynolds says, who wants to walk a hundred yards and look at a few signs? Most people want, within the limits of their capabilities, to take some chances. They don't want to be catered to. They don't want to be segregated on special trails—that's patronizing, and most disabled hikers wouldn't be caught participating in such an affair. Yet solutions are not really hard to come by.

Nelson W. Chadwick, a Maryland Park Service naturalist, recommends providing trails that can be used by the handicapped without special arrangements. The qualification here is subtle. Because disabled park visitors do not want to be confined to special paths, some trails should be designed to eliminate barriers to those with specific handicaps, remain open to general use.

For example, Nimitz Way, a paved, four-mile stretch of a former military road now part of the Skyline National Recreation Trails across the bay from San Francisco, is often used by disabled people. A park-district resource analyst termed it a multi-use trail, adapted by replacing half the pavement with gravel as a surface for horses and hikers. The solid half is for bicycles and the disabled. But

it was not specifically designated a trail for the disabled.

Albuquerque, New Mexico, has Paseo del Bosque (Pass in the Forest) Bicycle Trail, also a national recreation trail. The five-mile path—for foot, bicycle and wheelchair traffic—follows an irrigation channel along the east side of the Rio Grande. Separated from the river by forest, the trail passes several parks near the downtown area, but it also meanders into the more rural North Valley. The area supports many birds and small mammals, even occasional roadrunners, and, because the trail is accessible at only a few points, it seems isolated and far from the urban center.

In Ohio, the Cleveland Metroparks District sponsors "trails for all people, regardless of ability or disability." Paths there can accommodate children, mothers with strollers, senior citizens, people in wheelchairs or on crutches, the visually impaired and those with hearing disabilities. One path, the Rocky River Woodland Trail, follows the river through an area rich in plant and animal life and in geologic history. Near the trail's interpretive center is a cliff of Devonian shale, once deposited as mud in the bottom of a great sea where armored fish and sharks swam more than 300 million years ago.

Jacque Beechel, who wrote "Interpretation for Handicapped Persons" for the National Park Service's Northwest Region, reports that trails already prepared for wheelchairs are relatively few. There are, however, many more trails that would be usable by the disabled with minimum alteration.

Some trails, for example, are wide and flat, and even long enough, but their length requires accessible water and restrooms.

Another problem with long trails is financial: surfacing suitable for wheelchairs is not within the limits of most park budgets. However, portions of long trails can be designed for use by the disabled, a strategy that was used in construction of the Tollantusky Trail. Named for a distinguished chief of the Arkansas Cherokee Indians, it follows the Arkansas River in Cadron Settlement Park, about five miles west of Conway.

According to Doug Shields of Inner City Outings, the trails of many state park systems can already be used by the disabled; the state trails tend to be wide enough—a lot of people tramp them—and they are usually well maintained. A person in a wheelchair can easily follow quite a number of them.

Many such park-system trails are

within an hour's drive of California's Berkeley-Oakland area, only a few of them built specifically for the disabled. They're mostly level and they're in scenic regions where any hiker would like to travel. Minor modifications have been made, of course, where necessary—tree roots and other small barriers removed, and sections evened out. Once these small changes are made, it's just a question of identifying and publicizing the routes.

A group calling itself Sequoya Challenge has created an unusual trail suitable for the disabled by converting an old mining ditch in the Sierra Nevada foothills. The ditch, which carried water to hydraulic mines in the 1800s, is now a hard-packed dirt trail a little more than a mile long. It was designed primarily by naturalist John Olmsted.

For the visually impaired, trails present problems not encountered by those in wheelchairs. Braille signs and recorded-message stations have often been vandalized and guide ropes relocated, but such highly adapted trails are often neither needed nor wanted in any case. The trails enjoyed most by visually impaired people are those left in as natural a state as possible; if a trail is interesting to all the senses of a sighted person, it will be interesting to the blind.

The outdoors is not, after all, only visually stimulating. A blind person, too, feels the slopes of the terrain and takes in the sounds, the heat and the smells. However, people with impaired vision may find unchallenging the flat trails where wheelchairs are most easily maneuvered.

Joe McGeni/Peninsula Times Tribune

Running the Stanislaus, in Northern California: Ann Regan, a teacher with multiple sclerosis, and Mark Dubois, head of Friends of the River.

The answer is to provide trails that vary in type and magnitude of difficulty. One sort would be level with a fairly smooth surface to accommodate wheelchairs—this would also suit some people with temporary disabilities, some senior citizens, the mentally retarded, visitors with small children and anyone desiring an "easy" trail. Another sort of trail would cross varying terrain, minimally altered to eliminate obvious hazards.

Nina Bunin, a planner for the Lake Central Region of the Heritage Conservation and Recreation Service (formerly known as the Bureau of Outdoor Recreation), says: "The HCRS is the banker for the Land and Water Conservation Fund, which provides matching funds for almost all the outdoor recreation facilities in the country. So we're in a position to influence what gets built and how. Another influence now is the '504' regulations being completed by the Department of the Interior, which are like a Bill of Rights for handicapped people." (Section 504 of the 1973 Rehabilitation Act prohibits discrimination as evidenced by a lack of equal programs.)

"What we want to do," says Bunin, "is to make clear to the park and rec directors all over the country—the recipients of our money—that designing a facility so it will be accessible is as easy and cheap as designing it inaccessible. All you have to do is to be aware . . . and to draw the line this way instead of that way. And, for the most part, it's not going to cost anything extra."

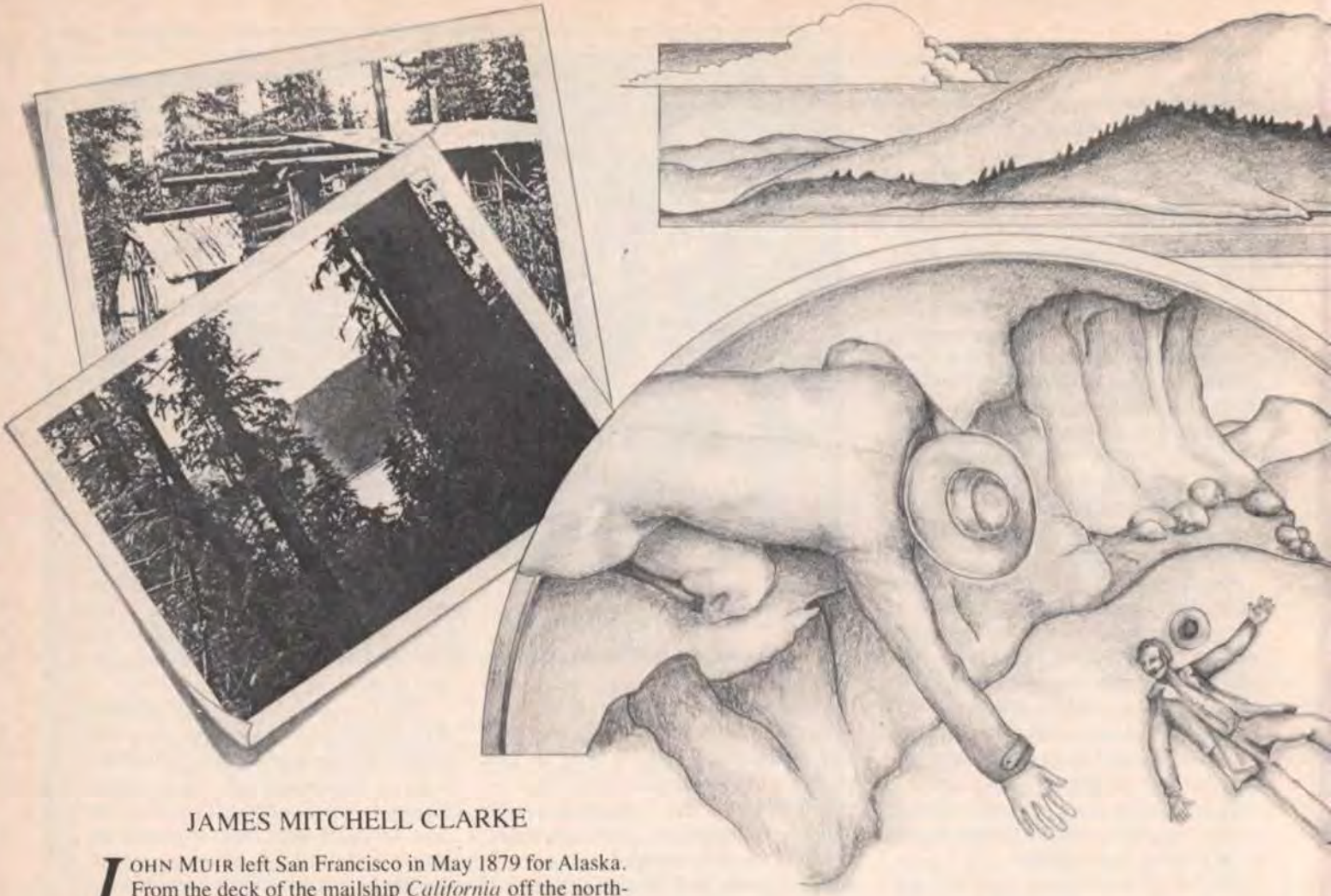
This new direction in park planning does not mean plans are afoot to pave the Pacific Crest or Appalachian trails. When trails of varying difficulty are available, hikers, disabled or not, will choose those best suited to their own requirements. But, whether hiking, skiing or rafting, the disabled do want the chance to know nature, too. □

Kerry A. Drager is a writer and photographer specializing in outdoor recreation.

More Information on Resources for the Disabled

Here are a few sources of information on trails and programs for the disabled:

- The Heritage Conservation and Recreation Service (formerly the Bureau of Outdoor Recreation) in the U.S. Department of the Interior: Ask for information from the coordinator of recreation for the handicapped at the closest regional office, or in Washington (Heritage Conservation and Recreation Service, U.S. Department of the Interior, Washington, D.C. 20240).
- The National Park Service: Call or write nearby parks. A 200-page book, "Access National Parks: A Guide for Handicapped Visitors," describes the accessibility of facilities in the areas of the National Park System. The book is available for $3.50 from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402, or by writing to ACCESS, Consumer Information Center, Pueblo, CO 81009. Many libraries have the book; it is available as well in Braille and as a recorded talking book, in libraries throughout the country. For the one nearest you, write the Division for the Blind and Physically Handicapped, Library of Congress, 1291 Taylor St. NW, Washington, D.C. 20542.
- Other public agencies: Local and state parks and recreation departments have programs suitable for the disabled. Also, U.S. Forest Service offices can give information about trails in national forests.
- Private organizations: Many local chapters of "traditional" organizations, such as the Muscular Dystrophy Association and the Easter Seal Society, sponsor outdoor programs. Various wilderness outings groups also have programs for the disabled. Even the Boy Scouts and Girl Scouts can accommodate disabled young men and women.
- The American Coalition of Citizens with Disabilities is a nationwide "umbrella" association of 86 national, state and local groups of disabled people. ACCD was set up to help safeguard the civil and human rights of Americans with disabilities. For information on activities in your area, write the American Coalition of Citizens with Disabilities, 1200 15th St. NW, Suite 201, Washington, D.C. 20005.



Adventure on

JAMES MITCHELL CLARKE

JOHN MUIR left San Francisco in May 1879 for Alaska. From the deck of the mailship *California* off the northwestern coast, he studied the forests and the evidence of long-vanished glaciers with intense interest—but for Muir the trip really began north of Vancouver. There the ship entered the macramé border of islands stretching along the shore to Glacier Bay, where the Alaskan coast swings westward.

It was not long before Muir sighted living glaciers in the mainland mountains. Even some of the larger islands had 5000-foot peaks with canyons descending from rounded, shell-like basins—cirques—that he thought of as "glacier wombs." Muir's theories of glacial development—unorthodox for his time—evolved from his intensive observations of their paths; yet even the glaciers were not the region's strongest draw for him. "Never before this," Muir wrote, "had I been embosomed in scenery so hopelessly beyond description."

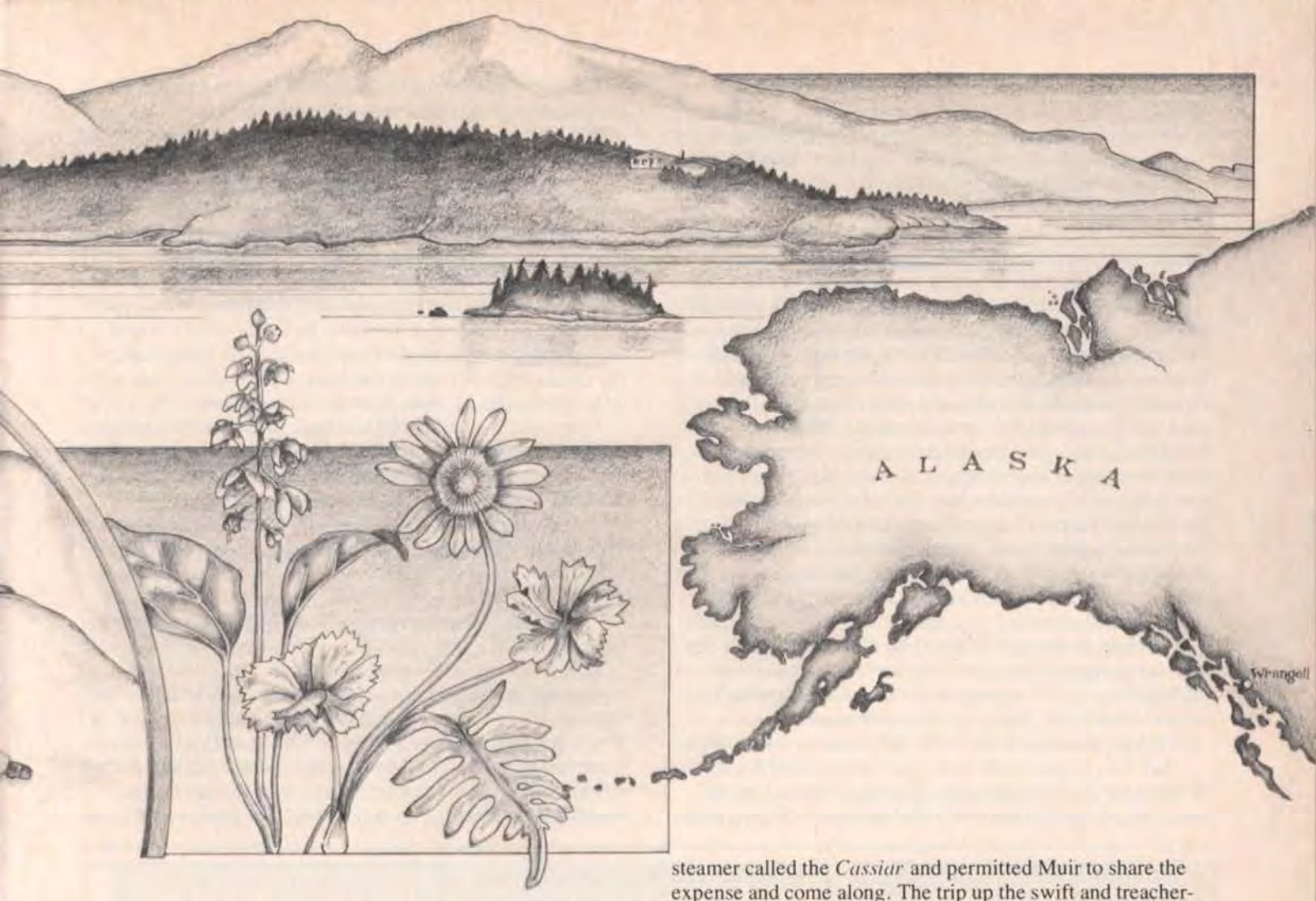
Part of the region's magic, Muir realized, was in the never-quite-ending days. For three hours each night the sun disappeared, yet the horizon remained colorful, even when the gentle rain of Alaskan summer fell. At times the sunset-sunrise light on the saturated air created a translucent, hazy, wine-purple atmosphere in which the islands seemed to float half-dissolved.

Tiny coastal islands, forested to the land's end, seemed like planters in which trees were set out for pure ornament, and on some slightly larger islands trees and rocks were so aesthetically situated that it seemed impossible they had not been put there by design.

There was quite a difference between Muir's conception of such a design, however, and that of three of his fellow voyagers on the *California*. The three were doctors of divinity—major powers in the Presbyterian missionary establishment, which was itself a power in many lands. The ship was not large enough for Muir and the missionary group to avoid each other completely—though their mutual disapproval was hearty. When they landed at Wrangell in southeastern Alaska, it was with considerable stiffness that the divines introduced Muir to S. Hall Young, the local missionary. He was a young fellow, small in stature but physically tough and of an adventurous, realistic spirit well adapted to understanding both the local Indians and the miners. He took to Muir immediately but, without riling his superiors, there was nothing Young could do to make Muir's introduction to Wrangell more agreeable.

Muir walked the two mirey streets, avoiding the hog wallows and stumps (for Wrangell had never possessed any wheeled vehicles that required clear streets). He could find neither lodgings nor good news. The interior of Alaska, people told him, was impassable; the Indians were unfriendly and treacherous. Muir passed Indian women selling berries; old crones with faces blackened except for rings around their

Illustration by Adriann Dinihanian



Glenora Peak

blankly staring eyes; girls in the brightest calicos and ribbons Vancouver and Seattle could supply; children dressed down to their waists and no farther.

Wrangell was strung out along a mile of the shore of a little cove. From the town, small stern-wheel steamers carried miners and supplies 150 miles up the Stickeen River. Then the miners, on foot, and the supplies, loaded on packtrains and in canoes, traveled another 100 miles to the recently discovered Cassiar gold mines.

The Stickeen Indians lived at the two ends of the town; about 50 Caucasians, most of them merchants, lived in the center. The Stickeens were excellent builders. Each of their structures conformed to the peculiarities of rocks that underlay the boggy ground—the result was that no two houses faced in precisely the same direction or followed the same lines.

Eventually one of the visiting missionaries kindly offered to let Muir sleep in a carpenter shop, and a few days later there arose an opportunity for exploring—the visiting mission dignitaries and Hall Young chartered a small river steamer called the *Cassiar* and permitted Muir to share the expense and come along. The trip up the swift and treacherous Stickeen was a delight to Muir, for by the time they reached Telegraph Creek, the extreme limit of navigation at high water, he had seen more than 100 glaciers adorning the walls of the great canyon or emerging from tributaries.

During the ship's return, the captain tied up shortly after noon at a Hudson's Bay Company station near the foot of Glenora Peak. He explained to his passengers at lunch that a gale blowing from the sea made the narrows below too dangerous to navigate. "Amuse yourselves," he said.

Friendship between Muir and Hall Young had developed rapidly into intimate understanding, and Muir now gave Young a look that plainly said, "Let's go climb a mountain!"

Young slipped away from the missionaries like a boy planning to play hookey and met Muir behind the pilot house. "Where is it?" he asked.

Muir pointed up to Glenora Peak, a clump of jagged summits in the sky above them. "It must surely be one of the most magnificent viewpoints in the world," he said.

"How far to the highest point?" Young asked.

"Eight or ten miles."

"How high?"

"Eight or ten thousand feet," said Muir, and went on to warn that they would be making, in an afternoon and part of the night, a climb an experienced mountaineer might hesitate to make in a full day of sun. Muir did not urge Young to come along; Muir could not, he said, be responsible for anything that happened. The missionary, who was a strong hiker and had done considerable mountaineering, told Muir not to worry.

They were somewhat delayed in starting. To cover his

absence, Young arranged for a band of Indians fishing for salmon nearby to come to a *hayu wawa*—a big talk. They would keep the dignitaries happy with their appearance of "simple faith and child-like docility" and with high-flown compliments intended to gain material favors from church and government.

"Take off your coat," Muir said when Young rejoined him, and, handing over a couple of sea biscuits, "Here's your dinner."

By the time they had wallowed and clambered through an area where fallen trees lay concealed under thick brush, then forced a path among dwarf evergreens that seemed to Hall Young to be guarding the steep slope like angry gnomes, Muir was convinced that his companion could make the mountain top. He not only ceased to worry about Young, he all but forgot him—for beyond the "gnomes" they came to an alpine meadow more luxuriant than any Hall Young had ever imagined. One could scarcely see the ground for the flowers. Every form of natural garden loveliness seemed represented—from daisies and campanulas to Muir's favorite, the cassiope, with its little pink and white bells shaped like lilies of the valley, filling the air with a perfume as delicate as their appearance.

Inhibitions dropped from Muir like discarded clothing. He ran from clump to clump, kneeling beside the flowers and talking to them in an outlandish mixture of endearments and scientific terms that Young scarcely understood.

"Ah! my blue-eyed darlin', little did I think to see you here . . . And who might you be with your wonder look? Is it possible you can be [two Latin polysyllables]? You're lost, my dear; you belong in Tennessee." And he kept pulling up plants by the roots and stuffing them, dirt and all, first into his pockets, then inside his shirt, and finally into Hall Young's pockets until they both had roots and bulbs and blossoms sticking out all over them like mythical, medieval nature men.

Young tagged along after Muir, asking naive questions and quarreling with himself for having neglected botany in favor of the "more important" studies of language and metaphysics. He readily saw beneath Muir's childlike enthusiasm a foundation of scientific knowledge and a deep, disciplined urge to understand nature's forms and processes; Muir, in his deep and genuine love of the earth, had achieved a spiritual exaltation that set him apart from all men Hall Young had ever known. Muir's baby talk to the flowers was no more than a man whistling as he went about the work he loved.

Young's hero-worship of Muir began that afternoon in the mountain meadow. It was to build to a kind of idolatry as the day wore on. They were on the southwest slope of the mountain with the sun looking on them from a cloudless sky when, rounding a spur of rock, they found themselves in shadow. Muir looked up, startled. "I was forgetting," he said. "We'll have to hurry now or we'll miss it."

"What?"

"The jewel of the day—the sunset!" and Muir took off up the mountain at a lope.

Muir loved sunsets as a connoisseur, but his underlying motive was to study the panorama of mountains near the Stickeen River, so as to decide where he wanted to go and how to get there. He now climbed with a speed and economy of motion Hall Young had never seen or imagined, attacking jagged cliffs with only a momentary pause to discover the easiest route, threading his way around and across lethal cre-

vasses in a blue-ice glacier. Young longed for a rest, for his strength was taxed to the limit, but his pride forced him to keep up with Muir uncomplainingly.

At the head of the glacier they halted briefly while Muir studied a 1000-foot cliff they would have to climb to reach the summit. The face was wildly fractured slate, overhanging in some places, vertical in others, and everywhere too steep for footing. Young would have turned back in frustration, but Muir simply said, "We'll have to climb carefully here," and started up by the route his experienced eye told him was feasible.

Compared to any climber Young had ever seen, Muir was as naturally superior as a mountain sheep is to a domestic woolly. He climbed with no visible pause, with arms, legs, thighs, knees and even his chin supplementing his feet and hands. His lean, supple body curved itself around outthrust rock bosses, flattened against sheer faces where he worked sideways with fingers and toes digging into tiny niches and clinging to little knobs. Muir moved so steadily that sheer momentum helped to overcome gravity. To Hall Young he seemed weightless.

Young kept his eyes on Muir as much as he could, and he strove to keep up with him. He had complete confidence that Muir's route was the best way up—certain the fragile knobs and shelves Muir trusted his weight to would bear Young's 120 pounds, for Muir weighed 150. But the smaller man had a handicap he had neglected to tell Muir about for fear of being left behind. As a teenager, Young had enjoyed breaking colts—which is a good way to get thrown and damaged. Both his shoulders had been dislocated; the left would no longer support his weight. As they neared the top of the cliff and he pulled himself up some precipitous stretches, he now and again felt the arm bone move slightly away from the socket. His strength was ebbing; his breath came now in painful gasps and his muscles began to tremble. Yet, not daring to lose sight of Muir, Young pushed himself onward with reckless desperation, not clearly seeing where he placed his feet and hands.

After climbing 950 feet of cliff they came to a shelf about two feet wide that corkscrewed around the edge. Here Muir paused for a brief rest, and Hall Young, gasping beside him, was treated to the most magnificent view of his life. They stood on the rounded neck of the mountain looking southwest across a rolling upland that blazed with acres of crimson fireweed set off by patches of dark-blue lupine and darker evergreens; the Stickeen was a silver line crossing this panorama, broken here and there by the variegated green of the trees along its banks. The horizon—three quarters of a full circle—was rimmed with helmet-shaped peaks, some snow-powdered, all wearing white-glacier collars. Thirty or 40 lakes gleamed from between long, rounded hills that resembled sleeping human forms.

"The sunset!" Muir exclaimed suddenly, "we must have the whole horizon!" and he began to lope along the narrow shelf. Young followed as fast as he could, but fell farther and farther behind—Muir was out of sight when Young came to a notch about five feet wide. The notch was filled to within four feet of the cliff top with pieces of disintegrating shale, and it extended down twelve feet, to where the face dropped off to the glacier below.

Young could have easily jumped across had he not been exhausted. He heard Muir shout something, but could not un-

derstand. Desperate to catch up, aiming for a shell-shaped boulder sticking out of the shale, he leaped. As his foot struck, the boulder disappeared into the delicately poised mass.

Young whirled to fall face down, feet toward the drop-off, and thrust out his arms to brace against the walls of the chute, for he knew the shale would slide under his weight. But when his hands struck, his arms were wrenched so violently that both jerked from their sockets and lay useless and agonizingly painful above his head.

Young dug in with his toes and chin. The shale slid slowly, carrying him down inch by inexorable inch, and then there was nothing for his toes to press against. Stones rattled past him or piled up against his head.

He had no hope of escape. Yet after the first wild moment of panic he felt no fear. Thoughts great and trivial whirled through his head: anguish for his wife, who would bear their first child within weeks; fury at the insurance companies that had refused him any policy; worry over the fate of his Indian converts on the islands; memories; speculations as to how long he would be in the air before he struck the glacier below; a wish that Muir would come in time to take a message to his wife.

A voice spoke near his head. "My God!" Muir said. "Grab that rock, man! Just by your right hand."

Young was afraid to take a deep breath. He mumbled weakly, "My arms are out."

When Muir spoke again, his voice was cheerful, confident, unexcited. "I'm going to get you out of this. I'll have to come down to you from the other side. Keep cool!" and he went off whistling "The Blue Bells of Scotland."

His encouraging sounds—whistling, singing, calling out—diminished but never ceased while Young suppressed as best he could the automatic twitching of his muscles and endured the sickening pain in his shoulders. Yet he was slipping, slipping until it seemed that the weight of his own legs must drag him over the brink.

He heard Muir's voice close by and a little below him. "Hold steady. I'll have to swing you out over the cliff."

With only gravel before his eyes, Young felt Muir's hand get a hold on the waistband of his pants and gather in his shirt and vest. Then he was suddenly slid over the edge and found himself face down, staring at the glacier 1000 feet below. Gradually he was tipped upward until his feet touched the cliff.

"Work downward with your feet," Muir said, and drew Young close by crooking an arm. As the man's head came past, Muir used his teeth to catch Young's collar. Young's feet found the little ledge on which Muir also had a toe-hold. He turned his head to see that Muir's left hand held onto a spur of rock above, but his body bent sidewise to maintain the bite on Young's collar, his right hand still holding Young's clothing. "I'll have to let go of you," Muir mumbled. "I need both hands here. Climb upward with your feet!"

The niches Young could find thus blindly were few. He never knew how Muir managed to claw up twelve feet of sheer rock face with Young's weight, held by Muir's teeth and one arm, dragging him outward, sideways and down, but when they reached the corkscrew shelf again Muir had strength left to support his companion, who sank down exhausted, trembling all over.

The sun had set; the air had turned icy, and they had no coats. Dusk was deepening on the cliff below them. After a few minutes Muir roused himself and went to work on Young's shoulders. The right had been dislocated in such a way that it snapped back into place fairly easily. But the head of the left humerus was buried deep in Young's armpit and could not be withdrawn. Muir made a sling for this arm from Young's suspenders and their handkerchiefs. Then he went off into the gloom to find a route by which he might get Young down the cliff.

They had no sooner started down than Young's "good" arm proved nearly useless. Its upper muscles refused to respond. Muir was forced into a series of hair-raising maneuvers. In some places he descended to a safe foothold, braced his body, then had Young reach down and grope until Muir could grasp his wrist. Then Young would literally fall, but in such a way that his descent was checked by Muir's body. In other places Muir carried Young on his back, and in still others he lowered Young by the wrist of the "good" arm. This right arm came out of the socket three times before they reached the glacier at midnight.

Young was too weak to jump the crevasses, so they climbed to the glacier's steeply sloping earth margin, which was covered with loose gravel. There they sat down, Young with a leg on either side of Muir, and slid on their pants for half a mile. It was the easiest part of the descent—and the only time Muir ceased the stream of cheerful chatter that helped Young forget the pain in his shoulders.

Muir relieved Young's faintness by dashing his face with icy water whenever they came to a stream or a spring. When they reached timberline, Muir offered to build a fire to keep Young warm while he himself went down the mountain for help. But Young had something to prove, and he made the difficult descent through unfriendly trees and shrubs on his own feet.

It was 7:30 in the morning when they started up the wobbly gangplank of the *Cassiar.* Blocking their way stood the Reverend Dr. Kendall, a formidable, six-foot divine with bushy white eyebrows.

"See here, young man!" he began, "Give an account of yourself. Don't you know you've kept us waiting?"

At that moment the captain came lumbering up like an angry bull. "Hell's fire!" he roared, knocking Kendall almost overboard with an elbow to the stomach. "Don't you see the man's hurt?" So Hall Young was taken aboard. But Dr. Kendall returned to the attack as his wife—a tall, grim woman who had not smiled since the death of her children years before—sat on the cabin floor with Young's head in her lap, feeding him whiskey with a spoon.

"Suppose you had fallen down that precipice," said the divine, knitting his eyebrows severely. "What would your poor wife have done? What would have become of your Indians and your new church?" Mrs. Kendall leveled her spoon at her husband like a dagger. "Henry Kendall, shut right up and leave this room! Have you no sense? Go instantly, I say!" and the Doctor of Divinity left.

With two men holding and two pulling, Young's arm was set. But it slipped out again, into a worse position. This time they called the ship's captain, who swore he would pull the arm into place or pull it off. Young fainted before the bones at last came together properly.

For the rest of Hall Young's life, tears came to his eyes when he remembered what John Muir had done for him on Glenora Mountain. □

James Mitchell Clarke wrote several books as well as many newspaper and magazine articles; The Life and Times of John Muir, *from which this story was taken, was his last major work. It is available for $14.95 plus $1 for shipping and handling from The Word Shop, 3737 Fifth Ave., Suite 203, San Diego, CA 94103.*

SIERRA CLUB OUTINGS

It's Not Too Late to Sign Up for a 1980 Outing

A large number of this year's outings are filled, but many are still available. You can probably find space on any of the trips listed below. If you're interested in an outing not listed here, please call, as cancellations often create space on trips that were once full. Refer to page 48 of the 1980 Outing Catalog for the application form and reservation-policy information, and page 37 in this issue of SIERRA for an outings-information order coupon. Look for a special Outings section describing next year's Foreign trips in the July/August SIERRA and a listing of 1981 Spring trips in the November/December issue.

Trip Number	E = Educational outing • = Leader approval required	Date	Trip fee (Incl. Deposit)	Deposit	Leader
	Alaska Trips (See Raft Trips for other Alaska outings.)				
52	Sailing and Whale Watching on Prince William Sound	June 27-July 10	975	70*	David Finkelstein
	Backpack Trips (See Canoe, Family, Hawaii and Service for other backpack trips.)				
139	•Cascades Crest, Willamette Forest, Oregon	June 15-23	155	35	Bill Bankston
140	•Original Gila Wilderness, New Mexico	June 15-28	280	35	John Colburn
141	•Thuston Peaks, Trinity Alps, California	June 22-28	105	35	Don Parachini
142	•Owyhee Canyon, BLM Proposed Wilderness, Oregon	June 22-29	170	35	C. Gooding & H. Jones
144	•Trinity Alps, Shasta-Trinity Forest, California	July 1-9	130	35	Bill Bankston
145	•Snowbird Creek/Slickrock Wilderness, NC	July 4-12	185	35	Dave Bennie
146	•Blossom Lake Leisure Loop, Sequoia Forest, Sierra	July 4-13	155	35	Len Lewis
147	•Diamond-Thielsen Wilderness, Cascade Range, Oregon	July 4-13	175	35	Holly Jones
149	•Mt. Tallac, Desolation Wilderness, Sierra	July 6-12	105	35	Ginger Harmon
150	•Great Western Divide/Table Mountain Loop, Sierra	July 11-20	140	35	Jeff Lee
153	•Sequoia High Country Vegetarian Trip, Sequoia Park, Sierra	July 13-22	135	35	Louise & Calvin French
154	•Mt. Jefferson Wilderness, Cascade Range, Oregon	July 14-21	150	35	Bill Gifford
155	•Rito Alto Peak, Sangre De Cristo Range, Colorado	July 14-25	190	35	Bob Berges
159	•Sally Keyes/Marie Lake Leisure, Sierra	July 24-Aug. 2	150	35	Ray Collins
161	•Emigrant Basin to Tower Peak, Yosemite Park, Sierra	July 26-Aug. 3	130	35	Carl Heller
164	•Golden Trout Creek, Sequoia Park and Forest, Sierra	August 2-10	130	35	Ken Maas
165	•Sawtooth Wilderness Leisure, Sawtooth Forest, Idaho	August 3-9	140	35	Harold Covey
168	•Kern River Headwaters, Sequoia Park, Sierra	August 4-12	130	35	Ralph Huntoon
169	•Wallowa Mountains, Wallowa-Whitman Forest, Oregon	August 7-15	165	35	Bill Bankston
171	•Wahoo Lakes, Sierra/Inyo Forests, Sierra	August 10-16	115	35	Eric Bergh
174	•Snowyside Peak, Sawtooth Wilderness, Idaho	August 17-23	130	35	Veda Scherer
175	•Symphony Lake, Coast Range, British Columbia	August 19-28	490	35	Tom Erwin
176	•Duke River Valley, Kluane Park, Yukon, Canada	August 20-29	340	35	Doug Harvey
178	•Margaret Lakes/Silver Divide, Sierra Forest	August 24-31	120	35	Wes Reynolds
179	•Kings/Kern Divide, Kings Canyon/Sequoia Parks, Sierra	Aug. 29-Sept. 6	130	35	Don Lackowski
180	•Kings Peak, High Uinta Primitive Area, Utah	Aug. 30-Sept. 6	180	35	Pete Nelson
181	•"Lost Coast," King Range Conservation Area, California	Aug. 31-Sept. 6	105	35	Ellen Howard
182	•Palisades, Kings Canyon Park, Sierra	September 2-11	155	35	Ann Peterson
183	•Mount Lassen and Caribou Wilderness, California	September 13-20	115	35	Grace Adams
184	•La Cloche Range, Killarney Park, Ontario, Canada	September 13-20	190	35	Karen Benzing
185	•Kings Canyon in the Fall, Kings Canyon Park, Sierra	September 14-21	115	35	Paul Von Normann
187	•Southern Shenandoah, Virginia	September 20-26	145	35	Ray Abercrombie
189	•Quehanna Trail, Black Moshannon Forest, Pennsylvania	October 5-11	145	35	Connie Thomas
191	•Appalachian Trail Colors, Nantahala Forest, North Carolina	October 11-18	170	35	Dave Bennie
192	•Grand Canyon, Arizona	Dec. 28-Jan. 3	185	35	Bill Wahl
	Junior Backpack Trips				
205	•Around Black Kaweah, Sequoia Park, Sierra	June 21-29	135	35	Patrick Colgan
206	•Hutching Creek/Unnamed Peak, Yosemite Park, Sierra	July 2-9	125	35	Lynne McClellan-Loots
207	•Monarch Divide, Kings Canyon Park, Sierra	July 18-27	150	35	Vicky & Bill Hoover
209	•White Clouds Older Teens, Challis Forest, Idaho	July 21-30	160	35	David Neumann
210	•Bench Canyon, Sierra Forest	July 27-Aug. 3	125	35	Christine Dienger
211	•Evolution Basin, Kings Canyon Park, Sierra	August 3-10	125	35	Ellen & Jim Absher
212	•Wind River/Mammoth Glacier, Bridger Wilderness, WY	August 22-31	160	35	John Carter
	Base Camp Trips (See Canoe, Ski and Wilderness Threshold Trips for other Base Camp outings.)				
60-E	Natural History of Mono Basin, California	June 14-21	170	35	Ray Des Camp
61	Talchako Lodge and Tweedsmuir Park, British Columbia	June 16-22	255	35	Katie Hayhurst & D. Kuch
63	•Midnight Lake Mountaineering Camp, Sierra	July 6-20	290	35	Sy Ossofsky

Per Person Deposit

Trip Number	E = Educational outing • = Leader approval required	Date	Trip fee (Incl. Deposit)	Deposit	Leader
64	Dinkey Lakes, Sierra Forest	July 13-20	185†	35	Perry Harris
67	Minarets-West Alpine Camp, Minarets Wilderness, Sierra	July 20-Aug.1	280	35	John Freiermuth
68	Merced Peak Back Country Camp, Yosemite Park, Sierra	July 26-Aug. 9	390	35	Ray Des Camp
71	Second Recess Alpine Camp, John Muir Wilderness, Sierra	August 3-15	280	35	Bob Cockrell
75	Granite Park Alpine Camp, John Muir Wilderness, Sierra	August 10-22	280	35	Dick Raines & Norm Kindig
77	Seville Lake Alpine Camp, Kings Canyon Park, Sierra	August 17-29	280	35	Emily Benner
78	Caving, Albany County, New York	Aug. 31-Sept. 6	170	35	Fred J. Anders
79	Christmas at Death Valley, Death Valley Monument, CA	December 21-30	190	35	Ray Des Camp

†Children under 12, $165.

Bicycle Trips

82	•Bicycle Tour of Kauai, Hawaii	July 14-28	435**	35	Bob Powers
83	•Maui by Bicycle, Hawaii	July 31-Aug. 14	440**	35	John Finch
85	•Chesapeake & Ohio Canal Bicycle Ride, Maryland	September 21-27	170	35	Jim Clarke
86	•Amish Country, Lancaster County, Pennsylvania	October 12-18	185	35	Herb Schwartz

***Trip prices do not include airfare.*

Burro Trips

90	Symmes Creek to Onion Valley, Sierra	July 12-19	240	35	Jack Holmes
91-E	Onion Valley to Division Creek, Sierra	July 19-26	270	35	Linda Furtado
92	Division Creek to Taboose Creek, Sierra	July 26-Aug. 2	240	35	Don White
93	Taboose Creek to South Fork, Bishop Creek, Sierra	August 2-9	240	35	Jack Holmes
94-E	Northlake to Pine Creek, John Muir Wilderness, Sierra	August 9-16	270	35	Richard Cooper
95	Rock Creek to McGee Creek, John Muir Wilderness, Sierra	August 16-23	240	35	Ted Bradfield
96	McGee Creek to Lake Mary, John Muir Wilderness, Sierra	August 23-30	240	35	Doug Parr
97	Lake Mary to Reds Meadow, John Muir Wilderness, Sierra	Aug. 30-Sept. 6	240	35	Jack Costello

Family Trips (See Base Camps and Hawaii for other trips with family rates.)

Wilderness Threshold

			Parents and one child	Each addl. child		
100	•Cramer Basin, Sawtooth Wilderness, Idaho	July 19-26	620	155	35	Ann & Larry Hildebrand
101	•Talchako Lodge and Tweedsmuir Park, British Columbia	July 23-30	650	185	35	Katie Hayhurst & D. Kuch
105-E	•Navajoland Cultural Experience, Canyon de Chelly, AZ	August 21-27	550	130	35	Myrna & Tom Frankel

Trip Number	E = Educational outing • = Leader approval required	Date	Trip fee (Incl. Deposit) Parents and one child	Trip fee (Incl. Deposit) Each addl. child	Deposit	Leader
	Family Canoe					
109-E	•Main Eel River, Northern California	June 29-July 5	590	150	35	Julianne & Bob Jones
110	•Green River, Canyonlands, Utah	August 6-14	795	205	35	Judy Hacker
	Family Backpack					
112	•Humphreys Basin, John Muir Wilderness, Sierra	July 13-20	330	90	35	Carol & Howard Dienger
114	•Clark Mountain, Glacier Peak Wilderness, Washington	July 27-Aug. 3	425	105	35	Char & Dave Corkran
115	•Summit Lake Basin, Diamond-Thielsen Wilderness, OR	July 28-Aug. 3	295	75	35	Holly Jones

1980 Foreign Trips (Trip prices are subject to change prior to trip and do not include airfare.)

600	•Climbing in Bolivia	July 7-28	1280	100*	B. Belanger & L. Wilson
610	•Kenya Highlands Adventure	July 9-August 2	2200	100*	Betty Osborn
640-B	•Hut Hopping in the Austrian and Italian Alps	August 8-21	755	100*	Bob Stout
645	•West Germany: On the Weg through the Schwarzwald	August 10-28	1030	100*	Lynne McClellan-Loots
642-B	•Hiking through the Berner Oberland, Switzerland	August 23-30	645	100*	Bob Stout
657	•Kenya Cross-Country Horseback Safari	Aug. 30-Sept. 23	2450‡	100*	H. Stewart Kimball
660	•A Trek through the Last Shangri-La, Ladakh	September 17-Oct. 16	1890	100*	Wayne R. Woodruff
680	•Balephi Khola Trek and Base Camp, Nepal	October 4-Nov. 1	1175	100*	Ginger Harmon
685	•Ganesh Himal/Gurka Himal, Nepal	November 1-30	1175	100*	Bob Stout
690	Sahara Camel Caravan to the Hoggar Mountains, Algeria	November (3 weeks)	1850	100*	Al Schmitz
695	•Sherpa Christmas, Nepal	Dec. 21-Jan. 4	500	100*	Peter Owens

‡Group size of 10; $2025 for group size of 15.

Hawaii Trips (See Bicycle Trips for other Hawaii outings.)

120	•The Big Island, Hawaii Family Teenage Trip	July 26-Aug. 6	410**†	35	Joan & Bill Busby
121	•The Big Island Backpack, Hawaii	August 7-17	405**	35	Kent Erskine

***Trip prices do not include airfare. †Children under 18 years, $285.*

Highlight Trips

125	Marble Mountains Wilderness, California	July 4-13	405	35	Laurie Williams
126	Humphreys Basin, Sierra	July 20-Aug. 1	530	70*	Stewart & Hugh Kimball
128	Big Five Lakes, Sequoia Park, Sierra	July 28-Aug. 7	450	35	Bert Gibbs

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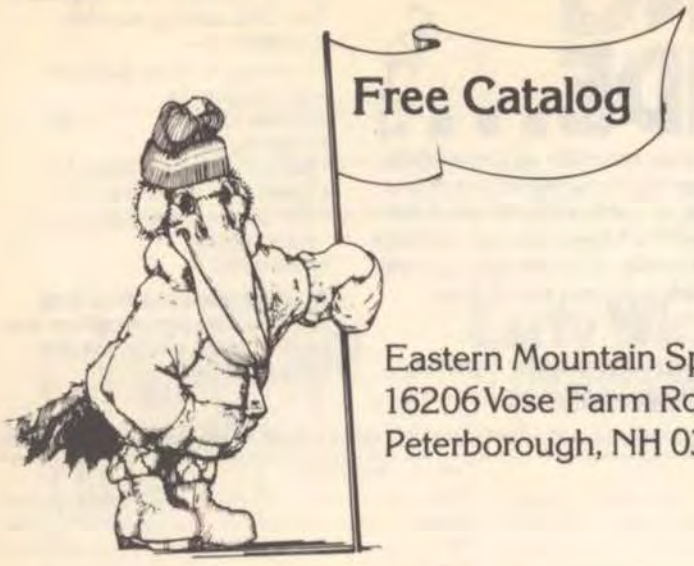

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131	Ruby Mountains, Humboldt Forest, Nevada	August 16-23	340	35	David Horsley & C. Schultz
132	Western Slope of the Tetons, Targhee Forest, Wyoming	August 18-27	430	35	John Doering
134	Anza-Borrego Desert State Park, California	Dec. 28-Jan. 3	255	35	Blaine LeCheminant

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215	•Yosemite Park Roving Clean-Up, Sierra	July 20-30	65	35	Tim Wernette
216	•Long Trail, Green Mountain Forest, Vermont	July 27-Aug. 2	65	35	Kevin Cresci
217	•Guanella Pass, Colorado Front Range, Colorado	July 6-16	65	35	Jim Bock
218	•Bridge Creek, Marble Mountain Wilderness, California	July 7-17	65	35	Roy Bergstrom
221	•Sequoia/Kings Canyon Trail Rehabilitation, Sierra	July 20-30	65	35	Brook Milligan
222	•Clear Lake, Marble Mountain Wilderness, California	July 21-31	65	35	Dave Bachman
223	•Renshaw Lake, Lewis and Clark Forest, Montana	July 21-31	65	35	Randy Klein
224	•Preston Peak, Klamath Forest, California	August 4-14	65	35	Bruce Horn
225	•McGee Canyon, John Muir Wilderness, Sierra	August 6-16	65	35	Bryan Wilson
227	•Hilton Lakes, Inyo Forest, Sierra	August 23-Sept. 2	65	35	David Simon
228	•Margaret Lakes/Goodale Pass, Sierra	August 28-Sept. 7	65	35	Keith Proctor
230	•Eagle Cap Wilderness Airplane Clean-Up, Oregon	August 5-15	65	35	Brook Milligan
231	•New Denver Glacier Special Trail Project, B.C., Canada	August 17-27	65	35	Lawson Legate
232	•Cottonwood Lakes Clean-Up/Trail Maintenance, Sierra	August 18-28	65	35	Tim Wernette
233	•Lake Chelan Revegetation Project, WA	August 18-28	65	35	Bill Bankston

Ski Trips

283	•Maine Back Country Ski/Snowshoe Tour	January 4-10, 1981	155	35	Fred Anders
284	Ski Touring Clinic, Steamboat Springs, Colorado	January, 1981	†	35	Sven Wiik
285	•Adirondack Ski Touring, New York	January, 1981	†	35	Walter Blank
286	Superior-Quetico Ski and Snowshoe, Minnesota/Ontario	February, 1981	†	35	Stu Duncanson

†1981 Ski Trip prices available Fall 1980.

Water Trips (See Alaska and Family Canoe Trips for other Water outings.)

Raft and Boat Trips

245	Rogue River, Oregon	June 16-20	355	35	Herb Graybeal
246	Rogue River, Oregon	July 7-11	355	35	Wheaton Smith
247	Rogue River, Oregon	July 21-25	355	35	Bill Bricca
249	Main Salmon Dory Trip, River of No Return, Idaho	July 30-Aug. 6	645	70*	Jeanne Watkins
300	Tatshenshini River, Alaska	August 4-13	1065	70*	Rolf Godon
251-E	Hell's Canyon Paddle Trip, Snake River, Idaho	August 7-12	485	35	Gary Dillon
252	Rogue River, Oregon	August 25-29	355	35	Grace Hansen
254	Grand Canyon Oar Trip, Arizona	October 9-22	975	70*	Dawn Cope
436	Sea of Cortez Leisure Boat Trip, Mexico	November 22-29	730	70*	c/o Ruth Dyche

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256-E	Green River, Utah	July 10-17	655	70*	Gary Larsen
257-E	Green River, Utah	August 15-23	715	70*	Mary Miles

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262	•Main Eel River Adult, Northern California	June 15-21	195	35	Larry Busby
263	•Appalachian White Water Canoe Base Camp, NC/SC/GA	June 21-28	225	35	Barbara Osgood
266-E	•Rogue River Naturalist, Oregon	July 30-Aug. 5	230	35	Ann Dwyer
267	•Kejimkujik Park, Nova Scotia	August 3-11	270	35	Connie Thomas
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DIANNE DUMANOSKI

Acid Rain

THE SENSES DECEIVE completely. Ninecornered Lake seems perfectly pristine, a little piece of wilderness of the New York Adirondacks unspoiled by development and civilization.

The water in this mountain lake is strikingly clear, indeed crystalline. Even with the wind whipping across the water, one can look down and see the pebbles and rocky ledge that lie three, perhaps four, feet below the surface.

Nor is there anything in the water's taste that betrays it. Scooped in a cupped hand, it tastes clean and fresh. None of the chemical taint of city water.

There isn't a clue to its true condition.

It is dying.

The cause is acid rain, an insidious and invisible form of pollution caused by the burning of fossil fuels—coal and oil—from as far away as Ohio, Pennsylvania or West Virginia.

Ninecornered Lake is only one of the victims. Thousands of remote lakes in the Adirondacks, eastern Canada and southern Scandinavia are dead or dying. And the situation is expected to become markedly worse.

Lakes like Ninecornered die from acidity that they aren't able to neutralize. The extreme clarity of their water is a cruel irony. As the fish, plankton and other forms of life die off, the water becomes clearer and clearer, until it becomes as transparent and dead as a bottle of white distilled vinegar.

The fish, plants, plankton, insects, salamanders, frogs—a web of life that took thousands of years to evolve—will disappear forever. For complex biological and geological reasons, scientists say that once a lake has become too acidic, it cannot simply bounce back. If the acid precipitation were to suddenly stop, it might take several hundred years before the lake recovered to the point where it again could support fish on its own, according to Svante Oden of Sweden, the first scientist to identify the acid-rain phenomenon and its causes. In the coming decades, vulnerable lakes in New England, northern Wisconsin, the Carolinas and the boundary waters wilderness on the U.S.-Canadian border in northern Minnesota may quietly fall victim to this pollution that the eye cannot see.

"Acid rain" is the popular term for precipitation (snow, sleet, mist) that is much more acidic than normal rain or snow. It is a phenomenon closely associ-

John Blair

Today's sulfur dioxide is tomorrow's sterilized lake.

ated with the travel of pollutants over long distances. Time is needed for the gases thrown up by a coal-burning plant in Ohio, for instance, to metamorphose into particles and acids. Carried by the prevailing winds, the particles may drift back to earth in a little-understood process called dry deposition.

More frequently, they are swept across the sky to atmospheric gathering points where they are washed down to earth as acid snow or rain. Eastern New England is one such point.

The rain that falls regularly in New England is from 25 to 50 times more acid than pure rainwater. And experts say that a great portion of the acid content of New England's rain originates outside the region.

Acid rain is actually a weak solution of strong acids—primarily sulfuric and nitric acids. The proportion of these acids tells something about the source of the pollution that created it. Coal-fired power plants are the biggest source of sulfur dioxide, which becomes sulfuric acid. In New England, as much as 70% of the acid in rainfall is sulfuric acid, the corrosive substance used in car batteries, which suggests that power plants are the main contributor to our acid rain. (These plants also emit nitrogen oxide, a source of nitric acid. The biggest source of nitrogen oxides, however, is the burning of gasoline for transportation.)

Scientific studies, most notably by Gene Likens of Cornell, who first identified the acid-rain phenomenon in North America, suggest that the problem is getting worse.

In the 1950s, upstate New York and New England were already severely affected by acid rain, which was then concentrated in the Northeast. Today the entire nation east of the Mississippi suffers the assault. New studies have turned up acid rain in California and the Colorado Rockies—an acid rain that is largely nitric acid, suggesting that the source there is probably automobile pollution rather than power plants.

Because of the shift toward coal in U.S. energy policy, the acid-rain threat looms even larger in the future. In the effort to reduce dependence on imported oil, the United States is expected to at least double, perhaps triple, the use of coal before the end of the century. Though other fossil fuels like oil and natural gas also emit gases linked to acid rain, coal, on the average, produces more.

Coal pollution can be reduced dramatically, according to Environmental Protection Agency (EPA) scientists. Many are optimistic that technology will make it possible to burn coal cleanly, at least as far as sulfur dioxide and nitrogen oxides are concerned. Sulfur controls already exist, and the EPA is testing what it hopes will be an effective, yet inexpensive, method to reduce nitrogen gases.

Under EPA regulations, all new plants must have sulfur-control technology (usually devices called "scrubbers") that, depending on the sulfur content of coal burned, must remove 70% to 90% of the sulfur gases that contribute to acid rain in New England.

However, older plants, those built before 1970, are regulated under a different set of laws—the ambient air quality standards. Most of these plants have no control technology and, compared to new plants, send vast quantities of pollutants into the air. Attorney Robert Rauch of the Environmental Defense Fund has calculated that the Gavin power plant in southeastern Ohio can legally emit seven times more sulfur dioxide than any new plant. Ohio has 21 major power plants built before 1970.

Though technology exists to reduce the pollutants that cause acid rain, it is anticipated that the amount of polluting gases will increase, because of political resistance to environmental regulation. Under intense pressure from the Department of Energy and the utilities, EPA has been moving to relax emission standards for old midwestern coal plants that fuel the acid rain downwind.

Not all areas are as vulnerable to the ravages of acid rain as Ninecornered Lake. Depending on their composition, all soils have a greater or lesser ability to neutralize the acid now falling with the rain. Some lakes, like Cayuga near New York's Cornell University, will never go acid, says Gene Likens, because they are located in areas that are rich in limestone. The limestone amounts to a built-in "Rolaid" that can neutralize or "buffer" significant quantities of acid. Other soils have only limited amounts of limestone, which can be quickly exhausted.

Unfortunately, many of the areas threatened by increasing acid rains are particularly vulnerable because of their granite or quartz soils, which have poor buffering ability. Granite bedrock underlies major portions of New England and southeastern Canada, which suffer from acid rain. As long as the supply of buffering material hasn't been used up, the effect of the rain may go unnoticed. But, once the Rolaid factor is exhausted, the change in a lake is dramatic. It can go acid in two or three years.

Given the current amount of acid rain, Canadian scientists estimate that at least 48,000 Canadian lakes will die in the province of Ontario alone in the next 10 to 20 years, because they are rapidly exhausting what little natural buffering ability they have. Svante Oden reports that at least 20,000 lakes are acidified in Sweden and that at least a third of these are no longer able to support fish. Norwegian officials report a similar number of severely affected lakes. Since southeastern Canada is geologically similar to southern Scandinavia, Oden says, it is not surprising that the effects of acid rain are already becoming evident there.

Lakes may not be the only worry. At a recent international conference on acid rain in Toronto, a number of scientists suggested that lakes could be just an early warning of still-unrecognized damage to the land environment. In a presentation outlining the dramatic impact acid rain has had already on the fish stocks in Canadian lakes, Harold Harvey of the University of Toronto suggested that the fish might be compared to the canaries that miners used to take into the mines to warn them of odorless, lethal gases. Since the canaries were more sensitive to the gases than man, their deaths signaled the invisible threat to human welfare.

The potential danger of acid rain to humans is indirect and not immediately perceived. The most likely assault on human health would be through water supplies. Acid rain can activate toxic metals that are usually inert, but which can contaminate water supplies, as it passes through the soil. There is also the danger that the acid rain water will leach harmful lead and copper from water pipes as it passes through.

Some scientists strongly suspect that acid rain is already causing a decline in food crops and forest harvests, though, due to the complexity of the land ecosystem, they have not yet been able to prove this. Ellis Cowling, who heads an EPA-funded research program into the matter, says that while the effects of acid rain on the aquatic system are well understood, there is "profound ignorance" about how it affects the land ecosystem.

Studies have shown clearly that acid rain can affect the foliage on plants and trees, perhaps making them less resistant to drought and disease, and that it can interfere with important nutrients and

bacteria and release toxic metals that plants take up into the root systems. Norman Glass of EPA's Corvallis, Oregon, laboratory, states the threat succinctly: ". . . the foliage is assaulted from above while the roots are starved and poisoned in the soil."

Our past is no less vulnerable than our future. An artistic and cultural heritage that has survived centuries or even millenia is dissolving before the assault of air pollution and acid rain. Details of some gargoyles of Notre Dame have been obliterated in recent years, the columns of the Parthenon are distintegrating, Michaelangelo's David and hundreds of other marble statues have been taken inside to save them.

Photographs show that statues that are now severely corroded had entered the twentieth century intact. Now, a NATO group called the Committee on the Challenges of Modern Society is studying the effects of air pollution and of acid rain on stone.

Acid rain may also cost us all money in hundreds of hidden ways. The federal government is studying the effects of acid rain on highways and bridges. As if winter road salt weren't enough, acid rain, sleet and slush joins in the attack on cars. The acid pollution also damages house paint and shortens the life of such synthetic fabrics as nylon.

The acid-rain phenomenon is another demonstration of an immutable environmental law: On a small planet, there is no such place as "away." Manufacturers tried to throw toxic chemicals away at Love Canal, at obscure sites throughout Massachusetts and elsewhere, only to find the poisons reappearing in schools, homes and water supplies.

This "throw away" philosophy has also informed our air pollution control policies. Except for regulations on the newest power plants, the federal Clean Air Act is based on the concept of dispersion. What the regulators look at is the concentration of pollutants at ground level in the immediate area of the plant, not the total amount the plant is spewing into the atmosphere.

That standard encouraged the construction of taller stacks by industries and utilities to help meet air-pollution regulations. This meant that a power plant could pollute more and still meet air-quality standards in the immediate area. The U.S. now emits more than 25 million metric tons of sulfur dioxide and 22 metric tons of nitrogen oxides annually.

According to a Federal Aviation Administration survey, 429 stacks more than 200 feet in height have been constructed since the Clean Air standards went into effect in 1970. And 178 of these new stacks measure more than 500 feet. The tallest in the world climbs 1200 feet above

The Sierra Club and Acid Rain

For the past ten years the Sierra Club has fought vigorously to reduce the effects of the major causes of air pollution—coal-fired power plants, smelters and automobiles. The major focus of the Club's efforts has been the adoption and implementation of tough air-pollution laws and regulations.

On Capitol Hill, the Club led the 1970 and 1977 battles to strengthen the Clean Air Act. In 1977 the Club lobbied for amendments that would force states to crack down on polluters and would protect air quality in unspoiled areas, especially in national parks and wildernesses.

And despite fierce opposition from mining and utility interests, Congress did adopt a new program to prevent significant deterioration of clean-air areas. The Club helped defeat the Breaux-Emery Amendment, which would have gutted the "significant deterioration" program. Further protection was accorded national parks and monuments by the establishment of a program to protect visibility in those areas. Visibility is impaired by the same pollutants that cause acid rain.

Much of the authority for implementing the Clean Air Act is delegated to the states, and the Club has relied on its grassroots activists to scrutinize each state's efforts to reduce pollution that might contribute to acid rain. The New England and Atlantic chapters successfully averted attempts by the states of Massachusetts and New York to weaken standards for power plants, an act that would have directly increased the already high levels of acid rain throughout New England.

The Club, especially through the Legal Defense Fund, has long sought a resolution to the complex air-pollution problems of the heavily industrialized Ohio River Valley. Several major power plants there have been allowed to increase emissions, despite the destructive impact pollution was already having on aquatic and agricultural ecosystems in New York, Pennsylvania and Ontario. Similar legal action has been taken against the nation's largest electrical utility, the Tennessee Valley Authority. In California the Club has fought to maintain the state's stringent auto-emission standards; experts attribute the increasing acidity of rainfall in the Los Angeles Basin to nitrogen-oxide emissions from automobiles.

Both the Club and its Legal Defense Fund have continued to lobby the Environmental Protection Agency to take more forceful action to control pollution from coal-fired power plants. The Club has recently sued EPA to force the adoption of tougher New Source Performance Standards for new power plants. The Club has also petitioned EPA to regulate sulphates, pollutants generated by the chemical transformation of sulphur dioxide to acid precipitation.

Public education has also been a large part of the Club's campaign to reduce acid rain. Last November, the Club cosponsored the Action Seminar on Acid Precipitation (ASAP) in Toronto. More than 800 scientists, government officials and conservationists attended that two-day international conference. In addition, the Club has recently completed a series of 50 workshops that educated local activists about the mechanisms of the Clean Air Act that can be used to reduce the pollution causing acid rain.

In the future, the Club will resist the Carter Administration's $10-billion plan to force utilities to convert from oil and gas to coal without provisions for adequate pollution control. Furthermore, industry has been mounting a major national campaign to weaken the Clean Air Act. The Club's Washington lobbyists expect this campaign to reach the legislative stage in 1981. They also expect that various industries will try specifically to gut the provisions of the Clean Air Act that protect us from the dangers of sulphur and nitrogen oxides—the major causes of acid rain. □

the International Nickel Company copper and nickel smelter in Sudbury, Ontario, and throws up 1% of the total annual sulfur emissions in the entire world, including those from natural sources such as volcanos.

A joint study by U.S. and Canadian scientists on acid rain, released last fall, shows that less than 25% of the sulfur pollution falling in New England comes from within the region. A satellite film made during a severe pollution episode in 1976 demonstrates graphically where the other 75% often originates. On August 16 of that year, a high-pressure mass stagnated over the Midwest. On the first day, air-pollution readings showed an elevation of sulfates in the lower Ohio River Valley, where Ohio, West Virginia and Pennsylvania meet. Six days later, the pollution over this area had intensified greatly and had begun to move eastward into New England. On August 27, this stagnant weather pattern finally broke, as a cold front moved in and began to push the polluted air mass eastward into New England and Canada.

This same study estimated that 2 million tons of pollutants travel from the United States across the border into Canada, while Canadian sources send about one quarter of that amount to the U.S. The U.S. contribution doubles the load of air pollution falling on Canadian soil, and Canadians are looking with alarm at the change in this nation's energy policy and at projections for increased emissions of sulfur dioxide and nitrogen oxides.

Studies by Oden in Sweden show that severe acid-rain storms in southern Scandinavia occur when the winds are blowing in from the west over Great Britain or from the south over Germany and France. When the weather came from other directions, rainfall was measurably less acidic. As much as 77% of the sulfur pollution that is killing the lakes in Sweden is thought to originate outside the country.

While most Americans still don't recognize the term acid rain, across the border in Canada, acid rain is an issue of the first order—both environmentally and politically.

Canada's Minister of the Environment John Fraser has flatly stated that acid rain is "the most serious environmental problem Canada has ever faced." Time, he says, is crucial, if Canada wants to save its lakes. "We don't have much time to fool around."

Canada, where lakes are already dying from the effects of acid rain, and where at

least 48,000 more lakes in the next 20 years are believed to be threatened, is pressing for an international clean-air agreement to reduce the total amount of air pollution in both countries.

In the hope of fostering such an agreement, 700 U.S. and Canadian scientists and citizens gathered for a major international conference on acid rain in Toronto last November to learn more about the problem and to discuss political strategies. They adopted a resolution calling for the reduction of pollutants associated with acid rain to less than 50% of current levels within 10 years.

Any international agreement to reduce the total amount of pollution would have considerable consequences for U.S. energy policy. In an effort to reduce its dependence on imported oil, the United States is moving to replace oil with domestic coal. Unless some change is made in air-pollution regulations, the U.S. contribution to the pollutants that fuel acid rain will increase.

In Europe, acid rain has been a serious international issue for the better part of a decade.

Though Sweden and Norway have both adopted strict measures to reduce sulfur emissions within their boundaries, the effort has had little impact on their acid-rain problem because most of the pollution comes from outside the Scandinavian peninsula. Norway, which depends heavily on hydro generation, at most produces only 20% of the sulfur pollution it suffers. Sweden generates only 22% of its total burden. Scientific studies have clearly shown that the pollution that falls on their rugged mountains, lakes and rivers as acid rain originates in Great Britain, or in France and Germany, depending on which way the wind is blowing.

The dramatic decline of lakes and rivers in Sweden and Norway since the 1950s has closely paralleled the great increase in fossil-fuel consumption and pollution. From 1910 to 1950, the annual sulfur emissions in Europe stayed constant at about 25 million tons a year. Since 1950, however, the amount of sulfur gases thrown into the air has more than doubled, reaching the level of 60 million tons in 1973.

Last fall, in Geneva, 35 nations, including the United States and Canada, that belong to the United Nations Economic Commission for Europe signed an international convention on transboundary air pollution. This agreement, which is the outcome of Nordic efforts to limit European pollution, falls far short of what they had hoped for.

Erik Lykke, the director general of Norway's Ministry of the Environment, said that the five Nordic governments (Norway, Sweden, Denmark, Finland and Iceland) had submitted a proposal to the UN council calling for a "standstill" on sulfur-dioxide emissions for all of Europe and, after a certain period, a reduction in emissions within each country. Sweden and Norway have at various times talked about the 1950 level of 25 million tons per year (less than half the present load) as a tolerable level for their severely stressed environment.

"The Common Market could not accept that," says Lykke, who headed his country's negotiating team. The Common Market countries argued that the cost of reducing emissions would be too high, according to Lykke.

The agreement that finally emerged was described by one U.S. participant as "having jaws and perhaps the beginning of a tooth." It does not state any goals, limits or timetables for controlling sulfur pollutants. It does call for cooperative research, monitoring of air pollution and rainfall and the sharing of information.

The absence of any moratorium on increased emissions is regarded as a setback by Lykke, but he says the agreement is not totally useless. "The convention as it stands is certainly a pledge, a political commitment to acknowledge the problem (and) to do something about it."

If the present agreement does not eventually lead to talks about limits and controls, as Lykke hopes, he says the Nordic countries might take the acid-rain issue to the United Nations and the International Court of Justice.

The North American talks were spurred by congressional representatives from border states threatened by emissions from Canadian power plants.

Last July, the two governments took a step toward each other in the minuet of

international negotiations when they released a joint statement saying that the discussions had moved "beyond the informal stage." In fact, Canada and the United States have embarked on the difficult task of fashioning an actual agreement.

It appears that politicians in both countries who are concerned about the environment have actually welcomed complaints from the neighbor across the border. Pressure from Canadians to limit the total emissions from U.S. sources might create the political impetus for sulfur controls on heavily polluting old Midwest power plants, which are exempt from the scrubbers required on new plants.

Similarly, Ontario, which has the world's single largest polluter—the International Nickel copper and nickel smelter in Sudbury—will no doubt find it much easier to push for stringent pollution controls if it can point out that the smelter's pollution is an international issue, not merely a provincial one.

Coming to grips with total emissions in the United States would mean placing controls on old coal-fired plants in the Midwest, which will still be the source of 80% of U.S. sulfur emissions in 1990. The problem centers on old plants not subject to controls rather than on the new ones and those yet to be built.

The plume from the new stack at the Eastlake plant, owned by Cleveland Electric Illuminating (CEI), doesn't look particularly polluting. It is pale, almost transparent. But, as with many aspects of the acid-rain phenomenon, appearances belie reality. The sulfur pollution that will kill lakes downwind emerges from the stack as an invisible gas—sulfur dioxide—which metamorphoses during the trip eastward into sulfates (solid particles) or, mixing with the moisture in the clouds, into tiny drops of sulfuric acid, the corrosive substance found in automobile batteries.

On an average day, the stacks at Eastlake will throw 657 metric tons of sulfur dioxide gas into the air—or a total of 240,000 tons a year, according to CEI officials.

There is a reason for detailing the story of the Cleveland plants. Ohio, which has 21 major older power plants, is the single largest source of sulfur pollution in the country. Alone, it produces more sulfur pollution than all of the New England states, New York and New Jersey combined—11% of the national total. Because of its concerted resistance to the Clean Air Act, Ohio also has the

loosest emission limits of any state.

With the help of tall stacks, which have sprouted since the Clean Air Act of 1970, pollution from plants such as Eastlake is spread far and wide. In the past 25 years, the precipitation over New England, and indeed the entire region east of the Mississippi, has become increasingly acidic.

Maine Governor Joseph E. Brennan recently protested that more Maine lakes will die if Ohio power plants are permitted to keep burning high-sulfur coal. Brennan has joined the downwind states of Vermont, New York and Pennsylvania in protesting an Environmental Protection Agency (EPA) proposal to relax the pollution limits on Eastlake and its sister plant, Avon Lake, which lies just to the west of Cleveland.

On order of the EPA, these two Cleveland Electric power plants were supposed to have drastically reduced their sulfur pollution by October 19, 1979. The order capped almost a decade of bitter resistance and court fights by Ohio utilities.

In the case of Eastlake, the sulfur-dioxide emissions were to be reduced from 240,000 tons a year to 50,000 tons.

Eastlake and Avon Lake, however, never had to meet this deadline. And it appears these drastic reductions in sulfur pollution will never take place.

Following six months of political warfare, which pitted Ohio coal miners and the United Mine Workers against the utilities, President Carter last June announced that the pollution limit at the two plants would be relaxed.

Though EPA will do more studies before setting a new emission limit, it is not expected to require any major cuts in pollution. In the meantime, Eastlake and Avon Lake continue to burn high-sulfur coal and send their pollution downwind.

EPA critics charge that this decision was unwarranted and blatantly political. Indeed, internal EPA documents obtained through a Freedom of Information Act request indicate that the EPA staff that reviewed the question initially recommended strongly against such a relaxation.

Many health and environment advocates fear the Ohio precedent may sabotage a decade of environmental progress, given the current panic over energy and inflation. They say the decision has implications that extend far beyond the two aging power plants on the shore of Lake Erie. The EPA decision changes previous policy in this region regarding tall stacks, and could open the door to a whole series of relaxations.

"We're not even holding our own now (on enforcement of the Clean Air Act)," says attorney Robert Rauch of the Environmental Defense Fund, which is fighting the relaxations for Eastlake and Avon Lake. "The situation is deteriorating."

Rauch observes that while EPA administrator Douglas Costle expresses great concern about acid rain, his agency's regulatory actions are sanctioning the very sulfur emissions that fuel the problem. "There's a tremendous gap between rhetoric and reality," he notes.

Costle painted a different picture during a recent interview in Washington. "We are bearing down on existing power plants, on existing industrial sources, to maximize the reductions we get," he declared.

He boasted as well about recent EPA regulations requiring all new coal-fired power plants to have "scrubbers," devices that limit the sulfur-dioxide emissions by 70% to 90% depending on the coal that's burned.

While downwind states such as Maine, Vermont, New York and Pennsylvania have vociferously protested the loosening of sulfur-pollution limits for Ohio power plants, Costle discounts the importance of increased pollution resulting from relaxations and tall stacks.

He bemoans the clumsiness of ambient-air-quality standards, which measure pollution at ground level around power plants, as a regulatory tool, and he decries the tedium of court suits arguing the fine points of the formulas used to set emission limits. Given the amount of effort expended, he says, the gains in these battles are small and amount to "wringing that extra hundred pounds of emissions out of some existing power plant."

Costle says a new pollution-control law is needed to fight acid rain, one that will give EPA direct authority to limit the total amount of pollution sent into the atmosphere. And he promises to fight for such legislation when Congress reconsiders the Clean Air Act in 1981.

He did say, however, that the climate of these energy-scarce times militates against stricter environmental controls.

Such critics of the EPA as Robert Rauch of the Environmental Defense Fund and Rafe Pomerance, a congressional lobbyist for Friends of the Earth, don't disagree about the ultimate need for new laws regulating old plants. But, given the present political climate, they argue it is important that EPA do the best it can with the existing law.

"EPA says it can do little with (older

Continued on page 60

Should It Be the Charles M. Russell National ~~Wildlife~~ Cattle Refuge?

A New Problem in the Old West

HANK FISCHER

When Lewis and Clark passed through eastern Montana in 1805 on their famous expedition, they were barely able to contain themselves. Captain Lewis wrote in his journal, "As usual, saw a great quantity of game today: buffalo, elk, goats or antelope feeding in every direction . . . the game is now in great quantities, particularly the elk and buffalo, which last is so gentle that the men are obliged to drive them out of the way with stick and stones . . . the country is as yesterday beautiful in the extreme." Lewis was finally so overwhelmed by the great herds of wildlife that he vowed to make no further mention of their incredible numbers in his journal.

While changes have come to eastern Montana since Lewis and Clark's passing, most of the Charles M. Russell National Wildlife Refuge (CMR) remains extremely primitive. The refuge lies in highly remote northeastern Montana, behind what outsiders call the Sagebrush Curtain. The mountainous western part of Montana gets more of the tourist attention and appears more often in calendar photographs, but the eastern two thirds of the state has its own quiet beauty and a romantic history to match.

On this million-acre wildlife refuge, though, there is also a quiet drama taking place. Out here, far from any city, the forces of commerce are in conflict with the needs of wildlife. The issue is grazing—and whether the refuge will be run primarily for the benefit of the wildlife or of the livestock interests that have controlled the refuge for much of its existence.

The second-largest national wildlife refuge in the continental United States, the CMR is somewhat larger than Rhode Island and New York City combined. It's the largest continuous piece of ground in the entire Northwest devoted primarily to wildlife. The refuge stretches across more than 125 miles of eastern Montana, along the banks of the Missouri River. "Old Misery," as it was known to early settlers, forms the heart and soul of the refuge. It meanders freely for about 30 miles through the west end of the refuge (part of it is a designated component of the National Wild and Scenic Rivers System) before forming gigantic Fort Peck Reservoir, a sprawling, 100-mile-long body of water with a shoreline as long as California's.

Among the variety of habitats to be found within the refuge—which accounts for the diversity of its wildlife—one can see not only waving prairie grasslands (a few still in their native state) but also dense ponderosa pine forests and thick stands of sagebrush. The topography ranges from flat riverbottom to rugged breaks to rolling prairie.

Almost completely undeveloped, the refuge has one paved road, only a few utility wires and only one bridge across the river for the refuge's entire 125-mile length. A few old homesteads, occasional fences and abundant livestock in most places are the only signs of human intrusion.

The CMR is home to nearly all the wildlife species associated with the Northern Plains, with lamentable exceptions. The buffalo, wolf and plains grizzly all flickered out around the turn of the century. The last Audubon bighorn observed in the entire United States was seen on the CMR in 1916.

Illustrations Courtesy Amon Carter Museum, Fort Worth, Texas

The plains elk were eliminated in the early 1900s but were later reintroduced—the herd, now numbering more than a thousand, is the fastest growing in the state.

Swift foxes apparently trotted into oblivion in the 1930s, one of the first victims of predator poisons. Recent sightings elsewhere in Montana give hope that they might return or be reintroduced. Black-footed ferrets, the rarest of North American mammals, once prowled the refuge but haven't been seen in recent years. Much suitable habitat remains; if ferrets could be found for transplants, or if a successful captive-breeding program were established, the CMR could be the key refuge for bringing the ferrets back.

Olaus Murie, the pioneer wildlife biologist who later became president of The Wilderness Society, saw the area's potential as a wildlife refuge. For sixteen days he traversed the CMR, and then sent a glowing report back to Washington. "This region as a whole is extremely picturesque," wrote Murie, who had been all over North America. "There is a glamour of early exploration over it all, the romance of historical events. The very landscape is appealing. A camp out in the badlands, with the jumble of carved and stratified buttes perhaps mellowed by the setting sun or set off by cloud formations at dawn, leaves nothing to be desired. In such a setting, the sight of a group of antelope on a ridge or a sharp-tailed grouse whirred from the head of a coulee completes the picture. An occasional prairie dog or burrowing owl are interesting details that belong to the whole. Simplicity on a grand scale is the keynote of this whole outdoor picture."

Murie's enthusiasm for the country must have been contagious. Only a year later President Franklin D. Roosevelt issued an executive order establishing as a wildlife refuge the area we now know as the CMR (it was first known as the Fort Peck Game Range). The Bureau of Land Management (BLM) and the Fish and Wildlife Service (FWS)—both known by different names in those days—were given joint responsibility for managing the area. The refuge charter specifically reserved forage first for wildlife, primarily antelope and sharp-tailed grouse. The charter does state, however, that forage not needed by wildlife can be made available to domestic livestock. This charter remains controversial today.

The notion of a prairie refuge turned out to be an idea ahead of its time—during the early years of the refuge, heavy grazing by livestock was the rule. Wildlife was relegated to rugged areas or to spots too far from water for cattle to reach. Range conditions generally declined through the 1960s, and conservationists began to complain that wildlife was not being adequately protected. There were no changes, however; disgruntled citizens began to call the area the Charles M. Russell National Cattle Refuge.

Drawings by Charles M. Russell

Then, in the early 1970s, change finally came, but in an unexpected way. The livestock and mining industries were dissatisfied with the joint administration by the BLM and FWS, not only of the CMR but of several other large western refuges. After a few years of arm-twisting and political infighting, Interior Secretary Rogers Morton announced that the CMR, the Kofa Game Range and the Charles Sheldon Antelope Range would be managed solely by the BLM, and that the FWS would manage the Cabeza Prieta and the Desert refuges.

This decision marked a major victory for the BLM and for the livestock and mining interests who benefit from it.

The Spectrum of Issues

In addition to livestock grazing, here are some other issues on the CMR:

- *Recreation.* The U.S. Army Corps of Engineers controls Fort Peck Reservoir and is working jointly with the FWS on recreational development. The Corps has expressed interest in marinas, second-home development, loop roads and other intensive development within the refuge.
- *Natural management vs. manipulation.* In some cases the FWS may want to manage areas by plowing, spraying herbicides, building dikes or planting nonnative vegetation (in order to raise certain species of wildlife faster and more abundantly than nature can). Manipulation might also involve farming, grazing and logging.
- *Endangered species.* The refuge system is a key part of recovery efforts for endangered species, and the CMR could be vital habitat for the black-footed ferret and the peregrine falcon. Although the northern swift fox has not yet been officially listed as an endangered species (only one has been found in Montana in the last 30 years), it also might be reintroduced on the CMR.
- *Hunting of nongame species.* The FWS would like to allow sport shooting of prairie dogs as well as of such other nongame species as badgers, raccoons and rabbits.
- *Trapping.* Although it has not been permitted in the past, the FWS is considering a trapping program. The National Wildlife Refuge Task Force recommended that hunting and trapping be permitted on the refuges only when necessary for management purposes: The FWS has chosen to sidestep that recommendation.

Letters should be written, urging that cattle grazing be allowed only where it is demonstrably beneficial to wildlife, and that other issues on the CMR be resolved in favor of wildlife protection. Send them to the Charles M. Russell National Wildlife Refuge, Box 110, Lewistown, MT 59457. Montana residents should send copies of their letters to Senator Max S. Baucus, Senate Office Building, Washington, D.C. 20510.

Conservationists were outraged at this attempt to dismantle and destroy an important part of the refuge system. The victory was short-lived; conservationists took their fight to the courts and to Congress. A district court quickly issued a restraining order blocking the transfer, and Congress, led by Senator Lee Metcalf (D-Montana), passed a law giving the FWS sole jurisdiction over all parts of the refuge system in the continental United States. More important, Congress made clear its dissatisfaction with past refuge management, directing that wildlife receive more consideration.

This challenge was dropped squarely on the FWS when it took over the CMR in early 1976. The agency was faced with the task of setting up a refuge for wildlife where one never really existed before. The CMR lies in the heart of Montana cattle country, and since its establishment, powerful local grazing interests have controlled its management. Clearly, the CMR's future will be determined by the FWS's ability to regulate cattle.

Several factors complicate the picture. The refuge boundary is mostly unfenced. Much of the land adjoining the refuge is privately owned or managed by the BLM; both public and private owners permit more domestic grazing than would be appropriate for a wildlife refuge. Furthermore, the best water source in this arid country—Fort Peck Reservoir—is located within the refuge and attracts cattle like a magnet. Trespass grazing is a serious problem; as many as 130 head of cattle have been counted in areas licensed for only 12. Finally, grazing fees are extremely low, making the permits highly desirable. It costs from $8 to $10 per AUM (animal unit month—the amount of forage that feeds one cow for one month) to feed a cow on private land, but the refuge charges only $1.89.

Dick Randall

The growing season is short and rainfall scanty, so much of the CMR cannot support heavy use by cattle. About one cow per 70 acres of land should be the norm. Problems arise because livestock sometimes eat the same food that nourishes deer, antelope and elk and because, in other cases, livestock reduces the amount of ground cover required by nesting wildlife. Many birds—including sage grouse, waterfowl, upland plover and sharp-tailed grouse—will disappear unless the vegetation can grow high

***Left:** A rarely seen wildcat.* ***Below:** The Charles M. Russell Wildlife Range.* ***Inset:** pronghorns.*

*Mike Aderhold/Montana Dept. of Fish & Game; **Inset:** Hank Fischer*

enough to afford protection from weather and predators.

Many areas on the CMR have been overgrazed, to the detriment of wild and domestic animals alike. According to Dan Hinckley of the CMR Planning Team, "If the refuge were managed as a cattle ranch, with no regard for wildlife, we'd need about a 25% grazing cut just for good range conditions." The nearer to water, the heavier the grazing; on more remote sites, much of the range is in excellent condition.

National wildlife refuges are established primarily for wildlife, though economic uses are permitted, according to the Secretary of the Interior, "when they are employed for the benefit of and are not harmful to wildlife and wildlife habitat." These secondary uses include mining (at the Secretary of the Interior's discretion) and logging as well as grazing and farming. The obscurity of this policy has plagued the refuge system for years.

Recently, however, refuge policy has evolved rapidly. In 1977, Assistant Secretary of the Interior Robert Herbst ordered the establishment of a National Wildlife Refuge Task Force to examine how refuges should be managed. The task force, representing a broad spectrum of conservation concerns, made recommendations to Herbst, who accepted most of them; they eventually became refuge policy.

Taking up the question of secondary, economic uses of the wildlife refuge, the task force suggested that: "Grazing, timber harvesting and agricultural practices may be abusive and should be used only when necessary for proper management of wildlife resources, keeping in mind the desirability of maintaining natural ecosystems."

So what's the future for the CMR? The FWS has been planning for it since it assumed management in 1976. The planning process has included biological studies (soil, range and wildlife surveys) as well as a number of public meetings in Montana communities. The planning effort is summed up in a draft environmental impact statement that is being released in late May.

The draft statement puts the grazing question squarely on the line. It recommends grazing cuts averaging between 30% and 40%. The cuts would be phased in over a five-year period in order to minimize economic hardship to livestock interests. But no matter how they're made, the proposed cuts will probably remain highly unpopular, and the FWS will come under strong pressure to reduce the cuts in the final statement, to be issued in December.

None of Montana's current congressional delegation has supported cuts in grazing. Montana Senator John Melcher (D) and Representative Ron Marlenee (R) have, in fact, introduced bills (which have been referred to committee) that would direct the FWS to manage the CMR under the same grazing rules that the BLM uses for its public lands. These bills would place the CMR under management for multiple uses rather than for a dominant use (by wildlife), as is intended for refuges. No other refuge in the country labors under such restriction, and passage of such a bill would set a dangerous precedent.

Local cattle interests continue to pressure the FWS for more grazing. In September 1979, several local ranchers filed a lawsuit seeking grazing rights for cattle on the range equal to or higher than the grazing rights given wildlife. The FWS has pledged to resist, and conservation groups plan to intervene, but one refuge official gives another viewpoint. "I'm not sure the ranchers understand the mathematics of the situation," he said. "If the ranchers were to win the suit, wildlife would have to get equal forage. The way it's been in the past, cattle have received a majority of the forage. To equalize the AUMs allotted to wildlife and to cattle would require cuts of about 50% in stocking rates, which is as much as or more than we're asking in most cases."

Urban dwellers may think it strange that local residents don't seem to appreciate having a national wildlife refuge nearby. Actually, they do appreciate it. But they're so used to having the refuge in their back yard, they don't see the need for the federal government to step in with regulations that restrict their own activities in an area that receives little visitation.

Local residents, living so close, underestimate the CMR's national importance and appeal. With its size and diversity, no other refuge or national park in all the Great Plains can match the Charles M. Russell. Once people discover the CMR's exceptional charms, it could become as popular as some of our national parks. □

Hank Fischer is a Montana field representative for Defenders of Wildlife. He is the author of A Floater's Guide to Montana, *Falcon Press, 1980.*

A Brief and Appalling Look at Hazardous Wastes

A. BLAKEMAN EARLY

"Ignitable: Can explode, catch fire or emit toxic gases or fumes."–Definition from EPA pamphlet

In July 1979, the Massachusetts Department of Environmental Quality Engineering ordered the W. R. Grace chemical company to stop dumping hazardous wastes at its plastics plant in Acton, Massachusetts. The order was the culmination of excellent "sleuthing" and citizen activism, led by a core group of Sierra Club members, and was the first the state had issued to control hazardous wastes at the plant.

It all started when Sierra Club members, investigating the odors that had long bothered local residents, hiked along a railroad spur and photographed colorful open lagoons into which malodorous chemicals from the plant were being discharged. These photos were shown to the public, the press and town officials, publicizing the possible dangers of an operation previously unknown to most residents.

And the activists didn't stop there. When samples of water from a well that supplied the town's drinking water revealed the presence of vinyl chloride, a virulent, cancer-causing agent, W. R. Grace claimed it no longer used the chemical. Citizens hiked back to the site with a reporter and photographed tank cars with *vinyl chloride* stenciled on the side.

This is one of many stories that illustrate what people can do to encourage public officials to address the serious threats posed by improper disposal of hazardous chemical wastes. The Sierra Club and Environmental Action, Inc., have launched a national Hunt the Dump campaign. Designed to give citizens the tools to track down these chemical nightmares, the campaign will focus national attention on the real culprits—the polluters themselves. But before we look at the campaign, let's take a look at the problem.

Ton Upon Toxic Ton

How big a problem is hazardous industrial waste? The U.S. Environmental Protection Agency (EPA) estimates that American industrial processes produce 770 billion pounds of wastes annually, 10% of which are hazardous. The tragedy at Love Canal alerted the public to a problem that has reached almost epidemic proportions. Poisoned wells in Massachusetts and California; serious cases of poisoning in New Hampshire and Colorado—even a casual student of the problem quickly amasses a bulging file of news stories.

Finally, this year, the EPA has issued regulations for future disposal of hazardous waste. But what about the billions of pounds disposed of in the past? Although eight sets of laws affect the general regulation of hazardous substances, until recently no one knew where many wastes have been or are being dumped. The House Commerce Committee's Subcommittee on Oversight and Investigation became so concerned about the lack of information that it conducted its own survey of 1605 disposal sites owned by the 53 largest chemical companies.

The survey revealed that 762 million tons of chemical-process wastes, not all

of them hazardous, have been disposed of at 3308 facilities since 1950. Almost all—94%—of the wastes were dumped at the facilities where they were generated. The most popular method of disposal was in landfill dumps, ponds or lagoons, which allow the wastes to easily enter ground or surface waters or to evaporate. Furthermore, 32% of the sites, because they are now closed, are not subject to any regulatory control. An additional 9% may also be closed—no one seems to know their status.

Abandoned dumps are rarely monitored for leakage, and the owners of closed disposal sites are unlikely to pay greater attention to them; even the newest federal regulations apply only to currently generated hazardous wastes.

The situation in some parts of the country is particularly appalling. Deborah Howard, director of environmental affairs for the Massachusetts Audubon Society, states, "There is no secure landfill in Massachusetts—or in New England, for that matter. There has been almost no incentive for users or manufacturers to reduce output of hazardous wastes. Nor has there been much inducement for them to dispose of wastes legally. While too little attention has been paid to hazardous wastes and to the volume at which they are produced, it has been estimated that 80% to 90% of such material has been disposed of illegally."

The EPA has been conducting additional studies that give cause for further concern. Landfill disposal is preferred by most industries; placing liquid wastes in ponds and lagoons is the second most common technique, and the EPA has surveyed approximately 15% of the 170,000 pits, ponds and lagoons estimated to exist. Of those surveyed, 87% are located above underground water supplies that are actual or potential sources of drinking water. Even worse, 66% of these facilities do not have impermeable barriers on the bottoms or sides to prevent wastes from gradually leaching into groundwaters. Almost half—44%—are not equipped with monitoring systems to detect leaks. The poisons buried in landfill dumps must touch liquid—surface or ground water—to be leached into water supplies, but lagoon wastes are already liquid and can escape more easily.

The first step toward solving the many problems of hazardous wastes is to find and monitor landfill dumps and lagoons. This is a challenge that must be taken up in every community; though federal and state programs and regulations do exist, they are not adequate to a problem of this magnitude. Ultimately, public pressure from citizens in the communites where hazardous wastes are generated is the most potent call for action.

The state-of-the-art method of waste disposal for many hazardous wastes at too many sites.

Citizen inquiry about the sites used by local industries helps ensure that companies shoulder their responsiblity to safeguard disposal facilities. Citizens can focus public attention on potential problems and encourage remedial action before additional Love Canals occur. We urge you to join the Hunt the Dump campaign to target the hazardous-waste generators in your community.

Hunt the Dump

The basic objective of the Hunt the Dump campaign is to find past and present disposal sites and to determine whether they are likely to leak dangerous chemicals and cause health or environmental problems.

Government officials are moving slowly to address the hazardous-waste problem, partly because they fear it will prove too big to handle with existing resources. By asking local generators of hazardous waste about disposal practices, citizens can identify actual and potential disposal sites long before the government can.

The House of Representatives' survey provides the best starting point for the hunt. (For copies of the survey for your state, write to Campaign Desk, Sierra Club, 530 Bush Street, San Francisco, CA 94108.) But gathering information about facilities *not* listed is of even greater value.

Targeting Manufacturers

Most chemical waste disposal occurs at the site of generation—at the factory. Using such sources as *Thomas Register of American Manufacturers*, *Dalton's Directory*, local Chamber of Commerce publications and state and local government agencies, it is possible to learn which industries operate in your community—these are your target companies. With the aid of a zip-coded street map, you can then pinpoint the enterprises and determine the most likely locations of hazardous dumps.

Now you need to locate the source or sources of your public water supply. If the water comes from a river, any manufacturers located upriver from the drinking-water intake become target companies. Look, too, for any facilities on the banks of major tributaries. If your drinking water is drawn from a reservoir, the job is more complicated; you need to locate any facilities within the reservoir's "watershed," or water-collection basin. Local water-company officials should be able to help you identify all major sources of water supply, and they may also have information on any contaminants that have been identified in drinking water.

Your drinking water could also come from wells that tap groundwater. Find out where such wells are located, and identify manufacturers that are upgradient ("upstream") from wells; they become target companies. Also, learn how deep the groundwater is and where the recharge zones are (areas where surface water enters the groundwater). If there are private wells nearby, ask local water and public-health officials whether owners of these private wells have complained of contamination. Questions local officials either will not or cannot answer should be directed to state water-survey or geological-survey agencies.

How Are Wastes Hazardous?

Wastes may be hazardous in any or all of these four ways:

Toxic	Poisonous, potentially harmful to human health; can cause cancer and birth defects and can contaminate, harm or kill wildlife.
Corrosive	Can corrode storage containers; damages human tissue if touched.
Reactive	Unstable; can react if exposed to heat, shock, air or water. Reactions include explosion.
Ignitable	Can explode, catch fire or emit toxic gases or fumes.

Hazardous wastes that are improperly stored, transported or disposed of can enter the ecosystem in six basic ways:

1. Liquids that leak from disposal sites contaminate groundwater;
2. Runoff from disposal sites contaminates surface water;
3. Incineration, evaporation or wind erosion of wastes pollutes the air;
4. Poisonous wastes are absorbed or ingested by organisms that pass them on in the food chain;
5. Poisons spill in storage or in transit, doing damage by direct contact;
6. Fires and explosions do direct damage.

A Toxics Lexicon

Amides, Amines and Imides are basic types of chemicals used in the manufacture of plastics and other chemical products. Various members of this class cause cancer, birth defects and genetic damage in test animals or test organisms. Many are toxic at low concentrations to aquatic life.

Arsenic is used in the production of boric acid and other pharmaceutical products. Arsenic can damage the brain, the nervous system and the gastrointestinal tract, and can produce skin lesions. It causes birth defects and genetic damage in test animals, and there is evidence that it can cause skin and lung cancers in humans.

Benzene is used widely as a solvent in chemical processes. Humans exposed to benzene have developed leukemia.

Cadmium is used in electroplating, in the manufacture of cadmium-silver oxide batteries, as a pigment and as a plasticizer, chiefly in polyvinylchloride. Low-level intake of cadmium over a long period is known to damage kidneys. Cadmium has also been associated with hypertension. It causes tumors and birth defects in rats.

Chromium is used in electroplating processes and as a paint pigment. Hexavalent chromium has long been recognized as a toxic substance; when ingested it causes hemorrhages of the gastrointestinal tract. Airborne chromium has caused cancer of the respiratory tract in occupationally exposed humans.

Copper irritates the gastrointestinal tract and can be highly toxic. Incidents of acute poisoning have been reported after ingestion of carbonated beverages that were in contact with copper vessels.

Esters and Ethers are a family of hydrocarbons derived from petroleum and commonly used in pesticides and herbicides. Some have caused cancer in test animals; they are highly toxic to mammals.

Land farming is the disposal of hazardous wastes by applying them to land or incorporating them into surface soil. This includes the use of waste as a fertilizer or as a soil conditioner.

Landfill is a land area, sometimes excavated, where solid, semi-solid or liquid wastes have been placed for permanent disposal. Such wastes are sometimes compacted and segregated by soil barriers.

Leachate is liquid that has percolated through hazardous wastes and contains components removed from the wastes.

Lead is used in the manufacture of lead-acid batteries and of pigments and is also a byproduct of metal smelting. Acute lead poisoning is relatively rare; exposure to low levels of lead over long periods of time can damage brain and bone. Lead causes malignant tumors in test animals.

Manganese is used in several metallurgical processes, including steel and aluminum manufacture, and in electroplating. Symptoms of manganese poisoning include sleepiness, leg cramps, increased tendon reflexes, emotional disturbances and spastic reflexes. Chronic manganese poisoning results in the progressive deterioration of the central nervous system. Chronic exposure may result in permanent crippling.

Mercury is used in metallurgical processes, in the production of chlorine, caustic soda and other chemicals, and as a plasticizer. Exposure to hexavalent mercury can cause brain damage and harm the central nervous system. It causes birth defects and may cause genetic damage as well.

Selenium is used in the manufacture of electronic equipment, steel, pigments, glass and ceramics. Acute exposure to selenium can cause eye, lung and heart damage.

Trichloroethylene (TCE) is used as a solvent; it is toxic to aquatic organisms and to humans. It has been shown to cause cancer in test animals.

Checking with the U.S. Geological Survey and with state universities is useful—their personnel may be able to identify manufacturers whose products or locations make them target companies. Ask state water-pollution control agencies and the regional EPA for the names and locations of manufacturers with waste-water discharge permits. Often these companies use land dumps for hazardous wastes that cannot legally be discharged directly into water.

Last, you will need to determine which areas of your community have residences, schools or recreational facilities close to factories. These are the areas where direct contact with hazardous waste is most likely.

Submitting the Questionnaire

The next step is to present questionnaires to the targeted companies.

The Hunt the Dump campaign has developed a brief questionnaire to aid in the collection and analysis of information about hazardous waste dumps. While this can be done by mail, an interview with the plant manager or other appropriate official is a more direct and effective way to review the concerns you and other representatives from the community may have. Gather together as many prominent citizens as you can.

The nature of the company's response will depend on a number of factors. The firm will want to maintain a favorable public image. On the other hand, it will not want to reveal information that would be of use to competitors or will bring about civil action from government authorities. The more you already know about a particular company, the less likely it is that you will be persuaded to accept phony information.

During the interview, let the official know that:

1. The community needs to know the size and scope of the hazardous-waste problem to avoid over- and under-reacting;
2. Forthright investigation of problems associated with hazardous-waste disposal will reduce public anxiety. This, in turn, will help reduce public resistance to new disposal sites;
3. You have information about the enterprise, and you are aware that more can be obtained;
4. Companies that are uncooperative will be subject to greater scrutiny.

For a copy of the questionnaire, write to Information Services, Sierra Club, 530 Bush St., San Francisco, CA 94108. Please enclose 25¢ each for each less than 10; 10% discounts are given on orders of 10 to 49, 25% discount on orders of 50 or more.

Evaluating a Disposal Site

Obviously, you cannot make an expert assessment of a manufacturer's disposal practices without professional advice. (We recommend a search for volunteer experts at local universities and among community organizations.) You should, however, be able to raise some hard questions and prod government officials into making sure adequate answers are forthcoming.

The quantities of hazardous waste generated can sometimes be minimized by changing production processes and recycling wastes. Some wastes can be used as feedstocks by other industries. Some hazardous wastes can—and should—be neutralized. The remaining, irreducible residue wastes must be encapsulated so they will not threaten human health or the environment. Here are some key features of safe waste disposal.

Landfill. Solid, semi-solid or liquid wastes are placed in landfill for permanent disposal. Water is the biggest problem in disposal of hazardous waste on land. In order to prevent water from filtering through hazardous waste and then contaminating public or private water supplies:

- The bottom of the dump should be a minimum of five feet above the underground water table. If the site has sandy soil, the dump should be at least ten feet above groundwater; this is critical if the groundwater is a source of drinking water. Active dumps over aquifers that are the sole source of public drinking water are so risky they should be closed down, and leachate monitoring and collection systems instituted.
- No land dump should be in contact with any surface waters, including seasonal streams and springs. A disposal site on a floodplain is an obvious hazard.
- No disposal site should fail to have a cover of eighteen inches of clay soil or of some plastic or other impermeable material. In addition, the surface of the landfill should be graded so as to drain rainwater away from the site. Ponds forming on the surface are a sure sign of trouble.
- Landfill dumps that are without covers or are located in sandy soil should have leachate collection and treatment systems. Such systems catch contaminated water, or leachate, as it penetrates the bottom of the dump, then pump it to

the surface for neutralization before it is released.

- Landfill dumps in sandy soil without leachate collection systems should have groundwater monitoring systems, which consist of wells around the site from which groundwater samples are periodically taken and tested for contamination by organic or inorganic chemicals.

Other factors that cause concern are:

- Oily or discolored surface water, withered vegetation, or yellow streaks in foliage (a sign of cadmium and zinc toxicity) near the site.
- The proximity of a disposal site to residential areas where water escaping laterally either above or below ground could result in direct human contact.
- The absence of any owner who is financially responsible for a site and so could be pressed to prevent or abate hazardous-waste releases.

The disposal of a variety of unsegregated wastes that have not been tested for reactivity. Questions should be raised about possible adverse chemical reactions when wastes are mixed.

Pits, Ponds and Lagoons. These disposal facilities can be natural topographic depressions, artificial excavations or diked empoundments. Located above, below or partially in the ground, they are the most common means of holding, treating or storing wastes. Many of these waste-disposal sites have been created to comply with water-pollution control requirements. Ponds allow some pollutants to settle out and others to oxidize during long-term exposure to air.

Few waste dumps have been built with impermeable bottoms or sides, so solutions seep into the underlying soil, which absorbs pollutants like a sponge as the wastes pass through. Unfortunately, just as a saturated sponge stops absorbing liquid, the soil stops absorbing pollutants when it can hold no more.

Because the liquidity of wastes in disposal ponds and lagoons increases the likelihood of percolation into water supplies, the groundwater in the vicinity of these facilities should be monitored.

A special case is disposal of carcinogens, which threaten health even when diluted; carcinogens should be incinerated, when that is safe, or, if buried, then encapsulated as well, and frequently monitored.

Land Farming. When wastes are mixed with a layer of soil over a wide area, the microbial action in the soil enhances the waste-degradation process. But, as with pits, ponds and lagoons, land farming disposes of liquid wastes

that can percolate to underlying groundwater—and, as with landfill dumps, runoff can be toxic. Where barriers do not exist, groundwater monitoring is advisable. Land farming is a promising disposal method; however, it is new, experimental and not widely used. Its safety has not been established.

Temporary Storage. Some pits, ponds and lagoons are emptied and refilled in cycles. Temporary waste storage has the potential for the same hazards as permanent disposal and so should meet the same safety requirements.

With each of these disposal strategies, storage of quantities of waste greater than the actual capacity of a treatment or disposal facility is a sure signal for alarm. It may indicate that the owner is abandoning responsibility for the site.

Once problem hazardous-waste sites are identified, the options vary greatly. Ideally, the owner will cooperate in investigating the danger. The owner does risk legal and financial liability for any release of hazardous waste. However, the risk is not great; regardless of fault, plaintiffs in such cases have difficulty proving that hazardous waste release was the cause of injury. The most effective tools to encourage cooperation by a site owner are adverse publicity, public pressure and rigorous state or local enforcement of pollution-control laws.

If you have questions about the safety of a site, you must raise them with other citizens, with local officials and with local media. Start with citizens' groups. When a nucleus of groups has assisted in the initial survey, work with them to expand your network. If a coalition does not yet exist, familiarizing the media with the issue can help create one. Sometimes, however, it is not until community interest has been demonstrated that media interest can be raised.

Be sure to involve your state's congressional representatives and senators—they can promote action at all levels of government. Perhaps even more important, acquainting them with the problems of hazardous waste in their own communities will improve the chances of securing their support for comprehensive national legislation.

The next steps to take simply depend upon the persistence and ingenuity of the people involved. You can make a difference in the safeguarding of hazardous-waste disposal sites in your community and nationwide. □

A. Blakeman Early is a Sierra Club Washington representative.

Cougar Lakes
Washington's #1 Wilderness Battle

CHARLES C. RAINES

Pat O'Hara

The trail winds in and out along the base of high cliffs that form the backbone of the ridge. . . . The sheer cliffs, the towering hemlock, and the balsam fir, pointed like spires to the sky, give this ridge a cathedral's majesty.
—William O. Douglas

JUST EAST of Mt. Rainier in Washington's Cascade Range lies Cougar Lakes, the land Justice Douglas wrote about in *Of Men and Mountains*. Much of the book, a chronicle of a boy's love and a man's reverence for the wilderness, takes place in the Cougar Lakes country, a favorite boyhood haunt of Douglas's. Now this area is caught in political crossfire—and the large wilderness he hoped would be preserved may never be established.

The proposed Cougar Lakes Wilderness stretches from the Little Naches River south to the Tieton River. The landscape is diverse: forested valleys, alpine meadows, windswept peaks, deep canyons, a high plateau and hundreds of lakes, the whole laced together by trails, more than 420 miles of them, including the Pacific Crest National Scenic Trail.

For 25 years, the forest has been clear-cut nearer and nearer the Cougar Lakes high country, and motorbikes have whined along more and more trails. And there are other threats: The U.S. Water & Power Resources Service, formerly the Bureau of Reclamation, wants to build a large earthfill dam near Goose Prairie; the dam would triple the size of Bumping Lake and flood part of the land proposed for wilderness designation. Now a bill that would determine how much acreage becomes wilderness has been introduced in Congress. Under the banner of the Cougar Lakes Wilderness Alliance, a coalition of conservation groups is leading the fight to realize Justice Douglas's dream.

One of the key areas of the proposed wilderness is Greenwater Valley, where a thick canopy of silver fir and hemlock often drips with rain that gathers into clear streams and fills secluded lakes. These lakes are reached by following a gradually inclined trail through a lushly wooded valley, a remnant of the vast forest that once covered the entire Puget Sound area. The valley, like most of the Cougar Lakes wilderness, is easily accessible; the trailhead is less than two hours by car from Seattle. It is also valuable because it is hardy lowland territory, which can sustain heavy use better than the fragile but more common alpine hiking areas.

However, extensive logging and road building in the area have contributed to serious erosion downstream and, two years ago, severe winter flooding. Residents of the little town of Greenwater, joined by two counties and the federal government, are taking legal action. Their suit against the Weyerhauser Company and the Washington State Department of Natural Resources seeks compensation for damages—and to keep the abuse from recurring. The Forest Service, however, ignoring this warning, has begun planning major logging and road construction in the upper Greenwater Valley. And plans have been advanced for another road to aid the forest-products industry.

That road, proposed by the Burlington Northern Corporation, would threaten the tranquility of the Greenwater area and would cut the Pacific Crest Trail. The road is designed solely to allow shipments of east-side logs across the crest of

the Cascades to west-side markets; because 80% of Washington's population, as well as the export centers that ship 35% of the state's logs, are on the west side, prices are higher there. Building this road would also increase the pressure to cut the virgin forests of the Little Naches Valley to the east. And there are demands even now that the proposed road be opened as a cross-state highway: this would forever destroy the character of these two quiet valleys.

The highest point in the wilderness is the summit of Mt. Aix, at 7736 feet. This and several other high, barren peaks surround Rattlesnake Creek, which is elk and mountain-goat habitat and the watershed for the city of Yakima. Water is critical on the east side of the mountains. Many farmers rely on the forests to shade the snowpack, holding the water until late summer when it is needed for irrigation. The clean water flowing from the Cougar Lakes area is also vital to Washington's salmon fisheries, the more so because many of the state's streams already have been seriously degraded.

In marked contrast to Mt. Aix is the Tumac Plateau. Unlike any other place in the state, this terrace of grassy meadows at an elevation of 5000 feet has hundreds of lakes, ponds and tarns scattered among the alpine firs. Two cinder cones rise abruptly from the broad, wet plain, hinting at its volcanic origins.

Hikers of all ages enjoy easy walks through this alpine garden. When winter blankets the fields with ten feet of snow, the plateau becomes a paradise for cross-country skiers. Yet the Forest Service deleted most of the area from its wilderness proposal in order to allow snowmobile use there.

Big and Little Cougar lakes lie nestled in glacial cirques under the vertical walls of House Mountain. Here, visitors still may hear the scream of the region's namesake, the cougar, on a still night.

A prime reason for the great variety of landforms around the Cougar Lakes area is its position straddling the Cascade Crest and its nearness to Mt. Rainier. Weather patterns change at the mountains; clouds leave most of their moisture on the western slopes, and the east side is left in a "rainshadow." The abrupt decrease of precipitation causes a dramatic change of vegetation, leaving each side of the range with a distinctive character.

As far back as 1946, the Forest Service recognized the special nature of the Cougar Lakes country when it established a small "Limited Area" there. After many studies, the Forest Service RARE II review culminated—for Cougar Lakes as for so many notable roadless areas—dismally. Fewer than 130,000 acres were recommended for wilderness designation.

Local conservationists, however, have proposed a 258,000-acre wilderness in two units, one on either side of the Chinook Pass Highway, which is a main gateway to Mt. Rainier National Park. National Park Service personnel testified in favor of wilderness designation for the units conservationists support in the RARE II hearings. They realize that further reduction of the roadless areas surrounding Mt. Rainier National Park would put unbearable pressure on the park's already heavily used wildlands. The rapid increase in use of wilderness lands is a key issue in the state, precisely because the roadless areas are fast being developed. Their loss results in greater concentrations of visitors on the fragile alpine lands—which are open for a shorter season—than in the lowland valleys.

Congressmen Joel Pritchard (R) and Mike Lowry (D) have introduced a Cougar Lakes Wilderness bill, H.R. 4528, which, with a few minor changes, conservationists support.

Predictably, the local congressman, Mike McCormack, has sided with the timber industry. He supports only a minimal, "rock and ice" wilderness (38,600 acres) within a larger National Recreation Area (100,800 acres)—but recreation-area designation would not prohibit timber cutting or off-road-vehicle (ORV) use. It is a familiar tune in the Northwest: timber and ORVs pitted against wilderness. But for several reasons the controversy here is a spurious one.

The vast majority of off-road-vehicle use occurs outside the proposed wilderness, and most of the trails within it (94%) already are closed to motorized use. And little of the Cougar Lakes land is considered good for timber producing. Most of the productive land has been withdrawn from harvest for years. Surrounding lands can adequately supply the timber demands of local mills.

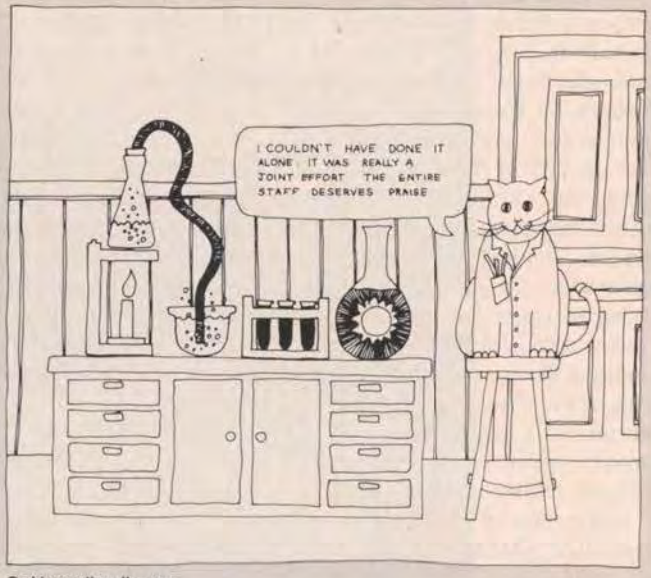
With the recent passing of Justice Douglas, many recall his great love for the wilderness. The Washington State Legislature has passed a resolution in support of a wilderness named for him. No tribute to Justice Douglas would be more meaningful than to establish a Cougar Lakes Wilderness worthy of his memory. □

Charles C. Raines chairs the Wilderness Committee of the Club's Cascade Chapter.

Energy—The Soft (and Furry) Path

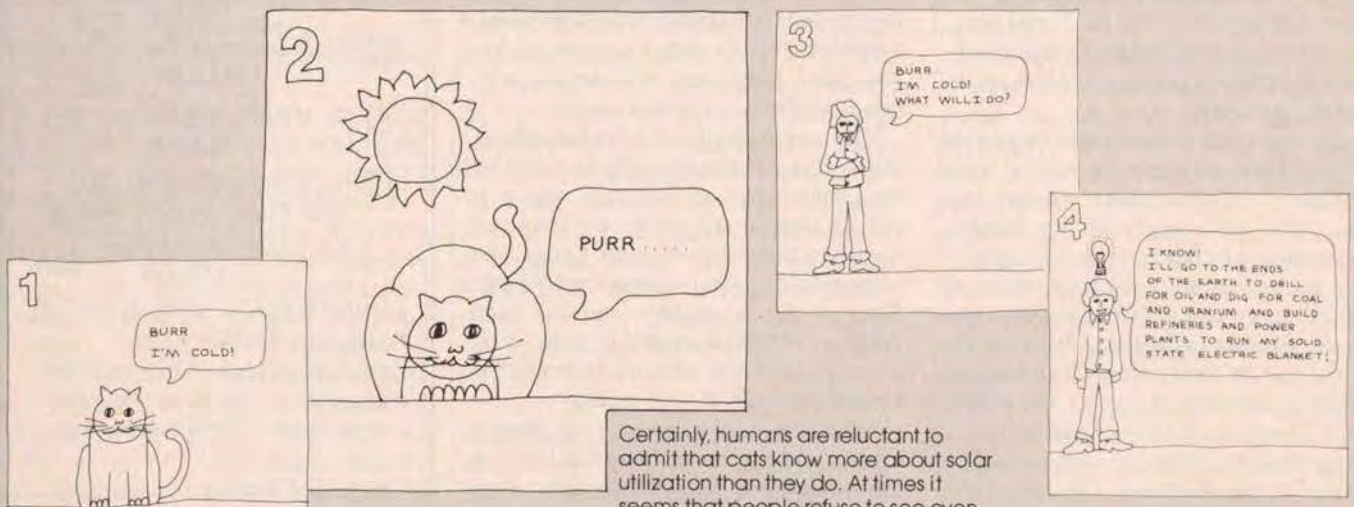
JIM AUGUSTYN

Many books about energy are technical and turgid. This is too bad, because the subject is intrinsically interesting and of crucial importance. The Solar Cat Book, *herein excerpted, is a rare work: informative and funny. Here are some examples.*

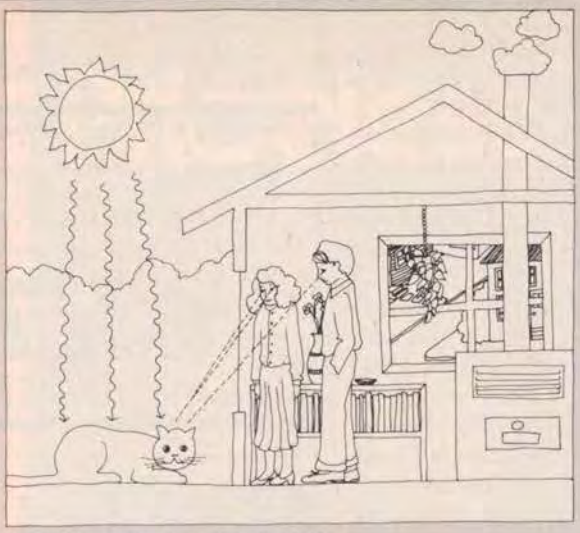


Cat inventing the sun.

Some think that cats invented the sun. Modern science has been unable to prove this theory. Then again, modern science has been just as unable to explain gravity.



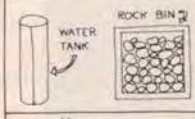
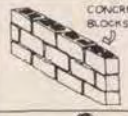
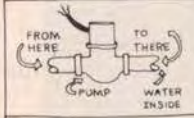
Certainly, humans are reluctant to admit that cats know more about solar utilization than they do. At times it seems that people refuse to see even the most obvious. The most common example of this involves cats' affinity for sunlight on chilly afternoons. Generations of study have led cats to the astute conclusion that, when cold, it makes perfect sense to expose one's fur to the sun.

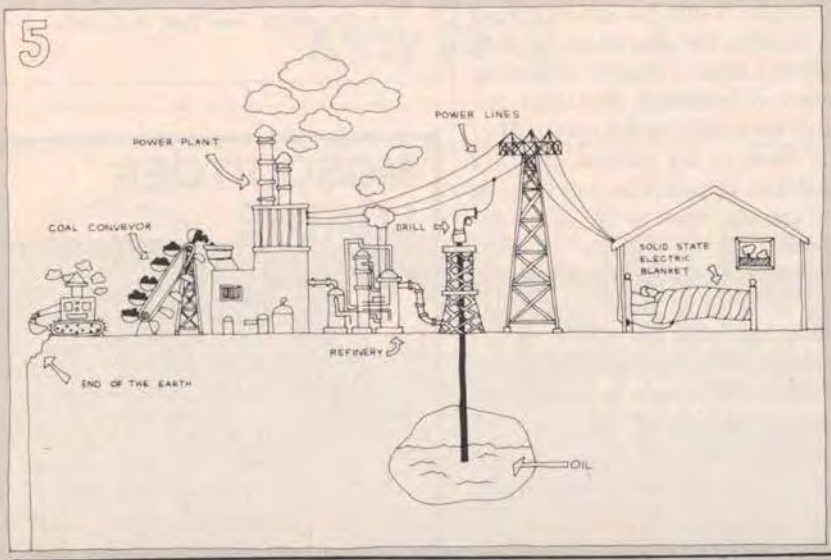


Two sightings of a cat in a patch of sunlight.

Today, cats can be seen routinely using the sun to meet their energy needs. How common is the sight of a cat curled up in a patch of sunlight? A good guess would be 50 million times a day in the United States alone! This is a good guess because there are about 25 million cats in the U.S., and if, on the average, each cat is seen twice a day, 50 million daily sightings result.

CHART COMPARING CATS' AND PEOPLES' SOLAR THERMAL SYSTEMS

COMPONENT	SOLAR THERMAL CAT		SOLAR THERMAL SYSTEMS MADE BY PEOPLE	
	ACTIVE	PASSIVE	ACTIVE	PASSIVE
COLLECTOR				
STORAGE				
HEAT TRANSFER MECHANISM				
CONTROL				
CATABOLISM			NOT APPLICABLE	NOT APPLICABLE



Reprinted by permission of Ten Speed Press from The Solar Cat Book, by Jim Augustyn, Ten Speed Press, Berkeley, California, 1979; paper, $3.95.

Acid Rain

Continued from page 45

plants) under the current law," says Rauch. "I emphatically disagree."

For a start, he says, EPA could make sure that current emissions limits are in fact achieved and enforced. And EPA could prevent further increases in pollution by denying further relaxation of standards.

Beyond that, Rauch points to two sections of the Clean Air Act that deal with pollution across state borders, sections the EPA hasn't even tried to use as grounds for denying relaxations to plants such as Eastlake and Avon Lake in Cleveland. EPA official David Hawkins acknowledges that EPA has never tried to use these sections, and explains it by saying that, because of a shortage of personnel, he hasn't assigned anyone the task of drawing up the necessary regulations.

Even with new legislation, Costle is not, however, speaking of dramatic reductions in the amount of sulfur pollution. While experts at a recent international acid-rain conference in Toronto called for a 50% reduction in emissions, which they say could be achieved with existing technology, Costle talks in terms of a 5% or 10% cut.

If a 5% or 10% reduction is EPA's stated goal, then the amount of pollution at issue in recent and potential relaxations due to tall stacks is not insignificant, as Costle argues.

In a relaxation last year in West Virginia, the amount of additional pollution sanctioned by EPA was equal to 1% of the total sulfur emissions in the country. To make matters worse downwind, the pollution from these two gigantic plants—Harrison and Mitchell—is being pumped out of 1000-foot stacks.

EPA's Region V office is anticipating at least 22 requests for relaxations because of lengthened stacks. Figures indicating the amount of increased emissions that will result are available for only half of these. If these 11 are granted, 565,817 additional tons of pollution will become legal, an amount equal to 2% of the national total.

The promise of future legislation offers little comfort to downwind states whose lakes are dying and whose vegetation is being affected by acidification, especially when EPA seems so reluctant to do as much as possible with laws that are already on the books. □

Excerpted from Dianne Dumanoski's series of articles in The Boston Globe, *with permission.*

Priceless.

But $4,000,000 Would Help.

Nothing angers us more than pricing the priceless. . . valuing in dollars and cents the wild places we love.

We insist, correctly, that some places have a value beyond dollars, for dollars cannot replace them.

But money can help save them from destruction.

If each Sierra Club member would recruit just one new member, we would be strengthened by over $4,000,000 in additional funds and the power of 185,000 new members.

Won't you recruit just one new member for the Sierra Club this week?

It will take only a few minutes. But it will help protect the earth's priceless places forever.

Sierra Club Membership Week

May 25-31

MEMBERSHIP FORM

☐ YES, I want to join! Please enter a membership in the category checked below:

New Member Name:_____

Address _____

_____ Zip_____

GIFT MEMBERSHIPS: If you are giving this membership as a gift, please enter your name and address below:

Donor Name:_____

Address _____

_____ Zip_____

GIFT MEMBERSHIPS will be announced by a special gift card in your name.

☐ Check here if you would like to be billed for renewal of this gift membership next year.

MEMBERSHIP CATEGORIES

	Individual Dues		Joint
Regular	☐ $ 25	☐	$ 29
Supporting	☐ 40	☐	44
Contributing	☐ 100	☐	104
Senior	☐ 12	☐	16
Student	☐ 12	☐	16
Junior	☐ 12		—

LIFE MEMBERSHIP

Per Person	☐	$750
Spouse of Life Member (annual dues)	☐	12

All dues include subscription to Sierra (3.00) and chapter publications (1.00).

Mail to: **Sierra Club**

DEPARTMENT S-004
P.O. BOX 7959,
SAN FRANCISCO, CA 94120

MEMBERSHIP FORM

☐ YES, I want to join! Please enter a membership in the category checked below:

New Member Name:_____

Address _____

_____ Zip_____

GIFT MEMBERSHIPS: If you are giving this membership as a gift, please enter your name and address below:

Donor Name:_____

Address _____

_____ Zip_____

GIFT MEMBERSHIPS will be announced by a special gift card in your name.

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Mail to: **Sierra Club**

DEPARTMENT S-004
P.O. BOX 7959,
SAN FRANCISCO, CA 94120

1st Prize.

We offer you an exciting prize for bringing
a new member into the Sierra Club. . . . a more livable world.

You joined the Sierra Club because you support our goals to protect
wild places, to insure clean air and water, and to explore alternatives which
conserve the earth's resources.

The Sierra Club will be even more effective with greater strength,
with the power that flows from a larger membership. In years past, we have had
a membership week campaign with prizes for new members. This year we're offering you something
more valuable. . . .a cleaner, more healthful world for ourselves and for future generations.

Help us increase our strength, our effectiveness, by recruiting a new Sierra Club member.

The prize will be shared by us all.

Sierra Club Membership Week

May 25-31

ROBERT A. IRWIN

Preserving Wilderness and Financial Security

Many of you who believe in the goals and programs of the Sierra Club may wish you could give it financial support to match the strength of your commitment. Of course, not every member has been able to make a substantial, outright gift to the Club in the past. But now there are ways of giving that allow you to improve your own financial picture while providing a major contribution to the Club. The Sierra Club Foundation has initiated a program to assist potential donors in their own financial planning, to achieve both immediate benefits for the donors and long-term benefits for the Club.

How can this be done? Your personal estate plan can be worked out in consultation with the Foundation's director of donor financial planning and your own attorney or tax counsel. One of these examples may correspond to your own situation.

- A couple approaching retirement wants to give a substantial gift to the Sierra Club Legal Defense Fund to help preserve wilderness in Alaska. They also want to arrange for their secure retirement. They decide to create a "life estate" using their home, which has sharply appreciated in value and is now worth $125,000. With this arrangement, the property is given to the Sierra Club Foundation, but the couple retains lifetime use of the home. And they receive a $44,532 tax deduction that can be spread over the next six-year period. The couple is responsible for maintaining the property, and, at their demise, it will go to the Sierra Club Foundation without estate closing costs.
- A second couple, now in their 50s, is receiving a very low—2% to 3%—yield on securities that have greatly appreciated in value in the several years the couple has owned them. The couple would like to increase their investment yield, but they do not want to incur any capital gain—and they are particularly interested in supporting the Club's work for protection of wildlife and endangered-species. Consequently, they elect to place $45,000 worth of these low-yield securities into a pooled life-income contract. The couple's income from the Sierra Club Pooled Income Fund amounts to 8¾% to 9% of the securities' value, they bypass all capital-gains tax, and they receive an immediate and substantial tax deduction.
- A man and a woman who are 45 years and 40 years old, respectively, want a plan that provides income at retirement and a charitable deduction now, in their high-earning years. They opt for a deferred-payment gift annuity that gives $20,000 to the Club for its work in conservation. According to the guaranteed annuity rates set by the government, starting in 15 years the couple will receive for life a guaranteed annual income of $1800 ($20,000×9.0%). Their current deduction will be $9002 ($20,000 × 45.01%), and the full, guaranteed payments continue for the survivor's life.

These are three of a number of possible estate plans the Sierra Club Foundation can arrange, depending on a donor's requirements. Nick Clinch, executive director of the Foundation, believes that many Sierra Club members would like to help the Club but are not aware that they can do so in a substantial way yet benefit their own financial positions. But careful planning can reduce and even eliminate both income and estate taxes, as well as trim probate costs. In addition, income can be assured at a time in life when it's most needed.

A life-income trust is not the only alternative to an outright gift; gifts of life insurance, bargain sales and bequests can yield many of the same tax benefits as a life-income donation, and some can even be made on a contingent basis, ensuring security for your beneficiaries.

We should all have estate plans in order to protect our beneficiaries. The Sierra Club Foundation would be pleased to provide information and to talk with you

and your advisors about including support for the Club's work in your own estate plan. For information, get in touch with Peter W. Wilkinson, Director of Donor Financial Planning, Sierra Club Foundation, 530 Bush St., San Francisco, CA 94108, (415) 981-8634.

Reports from the Grassroots

Though it is far too early to assess the impact of the Hunt the Dump campaign, some chapters have already reported progress, as well as successes in related efforts. Here are a few examples:

- Atlantic Chapter volunteers investigated groundwater pollution in Long Island suburbs. In addition to chemical-plant sources, they discovered gasoline seepage from old, rusting tanks of abandoned gas stations. They are now spurring governmental officials to act and are producing a slide show to publicize the dangerous mess.
- Connecticut Chapter member Emma Verdieck serves on a state task force that is drafting a bill to regulate waste-disposal sites, for which the chapter will lobby vigorously. The chapter is also, in cooperation with the Audubon Society, conducting a series of five field trips to show the problems of hazardous-waste disposal.
- The LeConte Chapter has been monitoring nighttime roadside dumping of toxic chemicals (mostly PCBs) in North Carolina, and is working with the EPA to establish control of hazardous-waste disposal sites.
- The North Star Chapter, still deeply involved in the long legal battle over the dumping of taconite tailings into Lake Superior by the Reserve Mining Corporation, has established a Hazardous Waste Task Force. As its first effort, the task force has drafted a position paper and submitted it to the Minnesota legislators responsible for hazardous-waste laws. The chapter will lobby for a bill providing that any mandated environmental controls are legitimate costs of production and, as such, eligible to be recovered in product pricing.
- The Mackinac Chapter already has scored a legislative success in the enactment of Michigan's 1979 Hazardous Waste Act. The chapter was active in the state task force that drafted the law, and it is now monitoring development of the required administrative rules and regulations.

• The New Jersey Chapter has carried out the Club's most comprehensive toxics program. Chapter activities have included a coalition with organized labor and health groups to persuade the legislature to pass a law requiring employers to tell workers about the hazardous materials they work with; lobbying the state legislature for regulation of hazardous-waste disposal; participation in an EPA-sponsored educational campaign for the public; and support of an Allied Chemical Workers strike against an unsafe and recklessly operated chemical plant.

A New Training Course

Hunt the Dump is a good start toward involving activists in community efforts to correct hazardous-waste problems, but a four-page pamphlet cannot be a thorough training tool. Late this fall, a comprehensive training course designed by Club people will be available. Right now, with a grant from the Environmental Protection Agency, Club staffer Judith Kunofsky is developing the course, which will consist of twelve two-hour sessions. She is testing the effectiveness of the course with fourteen task forces in the Southeast and the Southern Plains. The training focuses on practical measures, not lectures. The course is sufficiently flexible that organizers can choose to focus on hazardous wastes, pesticides, air or water pollutants or a particular substance or medium. When the course is completed, participants will have designed a campaign to solve a specified toxic-substance problem in their community and committed themselves to implementing that campaign.

When this new training course hits the road, the Club's campaign on hazardous wastes will have a nationwide impact on the hazardous-waste disposal problem.

The Denny and Ida Wilcher Award

Nominations are now open for the Denny and Ida Wilcher Award. A generous donor has endowed a fund that will enable the Sierra Club to present an annual $3000 award in recognition of work in either membership development or fundraising—particularly for conservation projects. All volunteer entities of the Club are eligible: chapters, groups, sec-

tions, Regional Conservation Committees or other committees or task forces. If you think your unit might qualify, please apply. Judges will consider several criteria, especially: success in recruitment and retention of members, the use of techniques that can be broadly applied to other Club activities, and original initiatives.

Nominations and applications are due by August 1, 1980; they should designate activities undertaken in 1979. Each nomination or application should include a description of accomplishments and an explanation of how they meet the judges' criteria. A list of people or Club entities endorsing the nomination should also be enclosed.

Nominations and applications should be sent to:

The Denny and Ida Wilcher Award Committee
Sierra Club
Volunteer Services Office
530 Bush Street
San Francisco, CA 94108

The new award was established in 1980 to honor Denny and Ida Wilcher. For more than two decades Denny provided outstanding leadership in developing the Club's fund-raising programs. The first award will be presented at the November meeting of the Board of Directors. Nominations will be judged by a special committee of the Sierra Club Council and the Committee on Honors and Awards.

In Memory of Ryozo Azuma

Ryozo Azuma, the man often called the John Muir of Japan, died last February at the age of 92. When Ryozo Azuma was a youth studying in the United States, he met John Muir, who was then 75 years old. The meeting led to the two-and-a-half-year trip to Alaska and Canada that inspired Azuma's life work in conservation. Always an outdoorsman, he climbed more than 140 peaks in western North America. Returning to Japan in 1934, Azuma wrote more than two dozen volumes on American history and parks. He was honored in his country for introducing the principles of the U.S. park system, and he was honored here, as well. In 1977, the Sierra Club presented Ryozo Azuma a life membership in recognition of his many contributions to conservation.

For Younger Readers

All About Islands

PEGGY WAYBURN

DID YOU EVER wonder how many islands there are on earth? Nobody knows for sure because nobody has ever tried to count them all. And even if you tried, you would find it a very hard job.

First of all, because people do not agree about what an island is, you would have to define the word "island" for yourself. Dictionaries say it is an area of land completely surrounded by water, but they do not say how large that area must be, or how small. Is a big rock lying in the ocean a little island, or is it just a big rock? Is Australia one of the world's largest islands, or do continents count? What about a good-sized piece of land that juts up above the water at low tide but is covered at high tide?

After you decide what you think an island is, if you still want to count how many there are, you may have another problem, for islands, you see, are always changing. Some form and then wash away in a matter of weeks, or even days. Others are worn down more slowly, but just as surely, by erosion, winds and storms and high seas. On the other hand, new islands—even quite large ones—can form very rapidly. Surtsey Island, for example, suddenly emerged from the sea about 250 miles northwest of Iceland one day in November 1963. And a new volcano is growing right now under water near Hawaii; sooner or later it will be a new island and probably a big one.

However you define an island you will find that there are enormous numbers of them. Some scientists estimate that there are hundreds of thousands; others say there are millions. The Philippine Archipelago alone has more than 7000. (An archipelago is a large group of islands.) Look in your atlas at the Greek Islands in the Aegean Sea, and guess how many islands there are. How long do you think it would take you to count these islands, along with all the others there are on earth? A few years? A lifetime?

Where did all these islands come from? Many of them were once part of one or another of the earth's seven continents, and some are still joined to the continents beneath the sea. These islands are the tops of ancient hills and mountains that have been drowned by rising seas. The British Isles, for example, were once part of the European continent. And Long Island, New York, was formed of rocks and debris deposited by a great glacier that once covered all of New England. At the end of the last Ice Age, many glaciers melted away and released immense amounts of water—the sea rose at least 300 feet and formed many islands along the shores of continents all over the world.

Strong ocean forces can also form islands from the shores of continents. If you live near a coast, you may

***Left,** Lumahai Beach, on Kauai, Hawaii; **right,** Kicker Rock, in the Galapagos Islands.*

Peggy Wayburn

Ed Cooper

have seen the way the ocean can pluck rocks, cut off pieces of land and move large sand spits away from shore.

Great rivers are also good island-makers. They often carry heavy loads of silt and sand, which they deposit in their deltas to become islands. The Orinoco River in South America, for example, has deposited enough silt and sand to make small islands at the river's mouth, and it has also helped form the large island of Trinidad, offshore. The Hudson River in North America has no large delta, but it is still strong enough to have quarried out part of the granite island of Manhattan.

The movement of the earth's crust is another great island-builder. Scientists believe that the earth's crust is broken into many separate pieces, known as plates, and that these are in constant motion, pushed by forces from deep within the earth. It is believed that the principal granite islands of the Seychelles Islands once were a part of the African mainland because they match exactly the geological structure of that continent.

Many islands, however, are entirely separate from any continent or other land mass; these are the volcanic islands. Volcanoes form where two pieces of the earth's crust slowly collide or where there is a weak spot in the earth's crust. In either case, hot rock beneath the earth's crust escapes upward, creating a volcano. Around the rim of the Pacific Ocean, where the the Pacific plate is moving against other plates, there is a rim of volcanoes called the "Ring of Fire." The Aleutian Islands chain forms one section of the ring and has many active, smoking volcanoes. Mt. Augustine is one of the smaller volcanoes in the chain, but when it erupted in 1974 and showered ash on nearby Alaska, it sent enough dust and ash into the air to set off fire alarms in airplanes flying 40,000 feet above!

Continents wear away for eons, but volcanic islands have comparatively short lives; they can be pulled beneath the sea by the same earth force that pushed them up. And some are so huge and heavy that they cause the ocean floor to sink beneath them. In warm ocean waters, a sunken volcano may be the base for a different kind of island, the living coral reef. Coral islands grow slowly: Each tiny coral organism secretes a hard outer skeleton that can attach to a sunken volcano or to other coral skeletons. Thus the coral colonies gradually build up massive structures that can remain if the volcano falls into itself.

Aldabra Island in the Seychelles is formed of coral, and it is one of the world's most important refuges for sea birds, sea turtles and giant tortoises. You may have heard of the Great Barrier Reef off the coast of Australia, which was once thought to be in danger of destruction by starfish that eat the coral, but the reef is still growing. And Eniwetok Island, in the South Pacific, grows from the remains of a volcano that sank below the sea millions of years ago. The coral limestone at the base of this island may have been living coral more than 50 million years ago!

Because islands are isolated and sometimes protected environments, they are often able to keep safe a plant or animal that can live nowhere else. The last remaining *Medusagyne* plants, with blossoms that look like jellyfish, live in the Seychelles. These are all that survive of a family of flowering plants that once flourished in many parts of the world.

***Left,** Manhattan Island, New York; **right,** Wizard Island, in Oregon's Crater Lake.*

Peter B. Kaplan

John Lemker

For Younger Readers

All About Islands

PEGGY WAYBURN

DID YOU EVER wonder how many islands there are on earth? Nobody knows for sure because nobody has ever tried to count them all. And even if you tried, you would find it a very hard job.

First of all, because people do not agree about what an island is, you would have to define the word "island" for yourself. Dictionaries say it is an area of land completely surrounded by water, but they do not say how large that area must be, or how small. Is a big rock lying in the ocean a little island, or is it just a big rock? Is Australia one of the world's largest islands, or do continents count? What about a good-sized piece of land that juts up above the water at low tide but is covered at high tide?

After you decide what you think an island is, if you still want to count how many there are, you may have another problem, for islands, you see, are always changing. Some form and then wash away in a matter of weeks, or even days. Others are worn down more slowly, but just as surely, by erosion, winds and storms and high seas. On the other hand, new islands—even quite large ones—can form very rapidly. Surtsey Island, for example, suddenly emerged from the sea about 250 miles northwest of Iceland one day in November 1963. And a new volcano is growing right now under water near Hawaii; sooner or later it will be a new island and probably a big one.

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As sea birds travel across the great oceans, they use even tiny islands for rest and refuge. Most islands have no native predators of birds, so wild birds can land freely to rest and find fish and other food. Larger islands provide nesting grounds for such ocean-going species as gannets, guillemots, puffins, boobies, petrels, frigate birds and many different kinds of terns and gulls. In all, millions and millions of birds depend upon islands for their survival. Among the island groups known especially for their bird life are the Pribilof Islands in Alaska, the Galapagos Islands off Ecuador, and the Farallon Islands off the coast of Northern California.

Walruses, seals, sea lions and other mammals also need islands. Most of the world's giant tortoises and sea turtles (a species believed to be nearly extinct) now live mostly on islands in the tropical oceans. Sea otters and elephant seals were near extinction before being protected on California's Channel Islands; perhaps giant tortoises and sea turtles will be saved, after all.

Islands are homes to many people, as well as to plants and other animals. Millions of people around the world live on islands—in Sitka, Alaska, for example; in Reykjavik, Iceland, and in island-cities such as New York and Hong Kong. Several nations, such as Japan, Malagasy, Taiwan and England, are made up entirely of islands.

Because every island is a world of its own, islands are particularly useful for the study of evolution. The great scientist Charles Darwin worked out his theory of evolution after visiting the Galapagos Islands in 1835. He noticed that the same species of animals and birds were a little different on each island. He decided then that the isolated island environments were the cause; the animals and birds had adapted to different living conditions. His book, *Origin of Species*, which described his findings, changed the thinking of people all over the world.

How do plants and animals get to places like the Galapagos Islands, which lie hundreds of miles away from the nearest continent? Some animals, such as sea turtles and crocodiles and sea mammals, can swim to them; larger animals might float that far on logs or other debris. A very little animal, like a frog, might even ride on a small branch. Tiny spores and seeds of plants sometimes stick to the feet or feathers of a bird that lands on an island, or the seeds could be blown across the sea or even carried high above the earth by winds until they float down onto an island.

Birds that usually fly over land can be carried off their courses by hurricanes and then, landing exhausted on an island, may stay to make their home. Sea birds, of course, can more easily discover islands and colonize them.

After plants and animals first find an island, it may take thousands of years for a whole island community to evolve and develop, and these communities are fragile and easily destroyed.

In these protected and isolated environments, plants and animals can live to be very old. On Praslin Island in the Seychelles, for instance, the coco-de-mer, a species of palm tree, sometimes lives to be 800 years old, and the giant tortoises can live for more than 100 years. Such plants and animals can also become very large: many giant tortoises weigh more than 600 pounds, and the coco-de-mer bears a seed weighing as much as 40 pounds—the largest seed on earth.

Many islands, with their delicate balance of plants and animals, can be easily changed. The Polynesians, for example, who first arrived in Hawaii more than a thousand years ago, brought with them some of the plants and animals that were their traditional foods on the south-sea islands from which they came. The breadfruit trees, the coconut trees, the taro and pigs they introduced did very well in Hawaii, and today they are considered to be part of the native animal and plant community. The Europeans who came to Hawaii less than 200 years ago also brought plants and hardy animals, such as goats, mongooses, rats and boars. They changed the landscape of the Hawaiian islands a great deal, as well, planting pineapples and sugar cane, coffee and macadamia nuts, and building many roads and cities. As a result of all this, many native Hawaiian plants and animals have been destroyed or threatened with extinction. Today, thirteen of the world's endangered species of birds live on the Hawaiian Islands. When Hawaii's next island finally pops above the water, maybe people will let it alone!

Did you think of the fact that, as far as we know, islands are found only on our earth, because ours is the only planet known to have water? Next time you see an island, stop and remember that it could be one of the few islands in all the universe! And that, whatever its shape and size, it is a very special place indeed. □

Peggy Wayburn is coauthor of the Sierra Club Book, Alaska: The Great Land.

Action Begins on Barrier Islands
Representative Phillip Burton (D-California) has introduced legislation to protect the undeveloped "barrier islands" of the Atlantic and Gulf coasts of the United States. The bill, H.R. 5981, would curtail federal programs, including bridge and highway construction, that subsidize development on unspoiled barrier islands. Additionally, the measure would add undeveloped islands and portions of islands to the National Park System for full protection. Readers can help by asking their representatives and senators to support this legislation.

In the meantime, the Sierra Club and the Natural Resources Defense Council have filed suit in federal court in Mobile, Alabama, challenging the legality of the construction of a bridge soon to be built from the mainland to Dauphin Island. The original bridge to this barrier island was destroyed by Hurricane Frederic in September 1979. The two environmental groups contend, (1) that the bridge would be in violation of two executive orders designed to prevent federal activities leading to the development of floodplains and wetlands, (2) that an environmental impact statement on construction of the bridge, is required and (3) that there are alternatives, including ferry service. Rick Middleton, an attorney with the Sierra Club Legal Defense Fund who is working on the case, said the island was "on the brink if not already overdeveloped before this hurricane came along. The Sierra Club contends that it's not fair for taxpayers to repeatedly be called upon to foot the bill for rebuilding projects."

Channel Islands Become a National Park
Legislation establishing a Channel Islands National Park has been signed into law by President Carter. The park includes Anacapa, Santa Barbara, San Miguel, Santa Cruz and Santa Rosa islands. Ann Van Tyne, a long-time Club activist in Southern California, said, "The Los Padres Chapter is, as you might imagine, feeling very good about the Channel Islands' becoming a national park. It's hard to believe, after so many years, that it is a reality."

Utah Chapter Takes on the MX
The Club's Utah Chapter has filed detailed comments with the U.S. Air Force on the proposed MX missile system slated for deployment in Utah and Nevada. J. Dennis Willigan, who prepared the comments, concluded that "the proposed new . . . horizontal-dash MX to be deployed in the state of Utah is technically, geopolitically, environmentally and militarily unsound."

The mobile missile system now being advocated by the Administration is expected to be the biggest construction project in the nation's history—bigger than the Panama Canal and three times as costly as the Alaska Pipeline. Millions of acres of potential wilderness would be lost, and priceless archaeological sites would be destroyed. Severe soil erosion, air pollution, water shortages, and economic and social disruption would result from its construction.

Park Service Director Ousted
William J. Whalen, controversial director of the National Park Service, was removed from that position on April 24, 1980, by Interior Secretary Cecil Andrus. Specific reasons for Whalen's dismissal were not made public, though Mr. Whalen's health was cited as a factor. The abrupt ouster came as a great surprise both to park service personnel and to conservationists. As Sierra went to press, the Department of Interior announced that Mr. Whalen's successor would be named by May 2, 1980.

World Conservation Strategy Set in Motion
An unprecedented agreement has been reached in the world's scientific community on actions necessary to ensure that the earth's natural resources are safeguarded for this and future generations. The launching of the World Conservation Strategy was announced by leaders from 30 countries representing every continent and every political persuasion. Endorsed by the International Union for the Conservation of Nature (of which the Sierra Club is a member), the World Wildlife Fund, and the United Nations Environment Programme, the strategy is the culmination of an intensive effort involving governments and more than 700 scientists and experts from more than 100 countries.

Copies of the World Conservation Strategy will be available for $20 from bookstores, which can obtain them through the United Nations "UNIPUB" system.

Tahoe Scenic Area Bill Introduced
The Forest Service recently released a study of the devastating effects human activity is having on the Lake Tahoe Basin, which sits astride the California/Nevada border. Environmentalists maintain that the area's degeneration can be halted only by tough federal action and determined leadership. They say that in light of ten years of bi-state mismanagement, more California-Nevada compromises will simply further the accelerating deterioration.

Representative Vic Fazio (D-California) has introduced legislation, H.R. 6338, to protect the region as a National Scenic Area. The bill now has 40 cosponsors in the House. If your representative is not yet a sponsor, he or she should be urged to sign on.

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