SIERRA

THE SIERRA CLUB BULLETIN

JULY/AUGUST 1981

$1.50

Photo Contest Winners

1982 Foreign Outings

NOT EVERYONE WAS WILLING TO WAIT FOR OUR HIKING BOOTS.

In all honesty, when we saw this photo of Ridgeway and Roskelley on K-2, we had no intention of making hiking boots.

But it got us thinking. If we had *the* technology to help world-class athletes run faster and farther, why couldn't we do the same for those who trek the deserts, river valleys

Lava Dome

and glacial moraines of Kashmir. Or wherever.

It took three years, but we've done it. And we've done it three different ways. With the Lava Dome, the Magma and the Approach.

Approach

They are not your classic hiking boots. By a long shot. The heaviest is the Magma which tips the scales, barely, at around 500 grams. Makes sense, considering every pound you put on your feet is like dumping six pounds onto your back.

At the same time, each is designed to give the stability and protection you need when the nearest hint of civilization is days, perhaps, weeks away.

They're flexible. Rugged. The Lava Dome, with fast-drying Duro-Mesh™, is ideal for day hiking. For wetter climes, it's the Approach with water-resistant yet breathable Gore-Tex®.

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Magma

We've sunk a lot of innovation into these boots. And we think it's about time you climbed into a pair. If for no other reason than because they're there.

Finally.

NIKE

Beaverton, Oregon

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JULY/AUGUST 1981 **VOLUME 66/NUMBER 4**

Cover: Stamens and pistil of a Texas Pride cactus, photographed by Jon R. Nickles of Anchorage, Alaska. This photo won second prize in the "Designs in Nature" category of Sierra*'s second photo contest. See page 33 for the complete portfolio of contest winners.*

The Real Quote

Help! In the January/February "Observer" column, I didn't say that! Last fall I was talking with Robert Irwin about the relative insecurity of parkland in Canada and cited examples of parks that were either abolished or had large pieces of land carved out of them to allow resource extraction. Thus, I pointed out, the Canadian Sierra Club is not *just* trying to see new parks created, but we are also heavily engaged in fights to preserve the ones we have.

Unfortunately, when the article was printed, the word "just" was omitted; I found myself quoted as saying we were not interested in new parkland! In fact, we are probably engaged in more fights for new parks involving more acreage than any other chapter in recent memory, except Alaska.

Jim Bonfonti, Chair
Sierra Club of Western Canada

Stopping Local Dollar Exports

Michael McCloskey makes an important point in "Environmental Protection Is Good Business" in the March/April issue. He shows how conservation and environmental measures have contributed to the national economy, to business and to major cities. I think it is important to add that conservation and the development of renewable energy industries will have major effects on local businesses and the revival of small communities.

Recent studies show that residents of small communities export a major portion of their incomes to pay for nonrenewable energy. The cost of heating a home is an example. Money that might have been spent locally, changing hands five or six times in a community, is now drained. The effects are lowered local spending, fewer jobs and businesses and lowered local tax revenues.

In contrast, developing renewable energy sources and conservation requires using local labor at a far lower rate of capital investment in the areas where many unemployed people now live.

Suzanne Prescott
Crete, Illinois

AMERICA, THE BEAUTIFUL

The national parks, wilderness areas and wildlife refuges of this country speak to visitors of the great beauty of America. They speak too of wise political leadership—a leadership responsive to the will of the majority of Americans.

Members of Congress and Presidents of the United States, expressing their love of this country and their desire to preserve its beauty for future generations, have set aside these special places. They responded to the public's will.

But now, officials of the new administration are threatening to roll back the gains made by the modern conservation movement. They want to open up existing conservation reserves to commercial exploitation; and, they want to cut back on further effort to protect such places, at a time when visitors are being turned away from our national parks.

Since 1892, Sierra Club members have effectively encouraged protection of this country's national heritage. More than ever before, we now need the increased impact on public policy that comes from a strong grassroots membership.

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Photograph: Crater Lake National Park, Oregon, by Ansel Adams

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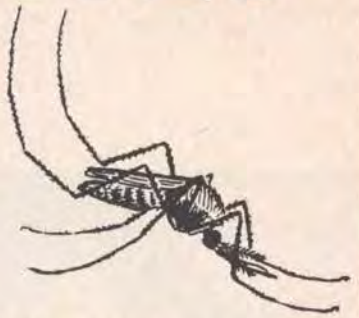
"MOSQUITO BITES" WHY SUFFER THEM?



THE PROBLEM

□ **ALL OF US KNOW...** the complete discomfort and apparent helplessness we have when confronted by swarms of mosquitoes every time we try to enjoy the outdoors. Even though its only the female mosquito who attacks you (to secure your blood to use for producing eggs and hordes of more mosquitoes) your defense against them is very limited unless you protect yourself.

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One word describes these E-Z Oral Tablets, Fantastic! **D.R.S., Mission Hills, Ca.**

The result is quite astonishing! Not a single bite was noted. Used them in Norway, fishing. **H.B., Switzerland**

I am extremely sensitive to mosquito bites, but since taking E-Z I am happy to report that I have not been bitten once, even though I have been repeatedly exposed. **G.M., Long Beach, Ca.**

My son and I have had trouble all our lives with mosquito bites. Drs. couldn't help. Now that we take E-Z we are able to go outside and not be afraid. God Bless your firm. **Mrs. E.M., Calumet City, Ill.**

Your pills have made it possible for me to be outdoors without worries. **S.B., Stanton, Ca.**

I've talked to 6 campers today, and they all say your E-Z pills really work; not a single bite! **H.A.H., Garden Grove, Ca.**

Used E-Z, I am impressed with the results. You've made a great break-thru for the outdoors person! **D.S.A., Belmont, Mich.**

These pills work so well, I have to give your address to everyone that tries them! **C.W.S., San Antonio, Texas**

E-Z has saved our lives! This is the first summer that we have been free of mosquito bites. If you want proof that E-Z works, we are prime examples! **Mrs. R.S.S., Abiline, Texas**

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Photographs by Mush Emmons

In the Matter of Mr. Watt...

The following article is excerpted from an address to the Sierra Club's 1981 annual dinner on May 2, 1981, by the Honorable Nathaniel Pryor Reed, former Assistant Secretary of the Department of the Interior.

I AM HERE TONIGHT as an old soldier of the Grand Old Party of the conservative movement—but a soldier who is sick at heart over the direction his party has been taking in the last few months.

I am a lifelong Republican, and I am extremely proud of my party's environmental record—from Abraham Lincoln's original withdrawal of Yosemite Valley, and Ulysses Grant's signing of the bill to establish Yellowstone as the world's first national park, to the withdrawal of the Arctic Game Range during Dwight Eisenhower's years—the largest land withdrawal in history up to that point.

Under more recent Republican administrations, the progress has been truly remarkable. The enactment of the National Environmental Policy Act; the creation of the Environmental Protection Agency and the President's Council on Environmental Quality; the enactment of the Endangered Species Act; the formulation and submission of the Alaska d-2 proposals; the great leap forward in the amount of land set aside as wilderness; the establishment of the first urban parks—all of these actions took place under Republican leadership, and many of them were Republican ideas.

In 1908, as President, Theodore Roosevelt called a conference on natural resources that was attended by the nation's Cabinet members, governors, members of Congress and experts on natural resources.

In his opening address, Roosevelt said the conference was in effect a meeting of all the people's representatives to consider "the weightiest problem now before the nation. . . . I have asked you to come together now because the enormous consumption of these resources and the threat of imminent exhaustion of some of them, due to reckless and wasteful use . . . calls for common effort, common action."

That kind of approach to the environment has guided Republican administrations for the last 70 years. Yet some of the new administration's people seem to be wildly out of sync. They are attempting to turn the clock back to the pre-Roosevelt era, when everyone supposed natural resources were inexhaustible. I cannot sit idly by and watch this lamebrained, outmoded philosophy take hold and stain my party's image.

It causes me a great deal of pain to criticize the administration as I am about to do—more pain than I care to describe. But my quarrel is not with Ronald Reagan. I think he will be a good President and a notable environmentalist.

The problem as I see it is that some of his appointees—and particularly James Watt, the Secretary of the Interior—have broken faith with the Republican Party and betrayed their President.

Some of you may recall that Watt headed

Nat Reed assesses the current administration's environmental policies.

NATHANIEL PRYOR REED

one of the bureaus for which I had responsibility when I was at Interior—the Bureau of Outdoor Recreation. Nobody likes to complain about an old colleague. I had hopes that he would rise above his narrow, advocate's role as director of the Mountain States Legal Foundation. I had hopes that he would develop into a statesman Secretary of the Interior, in the tradition of Udall, Morton, Hathaway, Kleppe and Andrus.

But two of Watt's actions have convinced me that he is already a disaster as Secretary. One of these is his butchery of the Land and Water Conservation Fund. I'll return to that later. The other is the talk that he delivered to the Conference of National Park Concessioners early this year—surely one of the most fawning, disgusting performances ever given by a Secretary of the Interior. He was so eager to please that he all but gave away the park system.

"I don't like to paddle and I don't like to walk," Watt told the concessioners. In answer to a question about river-running in the Grand Canyon, he said: "I went down in September on the Grand Canyon, Colorado River. . . . The first day was spectacular. . . . The second day started to get a little tedious, but the third day I wanted bigger motors to move that raft out. There is no way you could get me on an oar-powered raft on that river—I'll tell you that. On the fourth day we were praying for helicopters and they came."

Can you imagine? We have a Secretary of the Interior who is bored by the Grand Canyon! This is a man who was nominated for his job in part because he is a westerner, and yet his insensitivity to the beauty and adventure of the West is appalling.

But these are only incidentals. Watt actually invited the concessioners to help him *administer* the national parks. Here are his exact words: "You folks are going to play a tremendously important role and a growing role in the administration of our national parks, and we are going to reach out to involve you in some areas that you haven't been asked to be involved in before. I shouldn't say that. We are going to ask you to be involved in areas that you haven't been allowed to be involved in before."

Now I have no desire to feud with the national park concessioners. A few of them are rascals, but most of them are fine people who perform valuable services. But they have no business whatever involving themselves in park administration. There has always been a certain amount of tension between the Park Service and the concessioners, but it's a healthy tension. Whether Watt knows it or not, he cannot resolve this divergence of interests by waving a wand: he cannot legally delegate any part of managing the national parks to the concessioners.

At the same time Watt has proposed numerous changes in the rules for administering individual parks that would benefit private parties at the expense of the public interest. In Everglades National Park and Big Cypress National Preserve alone, he would:

- allow airboats to use a trail in the park,

contrary to longstanding policy;

- give commercial fishermen in the park lifetime permits, whereas previous policy has been to phase out this activity in 5 years; this action would in all likelihood destroy a multimillion-dollar game-fishing industry outside the park;
- give lifetime occupancy permits to squatters in the Big Cypress.

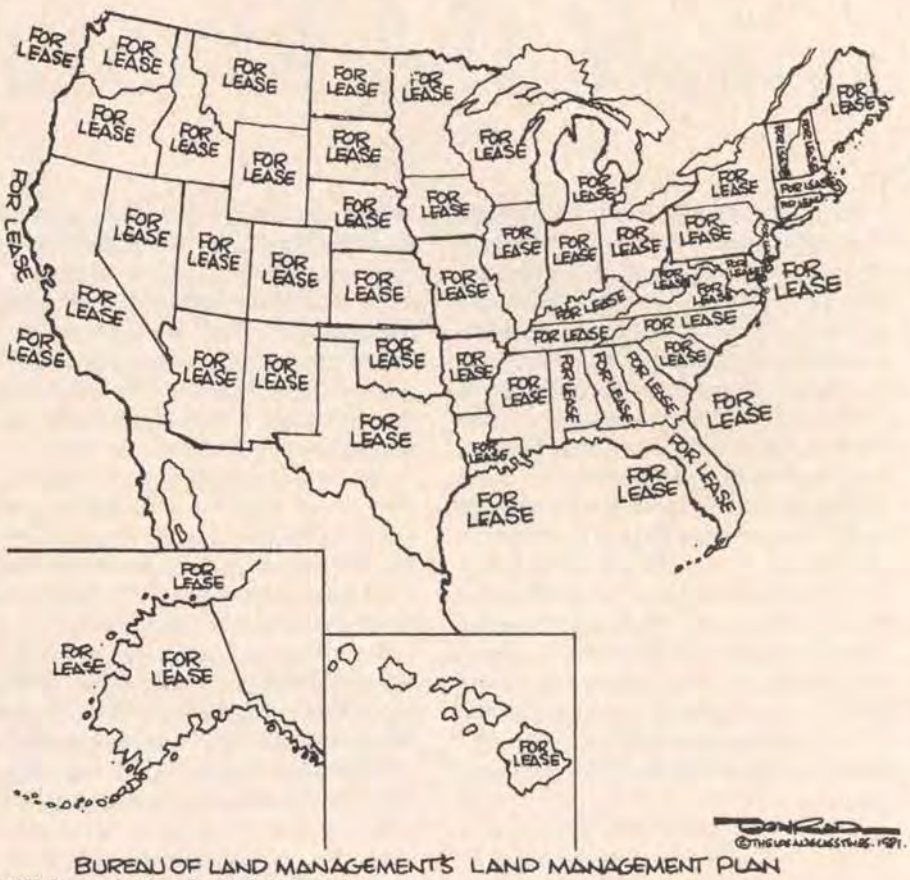
Watt seems to think he has divine sanction for his effort to turn our natural resources over to concessioners and developers. He has been quoted in *Time* magazine as saying, "My responsibility is to follow the Scriptures, which call upon us to occupy the land until Jesus returns." But the Scriptures also have this to say about the land: "Woe to the ones joining house to house, and those who annex field to field until there is no more room. . . ." Isaiah 5:8. The sad truth is that the Secretary and his developer friends are worshipping a false god. Matthew, Christ's discerning disciple, wrote: "Beware of false prophets which come to you in sheep's clothing, but inwardly are ravening wolves. Ye shall know them by their fruits." Matthew 7:15.

All of this, of course, is at utter variance from the Republican tradition. Nor do I believe the Watt approach corresponds to the environmental philosophy and the record of his President. In point of fact, that record is a very good one.

California made significant environmental progress under the leadership of Governor Ronald Reagan, as a few examples will show: He vetoed the Dos Rios Dam in the face of strong support by the powerful southern California water lobby. During his administration the state park system nearly doubled in size, and the initial coastal zone plan was developed.

In light of his record, it is difficult to explain why President Reagan has permitted his administration to recommend eliminating the Land and Water Conservation Fund programs, including the historic preservation program in its entirety, the agency that Watt himself so proudly headed a scant five years ago—how's that for loyalty? The answer, I believe, has to do with two Reagan preoccupations—foreign affairs and budget cutting—and his management style, which involves delegating a great deal of authority to trusted subordinates. What has happened is that some of his subordinates have abused this trust.

Let's examine Watt's attempt to trash the Land and Water Conservation Fund. The money comes from the sale of offshore oil and gas leases. The annual contribution to the fund now stands at almost $1 billion. The fund can be expended for only two basic purposes: to purchase land for selected fed-



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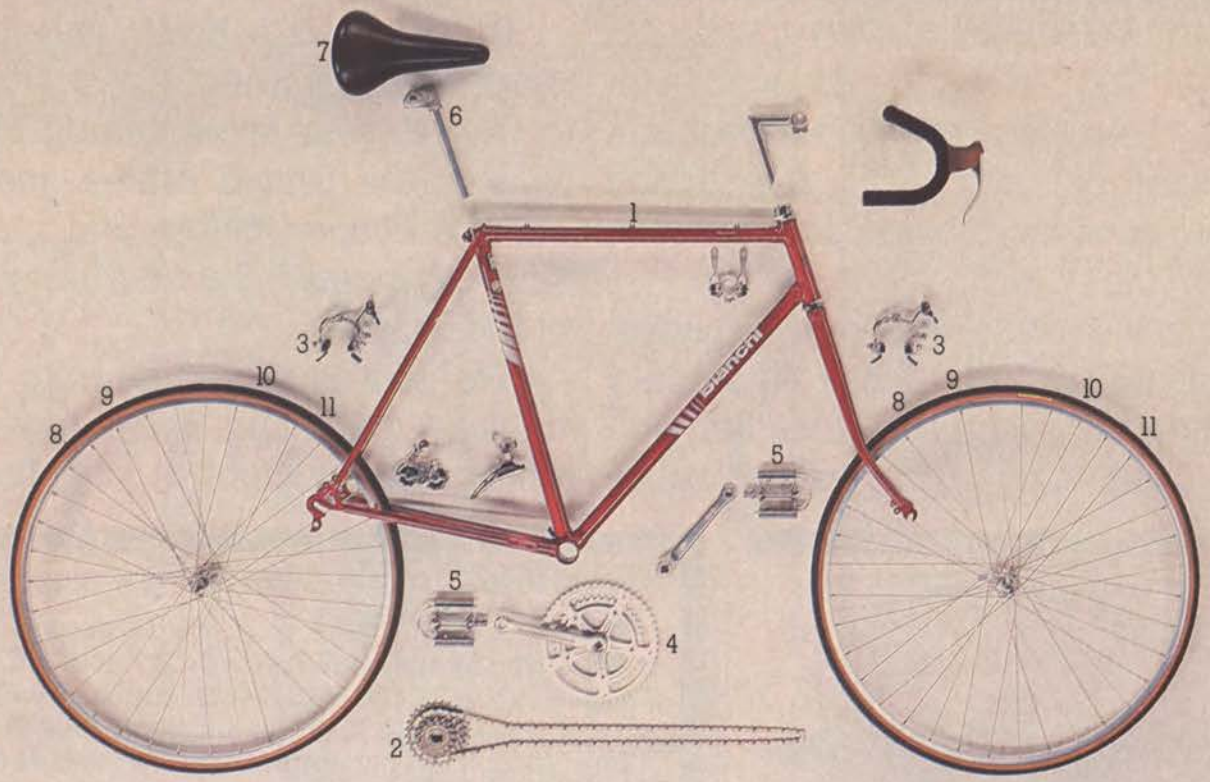

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eral programs (e.g., fleshing out the national parks and forests and providing habitat for endangered species) and to make matching grants for state and local governments to use in establishing their own parks and recreation projects.

The state side of the fund has become one of the most cost-effective revenue-sharing programs ever created. It has been used to preserve hundreds of thousands of acres of land, which have been enjoyed by millions of Americans.

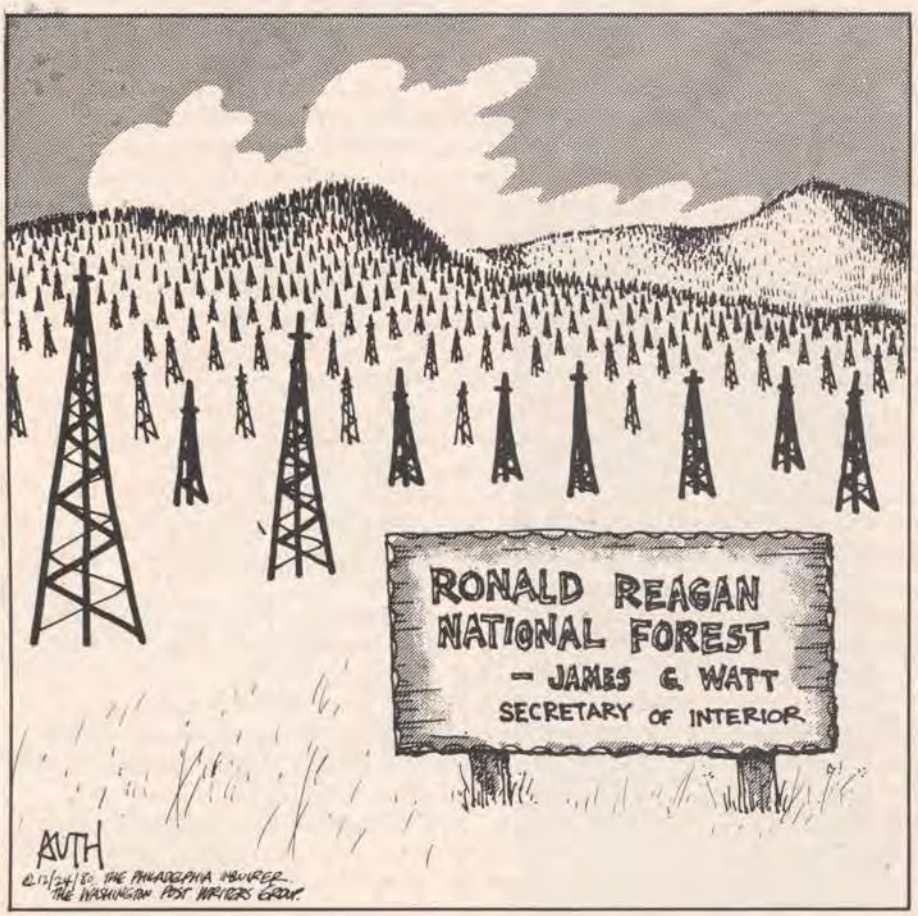
The federal side of the fund is the means by which parks in concept become parks in reality, by which endangered species obtain a new lease on life. If national parks, refuges and forests are to be anything more than boundary lines drawn on paper, the fund is indispensable.

The Carter administration had asked Congress to appropriate $237 million from the fund for federal land purchases in fiscal year 1981 and $335 million in fiscal year 1982. Watt proposes to spend no more of the '81 money; he wants to stuff the unobligated $105 million back into the fund. He proposes to reduce the 1982 appropriation to a token $45 million. At the same time he wants Congress to rewrite the rules for using the fund and appropriate $105 million for restoring and upgrading existing parks. As for the state and local grants program, Watt has in mind nothing less than its extermination.

And so, in one rash step, the Secretary of the Interior has proposed wiping out the most popular and effective federal revenue-sharing program in the country, perpetrating a cruelty on every landowner within the boundaries of a national park or forest, and guaranteeing that land purchases for the fund's purposes will be at inflated prices down the road.

I want to dwell for a moment on this fiscal aspect of the Watt proposal, for it's the one that strikes me as an out-and-out betrayal of the President. In his eagerness to be out-front of all other agencies in budget-cutting, Watt has saddled his successors—and the American taxpayers—with an inflationary future. Instead of fighting inflation by reducing expenditures, he will make sure that his successors pay swollen land prices a few years from now. This is false economy. This is a travesty of budget-cutting. This is directly contrary to the fiscal responsibility that Ronald Reagan was elected to impose.

Let me also dwell for a moment on the implications of Watt's proposal for the endangered species program. Although earlier Watt had promised that "high-priority endangered species programs will be continued," when he submitted his FY 1982 budget he reneged. Endangered species took a 36% cut, the deepest of any program



Secretary Watt: Further Particulars

SINCE THE SIERRA CLUB started its "Replace Watt" petition drive in mid-April, Secretary of the Interior James Watt has continued working against conservative stewardship of the country's natural resources, acting out his extreme pro-development position. The following list of actions updates the first one *Sierra* published in the May/June issue; it offers only new actions and further developments in the various areas he touches upon.

Acquiring Power

- Was appointed chair of the new cabinet-level Council on Natural Resources and the Environment, which influences all executive agencies. As chair, he has taken decision-making authority beyond the responsibilities of the Secretary of the Interior. He: will establish the timber-harvest level in national forests (Agriculture Department's function); stated his intention to shift to his agency the authority for assuring federal compliance with the National Environmental Policy Act (formerly the responsibility of the Council on Environmental Quality); helped to gut the Council on Environmental Quality, reducing its staff from 60 to 16; is working to centralize interagency control over water projects within his cabinet-level council; has stated his intention to weaken the Clean Air Act (Environmental Protection Agency's domain).

Wildlife

- Cut the budget for the Office of Endangered Species by 30%.
- Stopped all new endangered-species listings.
- Eliminated the State Cooperative Program, one of the principal means of implementing the Endangered Species Act.
- Announced his intention to downgrade the listing of leopards to let hunting trophies be imported.

National Parks

- Advocated an 85% cut in the Land and Water Conservation Fund, reaffirming his decision to stop further land purchases for parks. Instead, he proposes to divert funds from acquisition of vital lands toward maintenance of capital properties such as buildings.
- Has initiated actions that could remove more than 2000 acres from Olympic National Park.
- Developed a "hit list" of urban national parks to be turned over to state control.
- In Everglades National Park, he is considering rescinding a five-year-old ban on commercial fishing in Florida Bay; reopening to tomato and squash farming an area of up to 7000 acres; and lifting a prohibition on airboats in fragile wilderness areas.

Offshore Oil and Gas Leasing

- Proposed opening up virtually the entire Outer Continental Shelf to oil and gas leasing using new procedures that eliminate protection for marine and coastal environments.
- Proposed totally eliminating federal funding for the Coastal Zone Management Program in the budget for Fiscal Year 1982.
- Reduced the Outer Continental Shelf Environmental Studies Program by 25%.
- Suspended a prohibition on oil and gas exploration in California's marine sanctuaries.
- Strongly urged the Commerce Department to issue regulations (National Oceanic and Atmospheric Administration, *Federal Register*, May 14) stating that offshore leasing, by itself, has no direct effect on the coastal zone.

Onshore Oil, Gas and Mineral Development

- Is working with governors of several western states to develop ideas on how to transfer federal lands to the states.
- Accelerated oil and gas leasing in Alaska.
- Eliminated the five regional offices of the Office of Surface Mining, cutting 57% of the staff charged with enforcing standards in state programs.

Wilderness

- Modified policy for BLM wilderness study areas to allow increased development, even if it impairs the area's suitability for wilderness designation.

Administrative Actions

- Fired 51 members of the Interior Department's solicitor's office, gutting the office in charge of drafting regulations.
- Has failed to consult with Indians on budgetary and policy decisions affecting them, as he is required to do. Partly as a consequence, the National Tribal Governments Conference, representing 150 American Indian nations, has called for his resignation.
- Wrote an internal memo on May 7 that outlined goals for himself and his undersecretaries. They include: to "open wilderness areas," to "remove regulatory restrictions," to "accelerate public lands leasing" and to "realign the entire EIS system."

Alaska

- Began leasing procedures by asking industry and the public for comments and suggestions about potential oil and gas leasing on 130 million acres, including 57 million in wildlife refuges.
- Accelerated the leasing schedule for areas on the Outer Continental Shelf.
- Indicated that state-authorized aerial wolf-hunts would be permissible on BLM lands, which had previously been off-limits to the hunts. This he considers one feature of his "good neighbor" policy regarding the management of state and federal lands.
- Directed the Bureau of Land Management to review all of its lands for possible opening to entry under the homestead, homesite, headquarters-site and small-tract laws. (The state is already disposing of 100,000 acres a year for these purposes.)
- Is considering proposed summer seismic exploration by private corporations in the National Petroleum Reserves-Alaska (NPR-A), previously prohibited to avoid disturbing wildlife during nesting and calving seasons.
- Is preparing to lease 2 million acres in the NPR-A next December. The areas will be chosen from a pool of 6 million acres that include important wildlife areas.
- Told the Fish and Wildlife Service (FWS) to wind up its study of wildlife on the coastal plain of the Arctic National Wildlife Refuge by the end of 1981; the Alaska Lands Act specified in 1980 that the study cover five years.
- Has proposed budget cuts designed to block programs required by the Alaska Lands Act, such as comprehensive land-management plans, wilderness reviews and wildlife research. □

in the department. Watt slashed, by more than half, the budget for the listing program, by which endangered species are recognized as such and afforded the protections stipulated in the act.

Although Watt implied that he was shifting priorities to the recovery side of the program, he cut that by $6.5 million, more than one third of the fund, including the grant program to the states in its entirety. He also cut almost half of the research effort. For Watt to pose in front of a painting of a bald eagle, as he did for *Time* magazine, is the ultimate in hypocrisy.

Butchering the fund is a senseless act. Since open space is disappearing at a horrendous annual rate, many state and local park opportunities will be lost forever. Since the price of land to be acquired for federal units will surely escalate, no money is being saved. Since many endangered species must be rescued now or never, no time is being bought. Even so harsh a critic of Interior's policies as the Heritage Foundation stopped short of recommending that the fund be abolished.

Why, then? Why does Watt support such a looney proposal? Why this from a man who, in his Senate confirmation testimony, touted his stewardship of the fund during his BOR days as evidence of his environmental consciousness? Only two conclusions make sense. One is that he was sandbagged by the Office of Management and Budget as badly as any Cabinet official in recent memory. When they take away your most popular and effective program plus the two or three others that lie at the very heart of your responsibilities, Buddy, you've been had. James Watt either doesn't have the courage

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or the conviction to effectively disagree with a proposed cut or he lacks the basic knowledge to argue forcibly for important programs that are vital to the Department of the Interior's mission.

Once he sets policy, a President deserves, expects and demands total commitment from his staff; but his aides and Cabinet owe him a choice of a broad range of alternatives from which to set his policy. It is the duty of an effective Cabinet member to present choices and tradeoffs for his President's review, not to parrot what he thinks the President would like to hear.

The other possibility is even more alarming. Watt seems to be saying to conservationists: "You can convince Congress to authorize all the mountain parks and urban NRAs you want, but I'm not going to take care of them." He seems to be saying to Congress: "You thought you knew what you were doing when you established the New River Gorge, the Santa Monica Mountains and the Cuyahoga NRAs a few years ago, but you didn't. I know better."

My suspicion that vindictiveness may be Watt's guiding principle is supported by the man's attitudes toward his opponents. Does he marshall his arguments and try to reason with them? No, he calls them names—"environmental extremists" who would "weaken America." What a bankrupt and infantile approach!

Watt has also accused the National Park Service of grabbing "for more and more lands" and has expressed his scorn for the new urban parks that Congress has established. He wants to turn these areas back to the states—although I have yet to hear of a single governor clamoring to take one over. I must admit to having had some initial reservations about urban parks, but the overwhelming attendance figures have convinced me that these areas are bringing outdoor recreation to millions of people who would otherwise be frozen out of the park system. How does a Secretary of the Interior know the value and the heritage of the national park system if he has no experience except boredom while visiting the nation's historical and natural gems?

And, of course, we do need more money to restore and maintain the parks. You can't protect America's superb natural heritage for nothing—there's no such thing as a free park. Yet the national parks are surprisingly inexpensive: last year the total Park Service operational budget came to a little more than $2 per American. And the Park Service estimates that at least one out of four Americans made at least one recreational visit to a park unit last year.

I submit that the national park system is an incredible bargain and that we can afford

to up the ante a little to provide it with protection. But this should be done *in addition to* meeting the obligations of the Land and Water Conservation Fund, not *in lieu of* meeting them.

I have great faith in Congress as a whole, in legislators who know and love the land. I think that when the chips are down we'll be able to count on them. I don't believe they will be party to legislation that protects neither the purse nor the land.

Sometimes I wonder whether we can keep it up. The work of the conservationist is never done. We can never rest on our laurels, and sometimes it seems that we can't even stop to enjoy what we're fighting to save. As T. S. Eliot has said, "For us, there is only the trying."

But we must not forget that we have common sense and the will of the people on our side. Despite the widespread *general* support for the President's economic package, poll after poll shows that Americans want to maintain their quality of life and protect their environment. At the very least, one out of four Americans is a potential ally in this fight, and we've got to get the message out to them. We've got to convince them and the Congress and the President of three things:

- The Watt budget is an aberration from the Republican tradition and the true Reagan philosophy;
- The Watt budget is self-contradictory and inflationary;
- Watt himself is utterly lacking in the vision and judgment necessary to continue as Secretary of the Interior.

Unless we can make this case convincingly, all our victories over the last 20 years are in jeopardy. Until the administration realizes what is going on in the agency that is supposed to guard and wisely manage our natural resources, we can't relent in our vigilance and outspokenness. Unless a change is made soon, we will witness the tragic decline of that agency and its personnel into the Department of the Inferior.

President T. R. Roosevelt—a Republican with a conservation ethic as broad as the Giant Sequoia—set national goals still pertinent now: "I recognize the right and duty of this generation to develop and use our natural resources *but I do not recognize* the right to waste them, *or* to rob, by wasteful use, the generations that come after us."

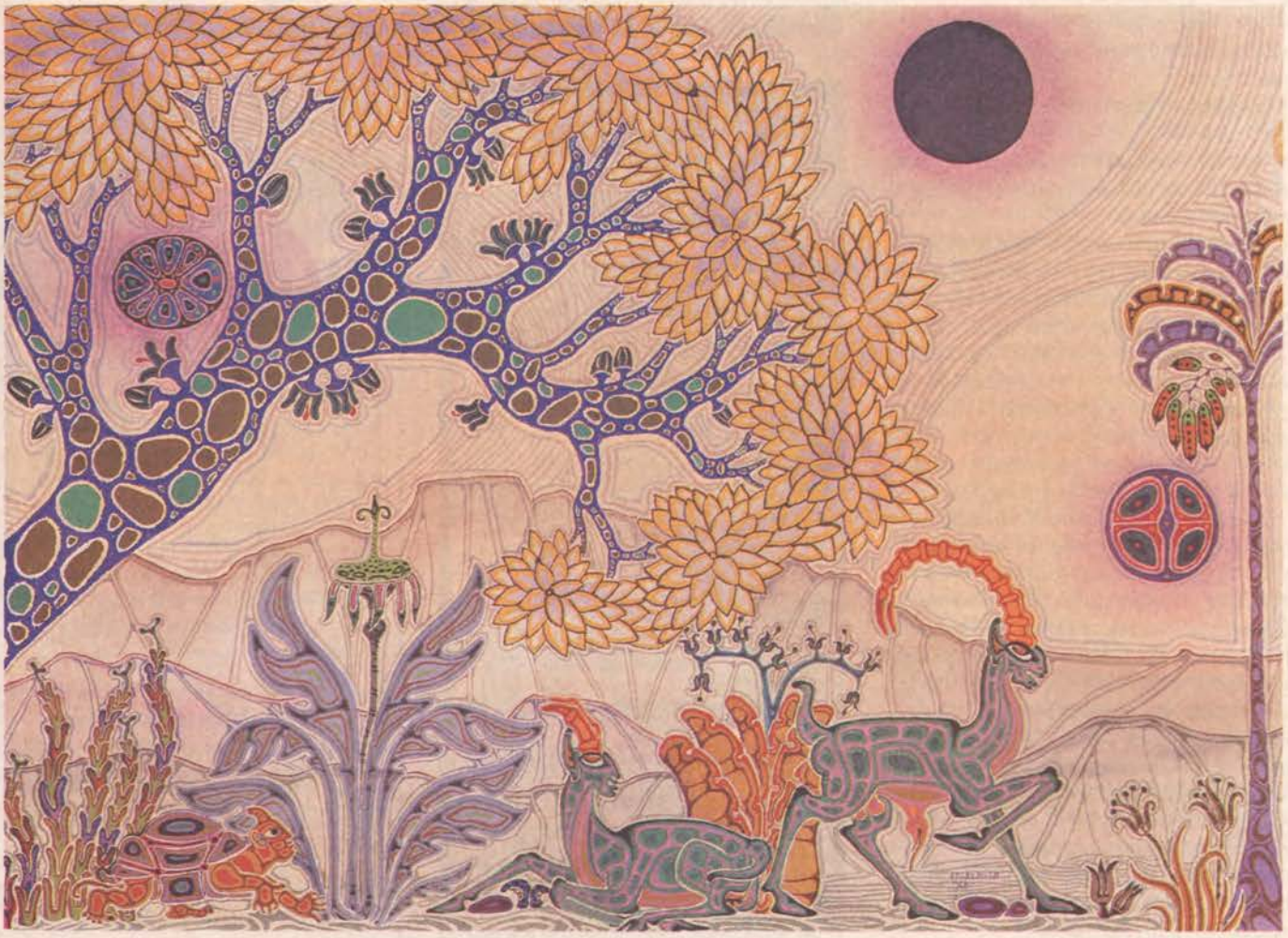
I am convinced this concept will prevail because I believe that President Reagan is at heart a good man. He is a rancher who knows and cares for the outdoors. I do not believe he wants his presidency to be remembered as the end of the Conservation Era. Most of all, I believe he will listen to the voice of the American people. □

Jesse Allen

Richard Dunning

BORN AND RAISED in Kenya, modern artist Jesse Allen paints exotic jungle wildernesses that depict the wildness, loneliness and innocence of that landscape and its creatures. His universe is unique, populated by creatures real and imaginary, creatures exaggerated and distorted to merge harmoniously with the patterns of their surrounding landscapes. His is a world without people, in which animals engage in passionate, life-and-death struggles or peaceful co-existence; it is a world of movement and of mystery. Allen's fantastic imagery celebrates the "oneness of all life, the unexpected harmonies that unite to create the logic and poetry of the universe."

First exhibited more than fifteen years ago, Jesse Allen's artistic visions have been received with great enthusiasm both in the United States and abroad. His work can be seen at the Vorpal Galleries in San Francisco and Laguna Beach, California, and in New York.



Hypothermia

BERNARD SHANKS

IT KILLED HUNDREDS on the *Titanic*. As old as caveman, it strikes the modern down-clad hiker or nylon-clothed boatman. The killer is an ancient enemy of wilderness man. It first chills the body, then numbs the mind to bring death with subtle efficiency. The technical name of the killer is hypothermia, and its basic weapon is cold.

Death by cold is a primeval fear. When one skis or hikes in frigid weather, apprehension grows with darkness and falling temperatures. Anyone who has faced a subfreezing night without a fire recalls the dread. The fear is based on fact. As many as 85% of wilderness deaths are caused by hypothermia. This silent, nondramatic killer with a pretentious name is far more deadly than hunger and claims more victims than animals, avalanches or lightning.

Hypothermia has three basic tools, which usually act in concert to produce a prey. First and most important is cold. The second and third, wind and wetness, magnify the adverse effects of low temperatures and increase the possibility of hypothermia. Finally, the silent killer requires a person with low energy, weakened by a lack of food, poor health or some trauma. Physiologically weakened, poorly clothed or sheltered, a person exposed to the three-pronged attack of cold, wind and wetness is in trouble.

Newspapers often claim that a death in the wilderness was caused by exposure or freezing. More accurately, the victim died of hypothermia. Although widely publicized in recent years, hypothermia remains misunderstood. Fatalities do not necessarily result from extremely cold temperatures. Some wilderness hikers suffer hypothermia when temperatures are in the 32°–50°F (0°–10°C) range.

An example is the fate of those aboard the Greek liner *Lakonia* crossing the Atlantic on December 22, 1963. On that night a fire broke out below deck. The crew was unable to contain it, and the fire drove passengers into the water. Water temperature was 65°F (20°C) and air temperature was only slightly colder. Such temperatures are hardly extreme or stressful. But water exaggerates the cold's impact by robbing the body of its vital heat. Body cooling advances slowly under dry conditions but accelerates rapidly in damp clothing. In cool water, heat floods from the body and hypothermia develops. Before rescue, 125 of the ship's passengers died. More than 90% of the fatalities resulted from hypothermia.

To understand hypothermia, it is essential to understand a few fundamentals of the human body. Humans maintain a relatively constant and warm body temperature independent of the environment. In a physiological sense, people abhor cold, and much human effort and economy are devoted to protection from cold. In all climates on earth, people maintain a body temperature close to 98°F (37°C), an optimum resolved by evolution.

Our bodies produce heat by consuming energy in the form of food. If body temperature rises, an automatic cooling mechanism is triggered. Conversely, if the temperature falls, other protection instinctively comes into play. The most obvious is shivering, an involuntary method of warming muscles. In addition, blood changes its circulatory pattern to provide more heat for the vital organs at the body core. Circulation to extremities is reduced to save the heart, lungs and other organs. Obviously toes, fingers and the nose suffer first from cold and later from frostbite. The human body automatically and prudently makes this choice. If cooling continues, even the core temperature will drop. The drop in the vital core temperature—termed hypothermia—is dangerous, a threat to life.

Nutrition plays a vital part in meeting the body's requirements for fuel to maintain the core temperature. Snacks of sugar and other carbohydrates are valuable energy sources during strenuous conditions. Eat small amounts often, maintaining a steady flow of food-fuel all day long. Foods that contain protein and fat are also needed, but because the body utilizes them more slowly, their value is less immediate. Protein is more important for its staying power. For quick energy, carbohydrates are superior.

Understanding the heat-loss mechanisms leads to understanding methods to prevent hypothermia. Radiation is the most important method of heat loss. Like a radiator, the body constantly emits heat waves that diffuse into the air. A fox, with a thick winter coat, is well protected from heat loss. But humans need insulation such as clothing, a tent or a hollow log to prevent some of the heat loss. Because of the high concentration of blood, the head is the major source of heat loss. At 40°F (4°C), up to half of the body's heat can be lost through the head. Cooling increases rapidly as the temperature drops. At 5°F (−15°C), up to 75% of the body's heat is lost through the head. The lesson is obvious: wearing a warm hat is an excellent way to reduce radiant heat loss. An old mountaineering maxim held the truth: "When your feet are cold, put on your hat."

Conduction, another method of losing heat, is the process of transmitting body heat directly into a colder medium. Unlike radiation, heat loss by conduction is usually small. Under some circumstances, however, heat loss via conduction may be important. Metal, ice and snow all conduct heat far more rapidly than wool, wood or similar insulated materials. Dense materials are usually efficient conductors, whereas light materials often are not. A metal zipper, nails in hiking boots or sitting directly on snow or ice can lead to important losses of heat.

The loss of heat by conduction in cold water is even more dramatic. The thermal conductivity, or speed of transferring heat, of water is 240 times that of still air. Wet clothing, depending on conditions, can accelerate heat loss from several times to more than two hundred times as fast as dry clothing. The lesson to prevent heat loss is explicit: dry clothing is far better than wet clothing; therefore, it is essential to stay dry if possible. Remember that clothing can get wet from sweat and overexertion as well as from rain, snow or water.

Deaths in cold water may appear to be

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from drowning but in fact result from hypothermia. Boaters who fall overboard or swimmers in cold lakes may quickly lose consciousness because of the rapid loss of body heat. Although air temperatures may be high, often these deaths occur in May, June or July, when water temperatures remain low. The cold water rapidly conducts the heat from the body. The core temperature of a swimmer may drop 6°–8°F, with a quick loss of rational thinking. Often the victim becomes numb and nearly unconscious, then quietly slips under water.

The night of April 14, 1912, provided history's most dramatic example of hypothermia. Just before midnight, the luxury liner *Titanic* was sliced by an iceberg. Some passengers began loading into the few lifeboats available, but many boats slipped into the cold night only partly loaded. Most of the ship's passengers were left on the sinking deck. Survivors in the lifeboats were haunted by the wailing of those who floated in the freezing water. Gradually, the cries of distress died away. One boat rowed back through the flotsam to look for survivors. Most, even in life jackets, were dead—but not drowned. A few were pulled from the water still alive, only to die during the cold hours that followed. Accounts of that grim night state that the passengers "froze," but most from the *Titanic* probably died of hypothermia. By dawn, rescue ships found the lifeboats and looked for other survivors. None were found—1,522 people had died in the icy water.

Studies at the University of Victoria in British Columbia illustrate the proper conduct for a person who is immersed in cold water. They estimated that survival time could be increased by one third if a person remained immobile while waiting for rescue. Researchers estimated that a person in 50°F (10°C) water could swim only about a mile before being overcome by the cold.

Studies also established that drown-proofing, a technique of conserving swimming strength by keeping the head under water except for periodic breathing, cooled the body fastest. Drown-proofing is useful for warm water but not acceptable under cold conditions. Considerable heat is conducted from the body, especially by immersing the head. A better technique is to remain immobile, head above water, with a tightly strapped life jacket. At 50°F (10°C), staying immobile, rather than swimming, doubles survival time. Several people huddling together, with clothing and life jackets, increases survival time still more. Insulated survival clothing and life jackets are essential for long-term protection in cold water.

The most important lesson of the Canadian research is to keep the head out of cold water if possible. Swimming and vigorous efforts are futile unless land or a boat is near. Survival time is extended if it is possible to get out of the water, even partially. The conducting ability of water makes it the swiftest tool of hypothermia.

Convection is a third serious source of heat loss. Unlike conduction, convection heat is transferred by the motion of the air. Convection heat loss is low when air movement is slight but rapidly increases with air speed. Radiant heat warms the air next to the skin, and heat loss via convection occurs if the warm air is constantly swept away by wind. The practical function of clothing is to retain a layer of warmed air next to the skin. As the wind increases, heat loss accelerates because of a wind-chill factor. For example, at 0°F (−18°C), the actual temperature is lowered an equivalent of 5°F (3°C) by a 5-mph wind. At 10 mph of wind, the chill factor lowers the 0°F temperature to −20°F (−28°C). With 40 mph of wind, the chill factor lowers the 0°F (−18°C) temperature to −55°F (−48°C). The solution is obvious—wear windproof clothing or find shelter to avoid convective heat loss.

Evaporation is another source of body-heat loss. When moisture evaporates from the skin, heat is lost—a physical process that cannot be effectively reduced. However, the amount of sweating can be reduced and wet clothing minimized. It is essential that moist air from sweating escape, thus reducing the possibility of damp clothing. Wet clothing loses heat by both conduction and evaporation. Thus clothing must be able to "breathe" to carry away body moisture efficiently. If you wear completely waterproof clothing, water vapor cannot escape.

A final source of heat loss is respiration. Warm, moist air is exhaled with every breath. Under normal conditions, respiration is not a serious problem. At low temperatures and high elevations, however, heat loss via respiration can contribute to hypothermia. Elevation brings frequent, labored breath, which adds to the burden of keeping the body warm. Heat loss may be minimized by preventing heavy breathing or panting under cold conditions. Breathing through the nose rather than the mouth can also conserve body heat.

Preventing heat loss helps prevent hypothermia. The conservation of heat is therefore a major objective. But heat production is the other side of the body's energy equation. Increasing heat production helps deter or cure hypothermia. Heat is constantly generated by the human body as a result of the metabolic process. Oxygen combined with the body's fuel produces in a complicated fashion three types of heat. Basal heat production, a fixed metabolic rate essential for the minimum processes of life, is the rate of heat output for a calm, sitting person. It is partly controlled by the thyroid gland, and because it can be altered only slowly, it is ineffective in defending the body against hypothermia.

Hypothermia can cause fatalities in summer as well as winter if hikers are unaware of its threat.

Thermoregulatory heat production is a second involuntary method to maintain the body's temperature. When the core temperature drops, even by only a degree or two, an automatic response begins. Rapid muscular activity—shivering—commences and can increase the heat production as much as three times the basal rate. Once the body is warmed, shivering stops. However, coordination and useful movement are reduced with this method of heat production. More important, shivering consumes energy reserves wastefully. It is much better to put on extra clothing or find shelter from the cold and save the energy.

Exercise is a third method of heat production. Running at a slow pace may double heat production. Hiking uphill with a pack can produce heat at six times the basal rate. Strenuous exertion, which is possible for only a short time, can elevate heat produced by up to ten times the basal rate. The maximum, all-out effort can be sustained for approximately ten minutes by a healthy adult. Activity at five times the basal rate may be continued for an hour or two. Although this is an important way to prevent hypothermia, energy must be rationed carefully in a survival situation. Panic running or exercise will waste valuable stength. It is much better to use the energy building a shelter or gathering firewood. Otherwise, after a short, excessive period of exertion, exhaustion can result, to be followed by deadly hypothermia.

Shivering itself is not dangerous; instead it is a perfectly normal response to cold and a small drop in the core temperature.

Still, it is a warning that heat loss from the body needs to be reduced. Normally it is nothing to be concerned about—unless it can't be stopped.

Shivering may continue and the body warmth may ebb because of poor physical shape, cold, wet and wind. When the body core temperature drops to 91°–95°F (33°–35°C), intense shivering may result. You may have difficulty speaking or become forgetful; in general, your thinking is slowed. A brain as numb as the body is dangerous. You may not be sharp enough to perceive danger, may be uncoordinated and have an accident in rough terrain. You may be unable to start a fire or prepare a shelter. Many serious accidents occur during this early stage of hypothermia. A companion can help recognize the symptoms at this point. If alone, you must immediately concentrate on finding shelter, building a fire and then eating.

During the next stage of hypothermia, as the core temperature drops to the 86°—91°F (30°—33°C) range, shivering decreases and eventually is replaced by muscle rigidity. By this time, rational thinking is severely impaired. Coordination is lacking, speech almost impossible. But you may be able to walk. Failure to shiver is the best indicator of this dangerous stage of hypothermia. The tense muscles replace the uncontrolled shaking and mark the continued decline in core temperature.

As the core temperature continues to drop, the body's sophisticated mechanisms fail, one by one. While the individual response may vary according to the physiological conditions of the body, the general downward trend continues. The complex body chemistry begins to change. As the internal temperature drops below 86°F (30°C), serious problems develop. Pulse and respiration slow; uncoordinated, irrational behavior may be replaced by a stupor. At this point, the process of hypothermia may be accelerating as the body exhausts its remaining energy resources. Falling body temperatures can be stopped and reversed only with assistance from others. Generally, as the core temperature falls below 80°F (27°C), deep unconsciousness will result. Reflexes may cease entirely; heartbeat may become erratic. Breathing will be difficult as the respiratory functions begin to fail. Even if external rewarming begins, the internal organs continue to cool. A process of core "afterdrop," or continued heat loss, makes recovery difficult. At this point in a wilderness situation, little can be done. Clinical help or internal heating is needed. If rewarming has not stopped or reversed the process, respiration ceases somewhere around 78°F (25°C). Individuals vary in response to falling temperatures, but somewhere in this range death results.

The steps of hypothermia can proceed slowly or rapidly. Hypothermia can occur in only a few minutes in water near freezing temperature. Or, depending on other conditions, the process may be spread over many hours, even over a couple of days. The rapid cooling of the body can be fatal to boaters who are immersed in cold alpine lakes or in ships that go down in cold-water oceans. It can occur while one is swimming in lakes or rivers, particularly in the early summer. It is helpful to wear a life jacket that gives some protection from the cold. Without other clothing, a life jacket will not necessarily prevent hypothermia. Boaters are sometimes found floating in cold water with their heads held out of the water by a life jacket—and dead. In extremely cold conditions, only a wetsuit or other survival clothing will prevent hypothermia.

Hypothermia must be appreciated and understood as a deadly phenomenon for wilderness users. Some people have died of hypothermia yet never felt really cold. Body cooling may take hours and be unnoticed until rewarming is difficult.

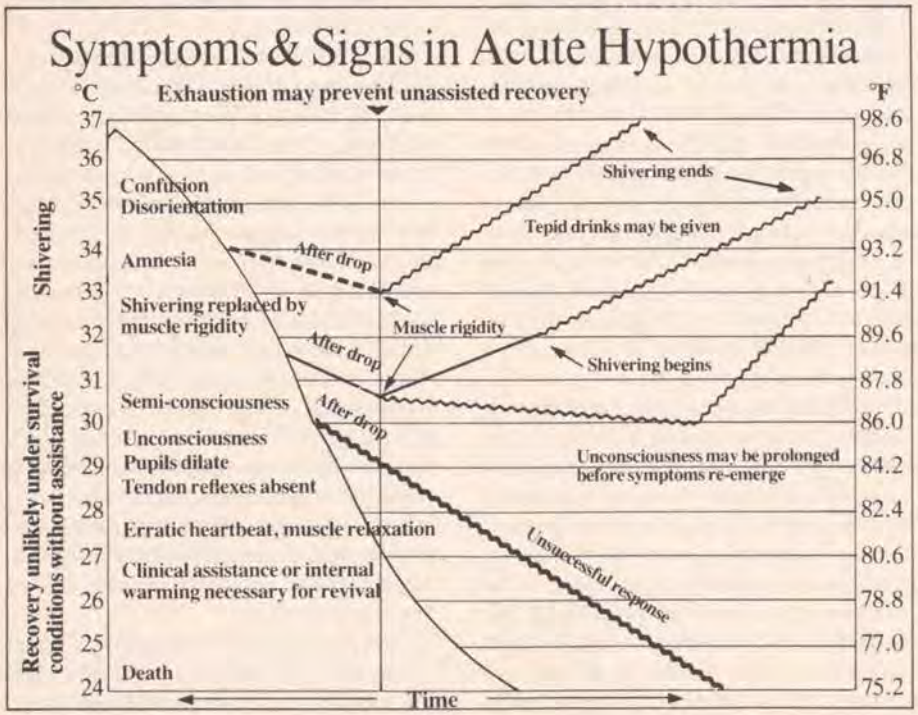
Prevention and understanding are the best defenses against hypothermia.

First, prevent the conditions that lead to hypothermia. Get plenty of rest, eat well and frequently. Avoid wind or cold conditions that rob the body of its heat. Stay dry, since most of the insulating ability of clothing is lost when wet. If this is impossible, carry a windbreaker or space blanket that protects the body or wear special insulated survival gear aboard ship. It is important to understand cold and to appreciate the hazards of temperatures even in the low 50s if accompanied by wind and moisture. Always have warm and waterproof clothing to prevent severe cooling or wetness. Most important, take the time to use it.

A second defense against hypothermia, terminating exposure, may be essential if you don't have adequate clothing or protection. Stop the conditions that cause hypothermia. Sometimes the most rational person is the one who has the courage to turn back from a hike or a climb and seek shelter from a storm. The person who avoids wind, rain or snow when not prepared is avoiding the danger of hypothermia. Although mild shivering is a natural, healthy response to cold, prolonged or violent shivering is a warning sign. Seek shelter to let your body maintain its essential normal temperature. The type of shelter or protection does not matter, as long as it works.

Although you may have a tent and sleeping bag, it is important to know when to stop. At times, the exercise of hiking with a pack or walking may be the only way to prevent hypothermia. Wind and cold may be marginally severe. Your body's heat production may drop 50% or more when you stop, and permit the core temperature to fall. Therefore, it is essential to make camp or find shelter when your body still has an energy reserve.

It is important to identify the symptoms of hypothermia. Always be alert for symptoms, such as uncontrolled shivering, vague, slow or slurred speech, which serve as warnings for you or your companions. Memory lapses, trembling hands or unexplained



stumbling or lurching may be a warning, especially under wet, cold and windy conditions, that the core temperature has dropped and the body is beginning to fail.

Apparent exhaustion or drowsiness may be another indicator of hypothermia. The old tale that sleep is fatal in cold conditions is not entirely true. A warm, sheltered person can safely sleep in extremely cold conditions. A decline in body temperature will awaken him. However, during poor weather, drowsiness, along with other symptoms, may be ominous. To lie down and sleep in wet, windy, cold conditions without shelter will probably prove fatal.

The final defense is the ability to treat hypothermia. First and most important, when hypothermia is detected, get the victim out of the wind and rain. Any shelter will serve this purpose as long as it is dry and provides protection from wind. In a shelter, core temperature can usually be maintained. If a person is immersed in cold water, there is little that can be done, but wool clothes or a life jacket can provide some protection. Quietly maintaining a position, if possible, with the head out of the water will also prolong the process of hypothermia. Swimming or thrashing in the water only accelerates heat loss. Most desirable is to get out of the water onto a capsized boat or log.

In a wilderness situation, remove all wet clothing and replace it with dry garments, if possible. Place the person in a dry sleeping bag or space blanket, if available, and add extra heat. In severe cases, the core temperature of the body drops although the body's surface is warming. Under these conditions, the body may not be able to rewarm itself without internal warming. Heat may be added by giving the person warm drinks. A more effective technique is to boil water and have the victim carefully breathe steam, which heats the heart and lungs rapidly. This technique, called inhalation rewarming, can be done with portable specialized equipment in the field. Such equipment should be available to rescue units and those exposed to severe conditions.

Do not give alcohol. It complicates the problem of rewarming. Alcohol produces a misleading sensation of rewarming because the blood vessels near the skin surface open. Blood travels from the core where it is needed most to the skin surface, permitting the loss of vital heat needed in the core. This accelerates the afterdrop process or continued cooling of the heart and lungs. Even after rewarming begins, the core will continue to cool. Despite the myth of brandy helping a chilled person, alcohol is one of the worst first-aid treatments.

In the field, other rewarming methods should be attempted. Obviously, a fire is important for heating fluids, drying clothing and warming the victim. Any additional heat loss and temperature decline must be prevented. Placing a victim in a sleeping bag may not be sufficient. Often it may help to surround him with warm bodies. Constant attention and care are needed once he is in a warm, dry place. Some have died of hypothermia when their well-intentioned friends left them in a sleeping bag and went for help. It is more important to continue to care for the person until the body core temperature returns to normal.

The human body functions best within a strictly limited temperature range. Cold is the basic weapon of hypothermia. But wetness rapidly accelerates cooling, and wind magnifies the cold dramatically. Hypothermia is best combated by prevention, proper clothing, staying warm and dry and eating properly. If necessary, treatment must be immediate and complete. Through an understanding and respect for hypothermia, many needless deaths can be prevented. □

Bernard Shanks has taught survival, outdoor recreation and wilderness policy courses at the University of Nevada and Utah State University. He has participated in many mountain search-and-rescue operations.

BRITISH COLUMBIA: CANADA'S BATTLEGROUND ON THE PACIFIC

LEON KOLANKIEWICZ

THIS IS A LAND whose sheer size and majesty have long stirred the blood of active explorers and armchair adventurers alike. Perhaps more than any other state or province in North America except Alaska, it evokes an almost mystical vision of the Great Northwest: a vast wilderness of brooding forests and untamed rivers, of forbidding mountain ranges crowned with perpetual ice and snow, of grizzly bears and leaping salmon, and of long, plunging fjords curving deep into mountainous recesses.

One doesn't immediately imagine massive shovels chewing into mountains, saws peeling the forest from a hillside or pipelines pouring mining wastes into clear bays.

To an extent, the vision reflects the place, even today. British Columbia's

The Inside Passage along British Columbia's west coast is known for its beauty and wildness and also for its rich resources.

Stephen Hilson/AlaskaPhoto

366,000 square miles make it larger than California, Oregon and Washington combined. But against their summed populations of about 28 million, British Columbia counts 2.6 million people, most of whom live in Vancouver and Victoria, within a stone's throw of the U.S. border. The hinterland is sparsely populated. In fact, much of British Columbia has been linked by road or rail only in the last two or three decades.

To say the province is mountainous is like saying the Sahara is desert-like. Through it run such beckoning ranges as the Rockies, Coast Mountains, Cascades, Purcells, Selkirks, Monashees and soaring St. Elias Mountains. Although the highest and most spectacular peaks have now long since been scaled, many lesser mountains and remote valleys remain virtually unexplored on foot.

Living testimony to enduring wildness are the mammals that still find refuge here—the grizzly bear, mountain goat, bighorn sheep, moose, caribou, elk, cougar, wolverine and wolf—all of which have been drastically reduced in number or range in other places on the continent.

British Columbia's sheltered coastal waters provide habitat for many engaging marine mammals, none more famous or formidable than the killer whale. Very little has been learned about *Orcinus orca* in the wild except that it isn't the menace it was once considered and the entire population along the B.C. coast is between 250 and 300.

The five species of salmon—chum, chinook, sockeye, pink and coho—symbolize the Northwest as much as any living things, and B.C. streams teem first with adults returning to spawn and die, then with juveniles descending to the sea. British Columbia's river fisheries have assumed an even greater significance since Columbia River's fishery was nearly destroyed by hydroelectric dams.

The country is big and, by American standards, still quite unspoiled. But it would be a mistake to call it virgin or pristine. Many British Columbians take pride in their labors to produce a living from natural resources. Although the province has developed some tourism and manufacturing, the economy has been built and still largely rests on the primary resources of minerals, forests and fish. The development of British Columbia, from early fur-inspired explorations to the uranium explorations of today, is inextricably linked to the efforts of a resource-happy industrial society.

This process is transforming the land, in the space of a few short decades, from an awesome area of untamed nature into a resource factory.

The following figures from a newspaper article on a Vancouver-based heavy equipment distributor show what British Columbia will be up against in the foreseeable future: "Sales steadily increased to last year's level ($375.41 million) from $74.09 million in 1970. . . . The use of heavy earth moving equipment in British Columbia is set to surge through the end of the century, most economists agree. . . . The company also expects to cash in on the surge in mining. . . . 'As ore grades drop, volume starts to surge,' said one mining analyst. 'This means you've got to move millions of tons of rock—and fast.'"

The lunge for frontier resources is on and British Columbia, in so many respects and minds still a frontier, finds itself in the middle of the route that many powerful interests believe will lead the industrialized nations into an economic promised land. Depending on who you are, this perspective offers either opportunities or fears. If you are an unemployed laborer, business owner or premier of British Columbia, you welcome the possibilities for new jobs, new investment, new growth and political power. In 1977, Premier Bill Bennett barnstormed through Europe, spreading the news far and wide: "British Columbia, with its coal, gas and oil deposits and its great rivers, has an abundance of energy sources which will become increasingly significant to business and industrial development in our province as energy sources in other parts of the world dry up."

Let's take a closer look at some current or potential developments that are changing or might change the land. The three activities with the most potential for disruption are logging, mining and developing energy sources.

As everyone who lives in the province soon learns, "Forestry earns 50 cents of every dollar in British Columbia." Although the saying overstates the case (it's more like 25 cents), nobody would deny that wood is the province's most important product economically. The forest industry directly and indirectly employs about 250,000 people, a higher percentage of the population than in any other state or province. The province exports more softwood lumber than the rest of Canada put together, and more than any other nation. The biggest customer is the United States, with Japan and the United Kingdom a distant second and third. Timber production has quadrupled in the last 40 years and more than doubled in the last 20 as external markets developed. But virtually no one argues that it will double again in the *next* 20 years; the idea of limits has arrived.

The history of logging repeats countless earlier experiences, softened but not fundamentally altered both by the existence of a forest management bureaucracy, the provincial Ministry of Forests, and by the fact

John Baldwin

John Ince

Fjords along British Columbia's coast (top) are renowned for quiet, beauty and fish. But development threatens the Nass Bay area, and the traditional Nishga fishing people (drying fish, above) are protesting. AMAX of Canada opened a molybdenum mine near Kitsault that began pumping 12,000 metric tons of tailings a day into a nearby fjord, Alice Arm, after promising that the operation would not hurt the fishery. Within weeks the pipeline broke twice, spraying tailings over 650 feet of beach.

The Nishga promptly sent a telegram to the Canadian minister of fisheries asking him to stop the tailings dumping and calling for a public inquiry into the environmental and socioeconomic impact of the pipeline disposal system. At the same time, the vice president and general manager of the company told a nearby Chamber of Commerce that opponents of the mine were either well-intentioned but misinformed or were part of the "anti-science, anti-technology, anti-growth cult." He said, "There is no scientific basis for any cause for alarm whatsoever that the selected method of marine tailing disposal will have any significant effect on man, woman, animal or marine life." The environment minister for British Columbia said the problems with the pipeline were "teething troubles, breaking in a new operation."

In the meantime, the Nishga have noticed that king crabs are leaving the area.

Rex Butler

Klaus Streckman

Dams threaten many free-flowing rivers and streams in British Columbia. Blackwater Creek on the Columbia River (top) is now underwater, flooded by a dam's reservoir. The Grand Canyon of the Stikine River (above) is a major scenic area in the north that may also be partially flooded. The spot shown is near the location of the proposed Tanzilla dam.

that 95% of the province's forest land is publicly owned. In the first half of this century, the forest seemed endless and efforts to chop it down, puny. The late Roderick Haig-Brown, a beloved Canadian writer and conservationist, once worked as a logger on the coast. He said people there always felt there would be more timber because it was such slow work getting out those huge trees. "Yet within 50 years, parts of British Columbia look like someone had taken a giant razor to them," writes Shirley Duncan, past chair of the Sierra Club of Western Canada.

The best sites, in valleys, were cut first because the best timber grew there and haul distances to mills were shortest. As these areas were depleted, the industry went in two directions—upward and north, and into problems with both. Steeper terrain and higher elevations are more visually and ecologically sensitive, and they grow smaller trees that are harder to remove. Remote stands to the north are also small, and harvesting them requires irreversible intrusions into virgin country. On many high and northern sites, it may be many years before trees return. And in remote locations, there are no watchdogs.

Today British Columbia's forest industry is caught between rising costs and declining size of trees on one hand and increasing outside demands for a land base it has always regarded as its own on the other. Expanding settlements, ranches and farms, as well as more hydroelectric dams, transmission lines, highways and mines, will all reduce the province's productive forest land base by some 25% in the next 20 years, according to a recent government analysis.

In addition, it is now generally conceded that annual allowable cuts (AACs) are too large because they are based on inventories conducted by the government that include inaccessible and slow-growing stands and that assume too fast a rate of regeneration and regrowth following harvest. The "falldown effect," a term heard with increasing frequency, describes the decline in the AAC as virgin, old-growth timber stocks are liquidated and gradually replaced by second-growth stands with less volume at harvest. In some areas, the falldown could be as much as 30% or 40% from current harvest sales.

The implications are serious for conservationists fighting to save outstanding wilderness areas not included in the 11.2-million-acre provincial park system or the 1.25-million-acre national park system. Rates of harvest will drop even if preservationists do not manage to save select areas. When there are shortages in the supply of wood, in a province that relies so heavily on the forest industry for jobs and income, conservationists fear that leaders and public will shun wilderness as a "luxury we can no longer afford."

There is ample historical evidence to suggest that even existing provincial parks may not survive intact. Jim Bonfonti, chair of the Club's Western Canada Chapter, observes: "There has been a consistent policy for decades in British Columbia of reevaluating park boundaries whenever resource conflicts are found." Most parks have been created by simple cabinet approval; they are not protected by law, so they can be erased easily without the cumbersome procedure of going through the legislature. In 1949, the 1.8-million-acre Liard River Park was virtually erased, and in 1955, 1.1 million acres were deleted from Tweedsmuir Park, both for hydroelectric flooding. In 1966, 2.3 million acres were shaved from Hamber Provincial Park.

Virtually all of the best-known standoffs between logging and wilderness today involve situations where people discovered on their own that a favorite area was already committed to logging and little could be done without severe local disruptions—mill shutdowns and community upheaval. The commitments were made miles away in the provincial capital in the days before public participation was a political necessity. None of these conflicts has been resolved yet, but all will have to be soon, because timber supplies are running out elsewhere. Although the government has now embarked on a valiant, if belated, program of public participation, environmentalists feel that the binding, big decisions have already been made considering their perspectives.

A similar sense of powerlessness also frustrates people concerned about the impact of mining on their communities and the natural environment. The competitive, often secretive nature of mineral exploration and development, as well as the fact that firms operating in British Columbia are largely controlled by foreign investors (mostly American), obstructs accountability to the public. Mining predates even logging in British Columbia; the gold rushes of the mid-1800s first brought large numbers of people to Canada's west coast. Today, many people in the mining industry still seem to operate under the frontier mentality that assumes the earth holds riches to be won by those bold enough to take risks, and miners have an inalienable right to exploit these riches.

Mining today is growing fast and is the second-largest industry in the province. From 1970 to 1979, the value of minerals extracted (including fossil fuels) increased sixfold, from $500 million to $2.9 billion. That's only the beginning. As mineral prices rise because of growing world demand, and

as high-grade ore bodies elsewhere are depleted or fall into the hands of unfriendly, unstable countries, the pressure to develop British Columbia's mineral resources intensifies.

The industry is fond of saying mines occupy only a fraction of a percent of the province, but this misses the point of most objections. British Columbia is generally regarded as having adequate reclamation laws, so the permanent disfigurement of the mined areas themselves does not seem to be a burning issue. Aside from disturbance of the land, which is regarded as temporary even though it may last for decades, the two principal environmental objections to mining relate to pollution and spinoff effects.

Pollution can be a problem at several stages in the mineral-to-metal process. For example, in 1966 Western Mines Ltd. opened an operation mining copper, zinc, gold, silver and lead in Strathcona Provincial Park (some B.C. parks allow limited resource development). Now it looks as though the mine is seriously contaminating nearby Buttle Lake with cadmium, zinc and copper, despite precautions. In another case, AMAX of Canada has satisfied fisheries officials that the 100 million metric tons of molybdenum mine tailings it will deposit deep into Alice Arm, a fjord on the coast, won't appreciably harm marine life. The nearby Nishga Indians aren't so sure.

Once the minerals have been extracted, they need to be processed. Smelters can be notorious polluters of air, as residents of Trail and Kitimat know. The Japanese, lured by the low cost of hydroelectricity, are keenly interested in developing smelters and steel mills here.

In addition to these direct effects, there are also spinoff effects, as two examples can illustrate. For some years a road built for mining exploration has been inching its way north over the wild Omineca Plateau, which contains, among other things, the largest remaining caribou herd in British Columbia. People who support the road insist that in such vast country, a tiny dirt track is hardly intrusive. Yet now, for the first time, any yahoo can penetrate hundreds of miles into what was virtually pristine wilderness and never leave a vehicle. The Sierra Club and other groups are concerned about the potential impact on wildlife and are infuriated that this publicly funded project never received formal review, even after considerable outcry. (Neither British Columbia nor Canada has compulsory environmental impact studies or the equivalent of the United States's Freedom of Information Act, and Canadian courts have generally proven an ineffective recourse for environmentalists to try.)

The second example is that the Aluminum Company of Canada would like to triple production at its Kitimat smelter by 1995. Smelting is energy-intensive, so the company will generate power both at an existing dam on the Nechako River and at new dams it will build on the Nanika and perhaps the Morice and Dean rivers. To build, it will use a license granted in 1950 that is still good. The impact on salmon and trout runs and on the area's water supplies will be devastating. Massive local resistance has stalled the plans but not stopped them.

Mining and energy developments overlap. Currently the Kootenay Mountains in the southeastern part of the province are being stripmined for coal. The provincial government recently negotiated a fifteen-year contract to export six to seven million tons of metallurgical-grade coal annually to Japan. In one of the largest developments ever to hit British Columbia, mountains of coal from the eastern slopes of the Canadian Rockies will be stripped and shipped away. Although millions have been spent on environmental studies, their recommendations will probably not be implemented. As *B. C. Outdoors* magazine commented, "Nobody talks about beauty when there's millions of dollars at stake."

There are other projects, too. The now-alive, now-dead Alaska Highway gas pipeline may yet be built. Oil companies anticipate renewing exploratory drilling off the coast as soon as a moratorium can be lifted. In 1980, Premier Bennett placed a seven-year ban on uranium mining but then dismayed environmentalists by disbanding a Royal Commission at a crucial stage of investigating the subject.

Then there is British Columbia Hydro & Power Authority, the quasi-public provincial utility. In the name of progress, Hydro has flooded well over half a million acres of valley bottom, the most prized land in the rugged province. To satisfy the growing need for electricity it forecasts for the next 20 years, Hydro wants to develop a 2000-megawatt coal plant at Hat Creek, 150 miles north of Vancouver, and a total of 8230 megawatts of power from dams on the Peace, Stikine, Liard and Iskut rivers.

Each of these projects is unpopular. For example, the two dams planned for the Stikine would flood its spectacular Grand Canyon and waters that are so turbulent they cannot be navigated by kayak or raft. The extent of damage to salmon and other wildlife cannot be predicted. Related developments such as roads, power lines, work camps and mines will spread far into surrounding wilderness. Ironically, recreational use of the area will increase, no doubt

leading some proponents to suggest a net positive effect on outdoor recreation. The Sierra Club sparked organized opposition with a Stikine Workshop in January 1980, but time grows short. Hydro is expected to apply for a license by May 1982.

What will use so much new energy? Pulp and paper mills now consume about half of Hydro's production. They are not expected to expand too much, but the government also plans to provide energy for coal liquefaction plants, mines, mills, smelters and factories. Some people speculate that government is clearing the path for a wave of industrialization. The recent elimination of the Environment and Land Use Committee Secretariat, a well-respected, independent policy and project review agency, and the new Utilities Commission Act, under which public hearings can be scuttled, are two possible signs of this. Another fear is that Hydro will attempt to tap a lucrative export market for electricity in the United States. It has already applied for a permit to export firm, as opposed to surplus, energy to American utilities, and its outspoken chairman favors such a policy.

In their anger, environmentalists often condemn Hydro for policies that emanate from the Social Credit government, which has long attempted to seduce industrial investment. One sure attraction is a firm offer of cheap electricity, making "need" forecasts self-fulfilling.

Demand is growing, or being nurtured, so that it will double in twelve years; to satisfy it will require building the equivalent of all existing generating facilities in just over a decade.

The archaic question still guiding B.C. energy policy is, "What will the demand for electricity be *x* years from now?" Nobody in power has yet dared to ask, "What *should* the demand be?" and encourage widespread public discussion of this fundamental issue. What price "progress"? Not so many years from now, at the present growth rate, many people here will agree—too late—that it was too high a price to pay.

British Columbia's official motto is *Splendor Sine Occasu*—"Splendor Undiminished." Its license plates unabashedly boast of its beauty, and the provincial tourism ministry touts the province as "super, natural." One gets the distinct impression, however, that *de facto* government policy is far more concerned with attracting tourists and industry than preserving naturalness and beauty.

British Columbians themselves are ambivalent and divided about the future of their land. Although most of them appreciate its wilderness and beauty, at the same time they say they want more jobs, industry and pros-

perity. There is little explicit recognition of the conflicts between environmental preservation and industrial growth of the sort and on the scale envisioned.

"Embattled" therefore describes B.C. environmental activists quite well. Jim Bonfonti points out that levels of activism in Canada are probably not very different from those in the United States, but since the population here is so dispersed and small compared to the territory, the result is fewer activists in British Columbia than in the San Francisco Bay Area alone. Consequently, in the '80s western Canada will be confronted with a rate of resource development rivaling that of the United States, and there are very few people to do anything about it.

Also, much of the northern resource development is planned in areas that are vast and relatively unpopulated. If there are few people who have been to an area and fewer still who live there, there is less of an "aroused clientele" to protect the area. A related point is that because so few people see these remote areas, aside from the developers themselves, the resource practices are reputedly poor—roads are built carelessly, steep slopes are logged and reclamation is done badly.

Years ago, Aldo Leopold wrote: "In Canada and Alaska there are still large expanses of virgin country where nameless men by nameless rivers wander and in strange valleys die strange deaths alone."

Today in the Northwest, there are no more nameless rivers, and most of the remaining strange valleys will soon be logged, dammed, mined or opened to rugged individualists in jeeps and campers.

As long as the world's appetite for resources continues to grow, it is inevitable that every remaining frontier will eventually yield to human exploitation. It would be unrealistic, and some would even say selfish, to expect this land to remain relatively empty and unused (of and by humans) while the rest of the world clamors for what it has.

But not all need be lost with resource development. A good deal of natural beauty and wildness can be kept with care and good planning. We have a chance to develop British Columbia right the first time instead of correcting centuries of abuse. A reasonable balance between industrial development and environmental concerns is attainable, but it will take courage and ingenuity to break free of the internal and external, economic and political forces now steering the province toward a future that will diminish much of its splendor, motto or no. □

Leon Kolankiewicz is a freelance writer and photographer who recently completed graduate studies in natural resource management at the University of British Columbia.

1982 Foreign Trips

SIERRA CLUB FOREIGN TRIPS have a special purpose. They take you off the beaten tourist path to meet people and experience life and conditions as they are in a way no commercial tour group can. In 1982 you can bike, hike, sail, ski, game-drive or ride a horse in some of the most beautiful and interesting places of the world. Where we can, we camp out, or learn to use and appreciate the well-developed European hut system, stay in homes or small inns. This means giving up many of the amenities we usually regard as essential. It requires fortitude and a sense of humor and often is more expensive than regular travel. But it can be high adventure.

Trips are planned and led by experienced leaders who are dedicated to helping trip members enjoy, explore and learn how to protect the natural environment.

The leader's approval is required for participation on most trips. Costs, where listed, are approximate and do not include air fare. For information about individual trips or for a reservation application, write: Sierra Club Outing Dept., 530 Bush Street, San Francisco, CA 94108.

England

Africa

(905) TANZANIA WILDLIFE SAFARI

February 5–19 *Cost: $1760*

It will be summertime in Tanzania when we walk and camp in some of the finest game and scenic areas in the heart of East Africa's game country. The trip is timed for the best weather and wildebeest calving time on the plains of Serengeti. We also visit little-known places, game preserves, tribal villages and prehistoric sites.
Leader, Betty Osborn.

(965) TOP OF AFRICA SAFARI

June 27–July 17 *Cost: $2890*

From the Great Rift Valley of Kenya to Kilimanjaro, Tanzania, we will explore the game refuges/national parks and meet the people of East Africa. Via Land Rover and on foot, we will see and photograph at close range an amazing variety of wildlife. From Marangu we will make a four-day, non-technical climb of 19,340-foot Mt. Kilimanjaro.
Leader, Pete Nelson.

Africa

Betty Pollock

(980) BOTSWANA WILDLIFE SAFARI

July–August *Cost: $2380*

Bring a camera and a spirit of adventure to game-drive, walk and camp in this beautiful, primitive country of few visitors—a country whose greatest wealth is its wildlife. We enter Botswana by way of Victoria Falls, Zambia and explore gamelands, waterways and villages from Chobe Park in the north to the Okavango Delta swamp in the south.
Leader, Betty Osborn.

(990) ACROSS KENYA ON HORSEBACK

August 5–26 *Cost: $2645*

For an unforgettable adventure, cross Kenya's game-filled plains on horseback. Camp in the bush with only the animal sounds to hear, see at close range the many varieties of wild game and birds and the migration of great herds. Riding experience is helpful but not necessary. Some game-drives by Land Rover are planned.
Leader, Ross Miles.

Europe

(920) SKI TOURING IN NORWAY

March 14–27 *Cost: $1315*

This tour is for the experienced cross-country skier as well as the novice. A member of the Norwegian outdoor club (DNT) will teach Norwegian touring techniques and serve as guide on daily trips. We will use DNT lodges as base camps in perhaps three scenic touring areas: Finsehytta, overlooking Hardangervidda plateau;

Courtesy of the British Tourist Authority

Rondvassbu, hidden among the snow hills of Rondana Park; Gjendesheim, nestled among the Jotunheimen mountains.
Leader, Jim Watters, Jr.

(950) WALES/SOUTHERN IRELAND
June 18–July 5
Explore the most beautiful and unspoiled areas in Wales and along Ireland's west coast while staying in small inns, farmhouses and country cottages. On travel days we will take time out to visit castles and historic ruins and stop for lunch at local pubs.
Leader, Lori Loosley.

(955) BICYCLING THROUGH DENMARK
June 21–July 8 *Cost: $1580*
Enjoy scenic, rustic, historic Denmark and see outstanding natural areas with our Danish assistant. Be a part of Danish Midsummer Night and U.S. Independence Day celebrations, staying in small inns and hotels. Bicycle rentals are available. Easy to moderate.
Leader, Mike Maule.

(960) CENTRAL PYRENEES, SPAIN
June 27–July 10
This walk in the scenic *Piraneos Centrales* of Spain will take a short swing into *les Pyrenees de France*. We stay in village *hostales* and mountain *refugios*. Walking, interspersed with some charter bus riding, will be mostly moderate to easy with some travel over snowfields and a glacier.
Leader, John Doering.

(970) HUT HOPPING IN THE DOLOMITES
July
Two of the most spectacular ranges in the Dolomites are the Brenta and Lavaredo groups of northeastern Italy. We will spend a week in each and stay, as the Europeans do, in Alpine Club huts and mountain inns, and thus need carry only our personal belongings.
Leaders, Fred Gooding and Tarcisio Pedrotti.

(975) BIKE BRITTANY AND BURGUNDY
July 16–30 *Cost: $1385*
Bike through the Roman-fortified towns of Brittany, along the canals and among the vineyards of Burgundy and between the *chateaux* of the Loire Valley. Enjoy the people, the beauty and quiet side roads of rural France. Daily rides of 25 miles and more will be suitable for average to experienced cyclists.
Leaders, Lynne and Ray Simpson.

(985) ON THE WEG IN THE SCHWARZWALD
August 3–17
Inspired by the genial hospitality of its members, we follow the Black Forest Club's well-marked trail through some of the most charming parts of West Germany. You can choose either or both one-week trips from Freiburg to Titisee and Titisee to Lake Constance. Hiking is easy to moderate between overnight stays at guesthouses or inns.
Leader, Carl Wood.

(995) SWISS ALPS SPECTACULAR
September
A walk along the top of Switzerland leads from the Berner Oberland, through the German-speaking Valais to Zermatt. From day to day the scene varies from idyllic villages and meadows to ageless glaciers and passes with views of the most spectacular peaks in the Swiss Alps. At night we stay in Alpine Club huts or small inns.
Leader, John Carter.

(998) GREEN HILLS OF ENGLAND/SCOTLAND
September
Explore the deep valleys and limestone cliffs of the Yorkshire Dales. Scramble o'er the green hills of the beautiful Lake Country. Walk along a splendid stretch of Hadrian's Wall, then on to the Cheviot Hills and moors of Scotland. A good time to enjoy historic Great Britain in early fall colors.
Leader, Bob Stout.

(600) MEDITERRANEAN SAILING ADVENTURE
September 21–October 2
Sail the beautiful Mediterranean from the Greek isle of Rhodes through wooded inlets and among islands along the unspoiled turquoise coast of Turkey. Discover and explore Graeco-Roman ruins, wilderness coves and beaches, deserted islands, and charm-

Italy

Courtesy of the Italian State Tourist Office

ing villages. Home will be a comfortable 65-foot motor-sail yacht, the "Kaptan."
Leader, Betty Osborn.

Latin America

(925) JAMAICA JAUNT
March 20–28 *Cost: $760*
Hike for four days across Jamaica in the beautiful and rugged eastern hills, climb Blue Mountain, then relax the rest of the week in a north-shore ocean camp, where shelter and food are provided. Ideal for the break between semesters for college students or anyone captivated by the Caribbean.
Leader, Carl Denison.

(930) SEA OF CORTEZ/SOUTHERN ISLES, BAJA
April 10–17 *Cost: $775*
Islas Espiritu Santo and Partida near La Paz are home for an incredible array of sea life, birds and sea mammals. We will camp on the beaches, explore on foot or by boat the coves, beaches, secluded lagoons, canyons and mountains, or just relax in the warm Baja sunshine.
Leader, Pete Nelson.

(945) HIGHLIGHTS OF PERU
June–July (23 days)
From Lima we travel north along the coast and through the Cordillera Negra to Huaraz, visit Chavin and other pre-Columbian ruins, then trek the Cordillera Blanca for views of some of the most spectacular snow-covered peaks in the world. The trip will be climaxed by a week in Cuzco and the Urabamba Valley, with three days at Machu Picchu.
Leaders, Ray Des Camp and Rosemary Stevens.

Japan

(935) TOURING JAPAN'S ALPS
April 17–May 11
Springtime in the Alps of Japan reveals a dazzling display of cherry blossoms, azaleas in bloom and the radiant new growth of conifers on the slopes. Our tour of Northern Honshu includes national parks and alps, walking and hiking with local conservationists.
Leaders, Mildred and Claude A. (Tony) Look.

Machu Picchu, Peru *R. Dickey*

Al Combs

Nepal

(605) AUTUMN HIKES IN JAPAN
September–October
Traverse ridges and ravines under canopies of brilliant reds and yellows in the mountain ranges of Japan. Itinerary includes hikes with a Japanese guide in national parks and coastal areas, with lodging in Japanese inns along the way.
Leader, Dennis Look.

Australia

(940) THE NORTHEAST AND OUTBACK
Three weeks in June
Northeastern Australia has a wider spectrum of scenic places than most people imagine. We will take time to see in detail parts of the virgin rain forest, cave paintings, unoccupied beaches and the Great Barrier Reef. To end, we will fly to the dry outback and make an excursion via McConnell Ranges to Ayers Rock.
Leader, Ted Snyder.

Important Notice!

RESERVATIONS for Sierra Club outings are subject to the reservation/cancellation policy and other conditions printed in the 1981 Jan./Feb. issue of SIERRA. Please see page 95 of that issue for this information and trip applications. The deposit for all foreign trips is $100 per person. Please include the deposit(s) with your application(s). Trip prices (where listed) are approximate and do not include air fare. Further price information will be listed in the 1982 Outing issue. The November/December issue of SIERRA will include a preview of Winter and Spring trips.

For supplemental information on outings,

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Enclosed is $_____ for supplements requested over 5 at 50¢ each.

Himalayan Countries

(915) LANGTANG TREK, NEPAL
March 20–April 12 *Cost: $770*
This 22-day moderate trek into Langtang National Park is the best place to see the rhododendron in bloom. Waterfalls, glaciers, yaks, lakes, high Himalayan peaks and Sherpas are also present to complete the picture of springtime in Nepal.
Leader, Peter Owens.

(910) SHERPA CULTURAL TREK, NEPAL
April 18–May 10 *Cost: $1440*
With a group of only seven people, we can visit the homes of the Sherpas and take part in the daily life of these gentle, high-Himalayan people. The trek route leads through the village of Namche Bazar, to the Thangboche monastery and past the towering Khumbu Himal to pay homage to the highest peak of all, Mt. Everest.
Leader, Ginger Harmon.

(610) SIKKIM TREKKING ADVENTURE
Three weeks in October
Two weeks of trekking in fabled Sikkim takes us to the ridge of Sandakphu and Phalut for sweeping views of the entire Himalayan range, of Mt. Everest and its satellites and Kanchenjunga. After the trek, we will linger in the old Indian hill town of Darjeeling. Hiking is moderate; maximum elevation, 16,000 feet.
Leader, Norton Hastings.

(615) LAMJUNG HIMAL TREK, NEPAL
November 6–26
Trek from historic Gorkha, passing in front of the Great Himalaya Range in central Nepal, into a seldom-visited area. En route are outstanding views of Manaslu, Peak 29, Himalchuli, Lamjung, Machhapuchhare and picturesque Gurung villages. The trek is moderate; maximum elevations expected are about 10,000 feet.
Leader, Al Schmitz.

(620) ANNAPURNA CHRISTMAS TREK, NEPAL
December 20–January 8, 1983 *Cost: $850*
This three-week Christmas trek is designed to fit into school vacation time. It goes from Pokhara to the fabulous Annapurna sanctuary and includes the Gorapani Ridge and a trip into the Kali Gandaki Gorge to Katopani Hot Springs. A circle trek, it has the highest reward-to-effort ratio of any Nepal trek. Highest camp is about 13,000 feet.
Leader, Phil Gowing.

1981 Fall Trips

BERNESE OBERLAND, SWITZERLAND
(800) *September 27–October 14. Leader, Tony Look.*
(800A) *October 3–20. Leader, John Carter.* *Cost: $1270*
A second section has been added to this popular trip into picture-postcard scenery in the Swiss Alps.

(805) MANASLU CIRCLE TREK, NEPAL
November 2–December 5 *Cost: $1660*
Route and cost of this trek into a new area are subject to change by the new Nepali government.
Leader, Wayne R. Woodruff.

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IMAGES

WINNERS OF *SIERRA*'S SECOND PHOTO CONTEST

SECOND PLACE, WILDLIFE: Bee in field, Thief River Falls, Indiana. By Tom Nelson, Duluth, Minnesota.

WE WERE VERY PLEASED this year to receive more than 1200 entries in our second annual photo contest. That's 500 more submissions than last year. It meant a lot of work for the judges, and it meant we had to find and use to capacity some almost non-existent storage space for the seemingly endless number of bulky envelopes that kept arriving. But it also meant that our readers enjoyed participating in the contest. We were gratified by the many enthusiastic comments and encouraging notes we found among the entries.

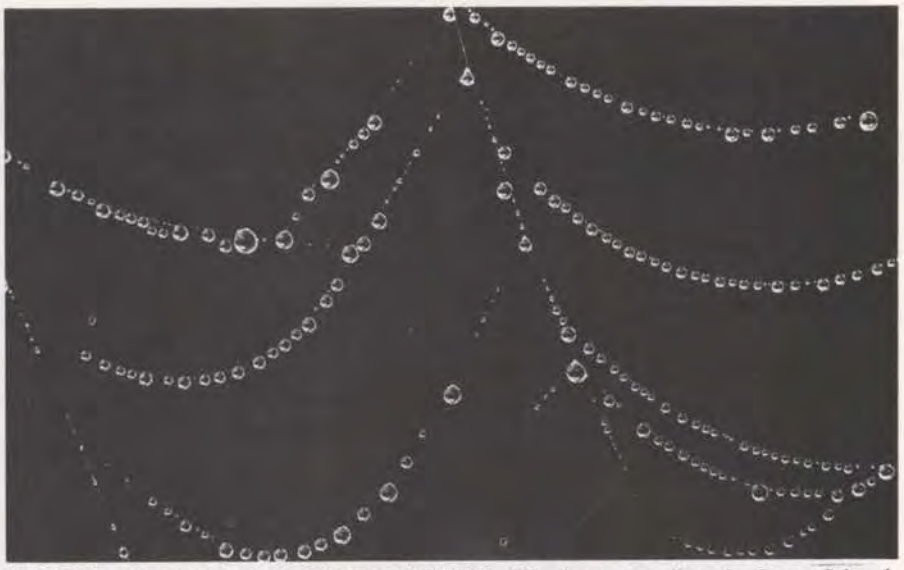
Photography is important in the remembering of special times, places and people, but it is also increasingly significant as the accurate visual documentation of environments to be saved—or too late for saving. The lens of the camera can preserve for posterity places that humans do not.

Next year we will probably charge a small entry fee to pay for a temporary employee to help with logging in, acknowledging and returning the entries. We'll change the categories somewhat, and we'll have different prizes. We hope you'll enter again with your best photographs. We enjoyed viewing them and are pleased to present here those we judged to be the most interesting, well balanced and dramatic.

Our special thanks go to the following companies, which were kind enough to donate the prizes we'll be sending to our winners: Johnson Camping, Inc. (four Camp Trails camera packs); E. Leitz, Inc. (Minox 35 GL camera); Minolta Corporation (Minolta camera); Moss (Solus II tent); Nikon (binoculars); the North Face (VE 23 geodesic tent); Sierra Designs (Cumulus sleeping bag and Aireflex tent); Tamrac (six camera packs); and Carl Zeiss, Inc. (Zeiss pocket binoculars). □

FIRST PLACE, DESIGNS IN NATURE: Ice detail, Rocky Mountain National Park. By Russell C. Dohrmann, Boulder, Colorado.

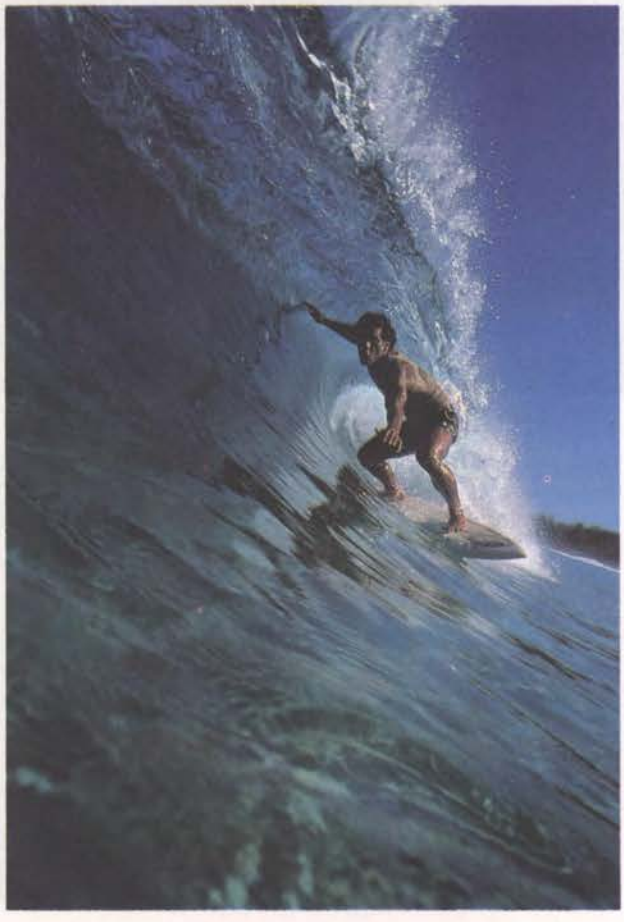
SECOND PLACE, OUTDOOR RECREATION: Kayak racing on the Kern River at Kernville. By Beverly F. Stevenson, Bakersfield, California.

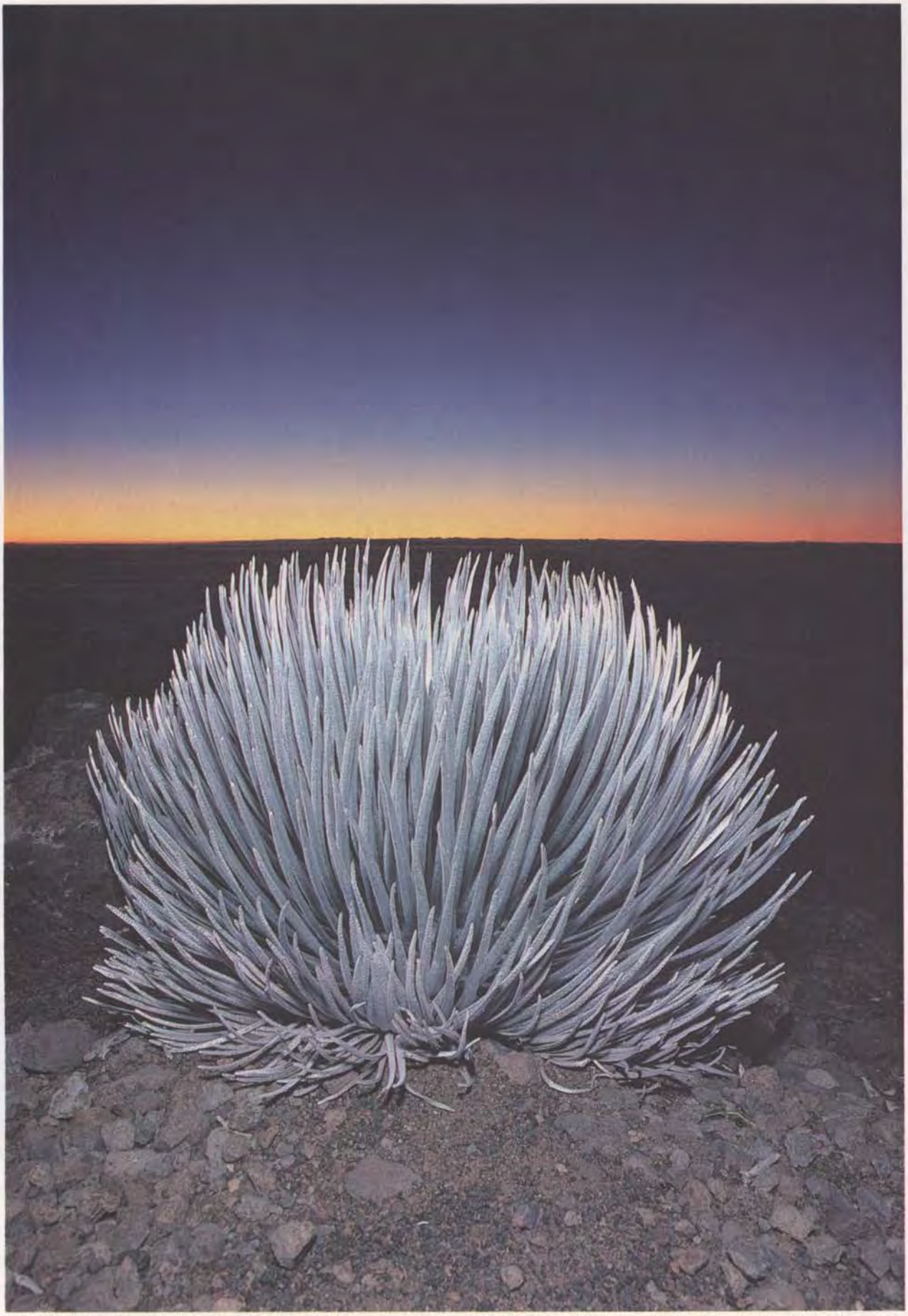


SECOND PLACE, DESIGNS IN NATURE: Westhampton Beach, Long Island. By Mitch Carucci, Great Neck, New York.

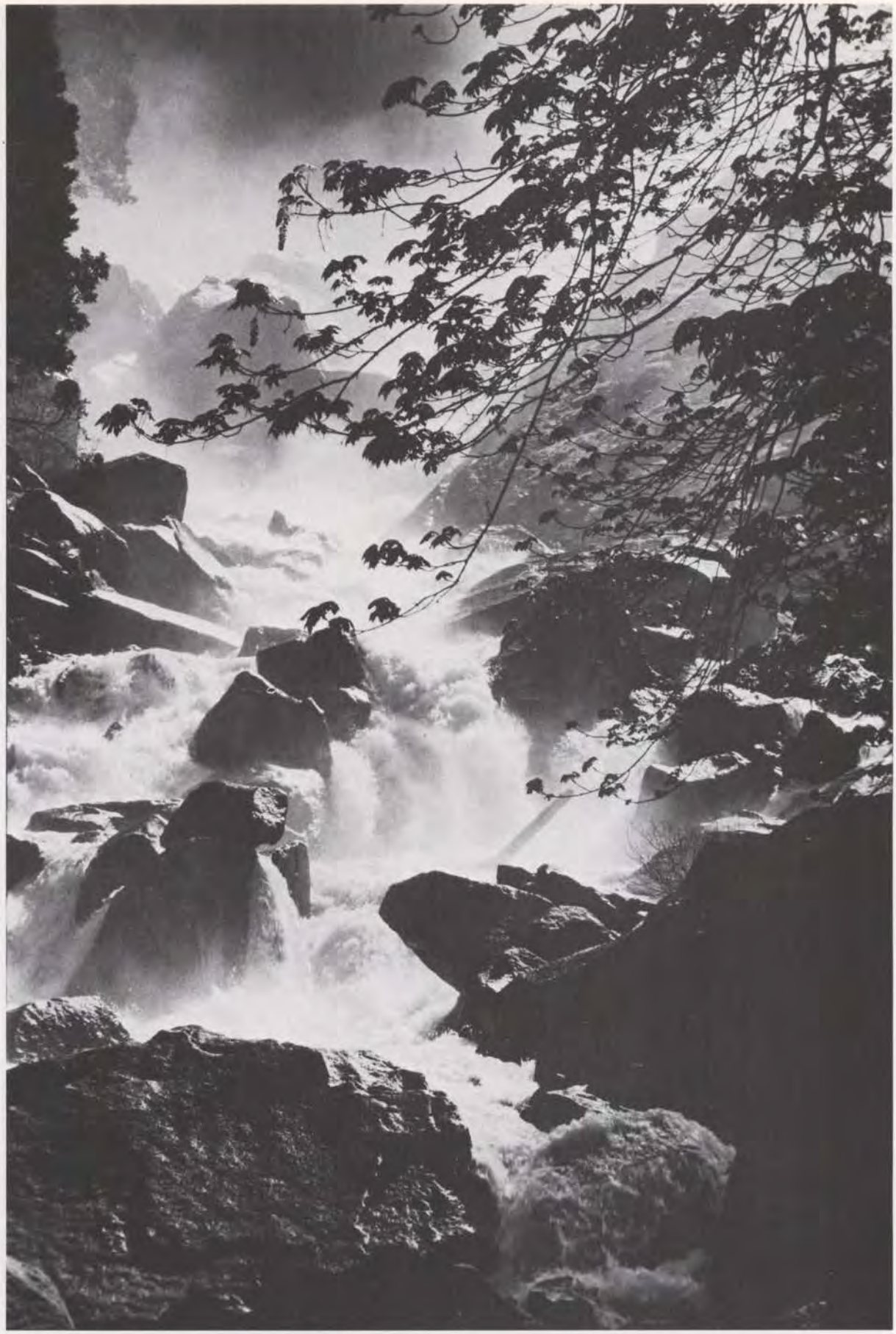
SECOND PLACE, NATIONAL PARKS: The Tetons and the Snake River, Grand Teton National Park. By Howard Bond, Ann Arbor, Michigan.

FIRST PLACE, OUTDOOR RECRECATION: Surfer, north shore of Oahu. By Bob Barbour, Capitola, California.





FIRST PLACE, NATIONAL PARKS: Silversword plant, Haleakala National Park, Maui. By Bob Barbour, Capitola, California. *Grand Prize, Color.*



SECOND PLACE, OUTDOOR RECREATION: Mist trail, Yosemite. By Janice Ott, Poway, California.

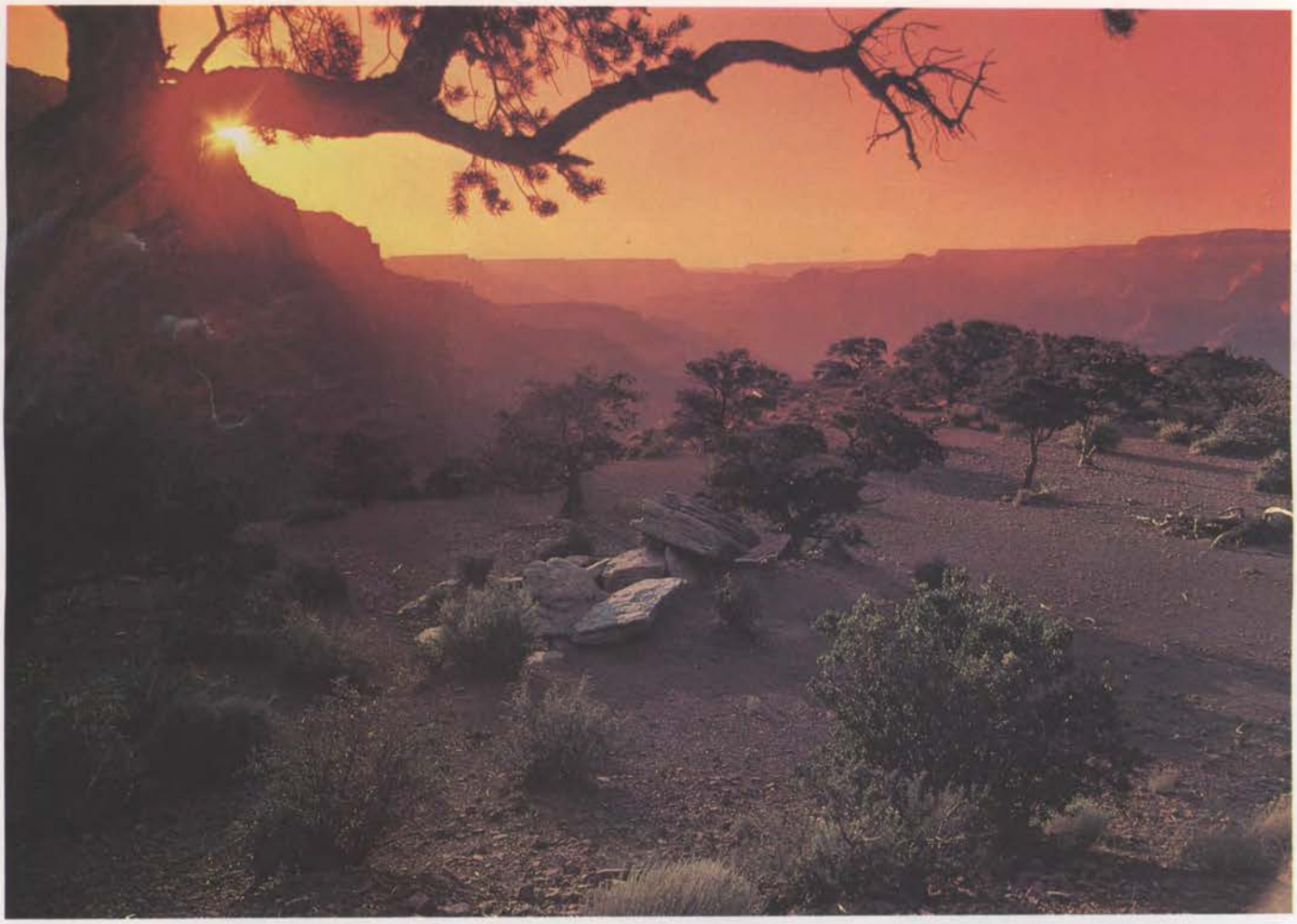
FIRST PLACE, WILDLIFE: Trumpeter swan. By Miriam Weinstein, Minneapolis, Minnesota.

FIRST PLACE, NATIONAL PARKS: Vernal Falls, Cascades, Yosemite National Park. By Ron Widman, Northridge, California. *Grand Prize, Black & White*.

FIRST PLACE, WILDLIFE: Penguins, South Georgia Island, Antarctica. By Joey Fuhrman, Beverly Hills, California.

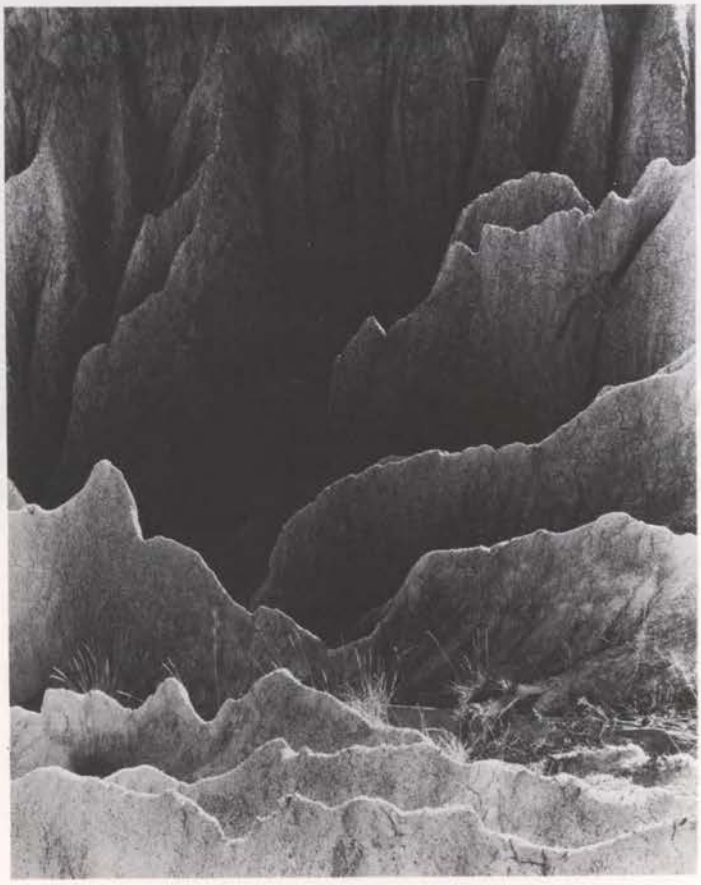
SECOND PLACE, WILDLIFE: Porcupine. By Peter D. Morris, Plano, Texas.

FIRST PLACE, OUTDOOR RECREATION: Glacier Peak Wilderness Area, Washington. By Roderick Barr, Fulton, Maryland.



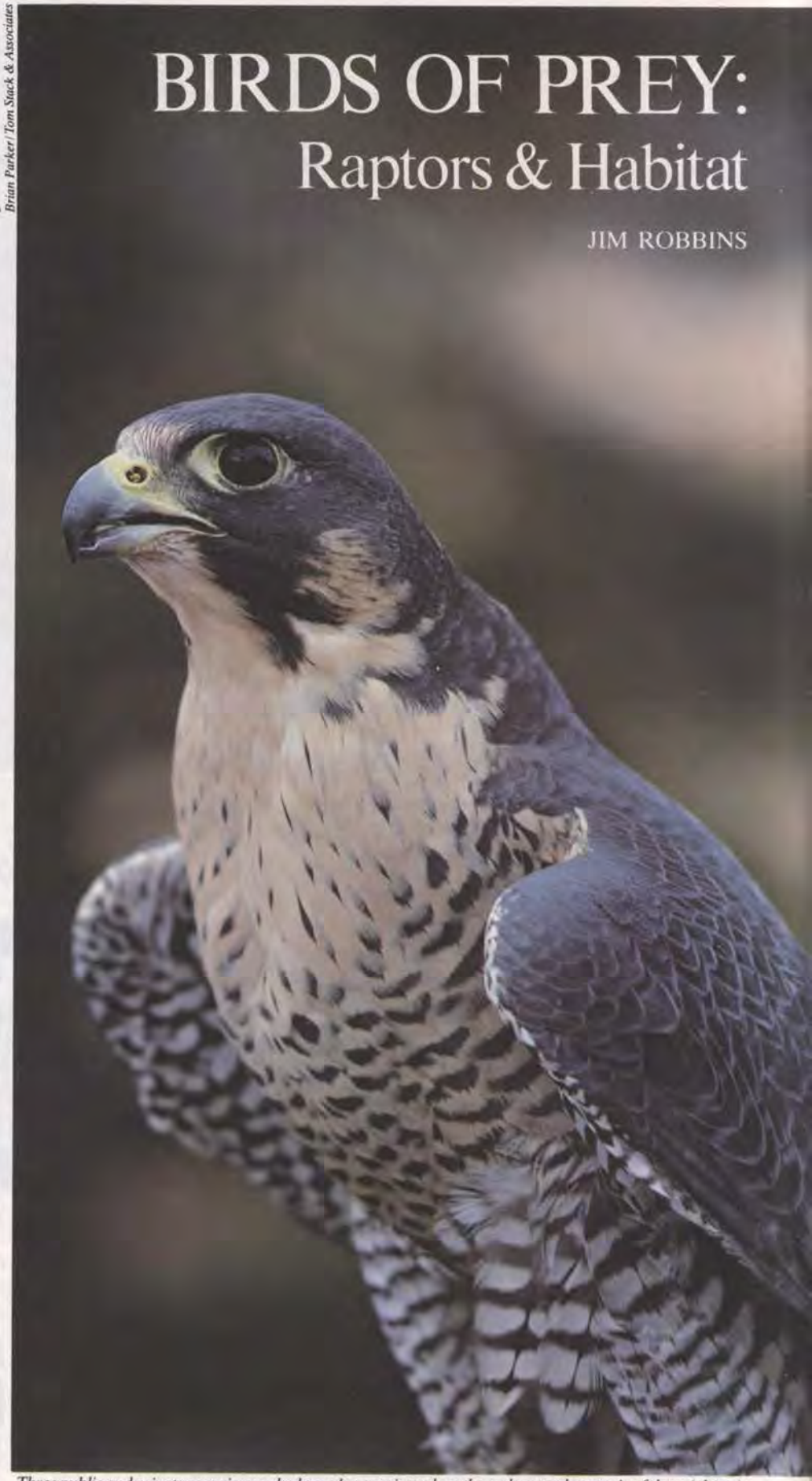
SECOND PLACE, NATIONAL PARKS: Grand Canyon, Arizona. By Richard Rownak, Los Angeles, California.

FIRST PLACE, DESIGNS IN NATURE: Point Richmond, California. By Tony Kay, Los Gatos, California.



BIRDS OF PREY:
Raptors & Habitat

JIM ROBBINS



Brian Parker/Tom Stack & Associates

Three public and private agencies worked together to reintroduce the endangered peregrine falcon (above) to the Birds of Prey Area. Five chicks have survived so far.

SILENCE. In the heavy midday heat of the desert there is little movement except for occasional gusts of wind that stir up clouds of dust. A jackrabbit bounds across a dirt road into a blanket of sagebrush that stretches to the horizon on all sides. The Owyhee Mountains are hazy in the distance, their purple snow-capped peaks like a mirage. Circling high above the muddy Snake on some unseen current, an eagle moves slowly downward in sweeping spirals, a black silhouette of outstretched, unmoving wings cutting through the desert sky like a knife.

The eagle is just one inhabitant of a unique area in southern Idaho known as the Snake River Birds of Prey Natural Area, a 33-mile stretch of canyon on the Snake that slices through the desert about 35 miles southwest of Boise.

Ornithologists say this is the most densely populated raptor nesting site in the world, supporting 165 species of birds including eagles, hawks, owls, falcons and osprey. The extraordinary density and variety of raptors has enabled biologists to conduct the most exhaustive study of raptors' predatory-prey relationships in the world.

Yet the Birds of Prey Area is the focus of one of the hottest environmental battles in Idaho. The ink was still drying on legislation that set aside 2.3 million acres of the state as the River of No Return Wilderness Area when the Bureau of Land Management (BLM) proposed to protect the birds by setting aside some 600,000 acres. The ideas met fervent opposition and helped fan the spark of the Sagebrush Rebellion, the attempt by private mineral, grazing and other land-related interests to gain control over federal lands in some western states. (They are using the issue of states' rights to do it, so the controversy looks to the public as though the states need control of federal lands within their borders to benefit small farmers and ranchers.)

To add to the intensity of the issue, the Birds of Prey proposal became a political football in the race for the U.S. Senate in 1980 that pitted conservation-minded Frank Church, who supported the legislation, against arch-conservative Representative Steve Symms. Symms won by 4,000 votes.

The Birds of Prey saga began when local citizens pointed out the teeming raptor habitat to the BLM, which controls most of the area. In 1971, then-Secretary of the Interior Rogers C. B. Morton declared 32,000 acres of nesting habitat the Birds of Prey Natural Area, a designation that allowed the land to be used for grazing and other purposes but established protection of the raptors as a priority in managing the area.

To prepare an inventory of the area and

Bill Mullins

Art Wolfe/ West Stock-Seattle

Tom Fitzharris

This canyon on the Snake River (above) is perfect raptor habitat, partly because winds are right for lifting the birds, and the prey area is above the nesting area in the cliffs. More birds of prey nest here than anywhere else in the world. Two species that do well are great horned owls (right) and marsh hawks (below right).

establish management procedures, in 1972 the BLM hired Mike Kochert to head up a biological study of the Birds of Prey Area. Kochert had previously studied predator-prey relationships between wolves and moose on Isle Royale in northern Michigan.

Preliminary research showed that the raptor habitat was much richer than anyone had imagined. Kochert found 14 species of predatory birds from five groups—buteos, harriers, falcons, eagles and owls, which can be divided further into falconiformes (daytime hunters) and strigiformes (owls). The study discovered 33 pairs of nesting golden eagles and 200 pairs of prairie falcons, nearly 5% of the known prairie falcon population. The list of raptors that either nest or winter in the canyon reads like a "Who's Who" of birds of prey. Resident hawks are the red-tailed, ferruginous, Cooper's, Swainson's, rough-legged, marsh and goshawks. Kestrels, gyrfalcons, turkey vultures and ravens live here, too, and the great horned, barn, screech, long-eared, short-eared, snowy, saw-whet and burrowing owls hunt the area at night. Bald eagles winter here, along with merlins and ospreys.

In addition, the Birds of Prey Area has been the site of a joint effort by the Peregrine Fund, BLM and the U.S. Fish and Wildlife Service to reintroduce the peregrine falcon. Three peregrine chicks successfully fledged in 1977, but in 1978 only two out of five survived.

The density of noncolonial nesting raptors at the Birds of Prey Area has captured the attention of ornithologists around the world. Kochert claims, "There's nothing else like it in the world. It's priceless. It has twice the density of the famed site in Matopos, Rhodesia, which is known internationally for its raptors."

According to Bob Turner, Rocky Mountain regional representative for the Audubon Society, the density of raptors is what makes Birds of Prey a priority for the National Audubon Society. "It's an extremely important issue," Turner said. "It is an area of international prestige, and the National Audubon board of directors has passed a resolution making it a number-one priority. Audubon has been working on this since the beginning. We think it's time the birds were fully protected, and we plan to lobby for the bills in Congress."

If they are not protected in the Snake River area, the birds are not likely to do so well elsewhere. They chose this particular spot because of a complex combination of factors that create the perfect environment for them. About 30,000 years ago a body of water called Lake Bonneville, which covered parts of Nevada and Utah, spilled over its banks into the Snake River drainage. It carved a deep, wide canyon and left house-sized boulders strewn along the bottom. The basalt cliffs of the canyon are now laced with fractures and wind-eroded holes, and the strong winds that funnel up the canyon are ideal for lifting the birds to their hunting grounds.

The climate, the vertical cliffs and the fact that the area is in the long rain shadow of the Cascade Mountains all contribute to an ideal environment. But perhaps the key to the abundance of raptors is that the soils around the area are rich and medium-textured. While Lake Bonneville was carving the Snake River canyon, the wind was depositing these fecund soils for several miles in either direction. The soil composition is chiefly responsible for the extraordinary habitat that produces the raptors' prey, mostly rabbits, mice and ground squirrels.

Kochert and his research crew—at times numbering 30 people with a budget of $200,000—focused on the relationship between the prairie falcon and the Townsend ground squirrel, a high-calorie rodent that breeds prolifically. By fastening radio transmitters to the falcons, measuring their weight and size and counting the number of birds in each of a number of nests over a five-year period, the BLM compiled volumes of data on the predator-prey relationship between the two species.

The study provided biologists with the first information of its kind. "This was the most comprehensive study on a large scale dealing with a complete raptor ecosystem," Kochert said. "Nothing of this magnitude has ever been done, and it has provided us with brand new information essential to raptor protection the world over."

One of the most dramatic discoveries of the study was the direct correlation between the populations of Townsend ground squirrels and prairie falcons. "The prairie falcon relies on the Townsend ground squirrel for its main food source," Kochert explained. "There is a direct, numeric response to changes so that if the number of ground squirrels is reduced, the number of prairie falcons also declines."

Kochert said that after a drought in 1977, which reduced available forage, many ground squirrels did not reproduce. The same year, researchers noted a large drop in prairie falcon reproduction. Then, in 1978, ground squirrel populations increased slightly; researchers noted a small corresponding increase in prairie falcon numbers. "It's evident," Kochert said, "that without the ground squirrels, there wouldn't be any prairie falcons."

Another important discovery that came out of the research was the enormous hunting range covered by the prairie falcon. The radio transmitters showed that the birds cruise almost 15 miles on either side of the river in their search for ground squirrels.

With these discoveries and subsequent studies of the other raptors came the realization that the area needed to sustain the birds, especially the prairie falcons, was much larger than the 32,000 acres originally set aside to protect the nesting habitat. Cecil Andrus, who was governor of Idaho in 1971 when the original area was established, recalled: "At the dedication, I told Rogers he had protected the bedroom but not the pantry."

Responding to the preliminary study in 1974, the BLM set aside 485,000 acres as the Birds of Prey Study Area. A year later a moratorium was declared on oil, gas and geothermal development, as well as on distributing land under the Desert Land Entry and Carey acts, pending findings of the study. Based on those results, in 1977 then-Secretary of the Interior Andrus expanded the study area to 833,000 acres. He asked the study team for recommendations on a final boundary based on their research; the 1979 Birds of Prey Environmental Impact Statement recommends protecting 720,000 acres, which was what the research team felt would comfortably support the raptors' prey base. Federal legislation would be needed to establish the area, and it would be called a

David Boehlke

The immature golden eagle (above) will develop a wing span of up to seven feet, and its tail will darken as an adult. It soars with its wings flat.

Bill Mullins

Nearly 5% of the world's population of prairie falcons (above) live in the canyon. The species prefers Townsend ground squirrels, high-calorie rodents that breed prolifically.

national conservation area under authority vested in the BLM by the 1976 Federal Land Policy and Management Act, also known as the Organic Act.

Subsequent negotiations with Idaho Governor John Evans whittled the proposal down to some 600,000 acres, deleting much of the state and private land within the boundary. This was the smallest area the research team felt could sustain present raptor populations. "Without the prey base there are no raptors," Kochert said. "We asked for what the prairies and other raptors needed."

Then the question of political timing became a factor in the issue. When Secretary Andrus expanded the Birds of Prey boundary and continued the moratorium on agricultural development, the River of No Return Wilderness issue (the largest such proposal in the contiguous 48 states that finally passed) was raging on. Incensed by what they saw as federal meddling in state affairs, Idaho's conservative citizens reacted swiftly and furiously to Andrus' action.

Amidst Sagebrush Rebellion rhetoric, state legislators, business people, farmers and livestock interests flocked to public hearings to testify on the proposal. They warned about the coming of the federal bogeyman and decried the idea of setting aside 600,000 acres for "a bunch of birds." "The federal government thinks that birds are more important than people," one southern Idaho developer declared. "Let's get the federal government out of Idaho."

The Sagebrush Rebellion is sentiment against the federal government that has focused primarily on the BLM. Its political actions have been financed largely by mining companies and other corporate enterprises with interests in the lands. Environmentalists believe the companies' strategy is that states would gain title to now-federal lands using states' rights as a rallying argument. But the task is so expensive that the states would be unable to manage the lands, so a few years down the road they would be forced to sell them or lease out their management. The corporations would be standing helpfully by.

Several states, unfamiliar with the above strategy, have already passed various forms of legislation that assert their control over the lands. Until a state files suit against the federal government and wins, however, the land will remain U.S. property. Political observers give the movement little chance of success in court, but the temper of the rebels is up; some claim they have already won part of what they want—concessions from the BLM on wilderness, grazing EISs and other environmental issues.

There was another reason for widespread opposition to the suspension besides the Sagebrush Rebellion, however: hundreds of southern Idaho residents have pending claims on land within the proposed Birds of

Continued on page 57

What You Can Do

The Birds of Prey Area in southern Idaho is one of the most precious wildlife habitats, not only in the United States but in the world. Yet local opponents, with their eyes on a government giveaway, are succeeding in undermining efforts to protect the raptors.

The proposal needs strong national support in order to survive. Ken Robison, the leader of the Friends of the Birds of Prey, which is coordinating preservation efforts, says that letters to Senator James McClure and Secretary of the Interior Watt asking for federal protection of 480,000 acres for the raptors would be most helpful. Additional letters could go to Representatives Morris Udall and John Seiberling. Letters should be mailed by the end of August. The addresses are: Friends of the Birds of Prey, Box 844, Boise, Idaho 83701, phone (208) 345-6933; United States Senators, Senate Office Building, Washington, D.C. 20510; Secretary of the Interior James Watt, Department of the Interior, C Street Between 18th and 19th Streets, N.W., Washington, D.C. 20240; Representatives, House Office Building, Washington, D.C. 20515.

BEAR ETIQUETTE

What to Do If You Meet *Ursus arctos horribilis*

PEGGY WAYBURN

ALMOST ANYWHERE YOU travel in Alaska, you will be sharing the rightful territory of many wild animals such as wolves, wolverines, Dall sheep, deer, lynx, arctic foxes, mountain goats, bears, moose and caribou. This is a rare experience that cannot be repeated in many parts of the world. Treat these animals and their habitats with respect; they are increasingly threatened as Alaska becomes more developed, and it is not necessary for you to add to the pressures.

If you plan a wilderness outing, check with the appropriate agency to find out if there are sensitive wildlife areas in the places you want to visit, and plan to avoid these areas. Walk lightly where you do travel, keep your distance, and you may be privileged to see—and to coexist with—some of the most magnificent wildlife remaining on earth.

Always travel with caution, but never with fear. Most of Alaska's wild animals—such as wolves and wolverines, lynx, Dall sheep and foxes—are more anxious to stay out of your way than you are to stay out of theirs. Chances are they will do their best to avoid a face-to-face meeting with you at any cost.

But bears demand special respect. It is up to you to stay out of their way. Remember that they are the largest, most successful predator in this particular wild animal community. And, although they are seldom the aggressor against a human being, they are unpredictable. Unwanted encounters with bears may occur when they are surprised or their territory is intruded upon.

I learned this firsthand one late June afternoon on West Chichagof Island. Five of us who had been travelling by boat along the coast of this magnificent wilderness island had come ashore for a stroll through an area that had been logged a few years earlier. It was a soft, rainy afternoon, a little misty and mysterious, with big old stumps looming out of the fog. We soon fell silent as we spread out along the road.

I was second in line, walking behind a young man of considerable strength and size who had a longer stride than I and soon disappeared from sight ahead of me. After rounding a bend in the road, he reappeared suddenly, racing toward me and yelling, "Bear—get out of here!" Then he disappeared again in the direction we had come. Without thinking, I turned and sprinted after him, passing his wife who, in turn, followed me.

Around a curve, I came upon the only Alaskan in our party. He was standing with my husband in the middle of the road, waving his arms and yelling a stream of imprecations that were quite surprising to me even in my state of shock. He is usually one of the most gently spoken people I have ever met. My husband was doing a good imitation of

Rick McIntyre/ Tom Stack & Associates

If you can't avoid a grizzly on the trail, this demonstration staged by Bozo (television's Gentle Ben) and his trainer, Ken Beebe, shows what to do. First, wave your arms (above) and yell. The bear may go away. If it stays, lie down (below) and be still. It is unlikely to touch a human it thinks it has killed.

Rick McIntyre/ Tom Stack & Associates

Alaskan brown bears (left), called "brownies," are grizzlies.

Photograph by Stephen J. Krasemann/AlaskaPhoto

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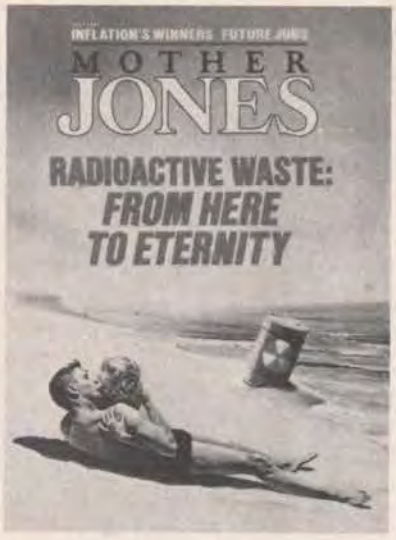

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his actions. Stopping to join them and the other two in our party, I looked back and saw the bear.

It was a brownie, a creature so large I thought he was standing on his hind legs until I realized that he had stopped on all fours to survey the situation. He was making sounds that, to me, sounded like the roaring of a lion. (I have since learned that bears are properly said to "woof" or to "bellow.") The two men were making a real racket by now, and finally the bear grew quiet. After what seemed an eternity, he turned and ambled off in the opposite direction. We made a quick and quiet retreat to the boat and, thoroughly shaken, congratulated ourselves on being alive.

We were lucky to have escaped unscathed from such a face-to-face encounter with a brown bear. But the incident took place only because of our own thoughtlessness. We were intruders, uninvited guests in the bear's territory, and we had failed to make our presence known. The first member of our party had come unexpectedly upon the animal. Walking quietly around the bend in the road, he had met the brownie practically head-on—and had made the mistake of running. Two other members of the party (including me) had compounded this mistake—quite understandably, because there was no place to hide, no tree to climb. Had it not been for the presence of mind and the expertise on bears possessed by our Alaskan friend, who is an old hand in the Alaskan wilderness, there could easily have been at least one serious injury among us. (Recent studies also suggest that a large group has a better chance of bluffing a bear. For this reason and many others, I strongly advise not traveling alone.)

The lesson was, of course, that you must announce your presence in bear country where you cannot see or be seen easily. Make some kind of noise as you walk. Some oldtime Alaskans strap a tin can half full of pebbles onto their packs. Others tie a bell to their belts or bang on a tin can as they walk. (A Sierra Club cup makes a good loud clang, especially when struck with your spoon.) You can lace bells onto your boots, or you can whistle, sing or even play your harmonica. Field biologists working for the Alaska Department of Fish and Game have been known to set off firecrackers as they work along salmon streams where bears are numerous. You can also, when possible, walk with the wind behind you. This gives the bear the added warning of your scent, and it gives you the chance to look for bears.

If you are travelling cross-country—as you will be in most wilderness areas of Alaska—choose where you walk with care. Avoid willow patches and other brushy

places along salmon streams, especially when the salmon are running. Keep a sharp eye out in rolling terrain where there are berry patches; a browsing bear may be invisible in a hollow while it feasts on blueberries. Also, beware if you smell decaying meat. Avoid the source of the smell, for it is likely that any bear in the vicinity will be at work on the carcass.

Travel with care on any game trail through brushy country, forests or any other area where you cannot be easily seen. And never make your camp on a game trail; this invites disaster. Game trails used by bears are easily identifiable: they are likely to run along the banks of rivers and every now and then turn down to the streams. There are almost always several near any salmon stream. They may lead into berry patches, and they are frequently seen crossing the low points of ridges. They usually have two well-worn lanes, about as far apart as a bear's legs, and you may find occasional large bear footprints. Bears like to step in the same place over and over again. When you camp in the wilderness, try to pitch your tent downwind from any evidence of bears, including their active trails.

The most effective bear insurance for campers is to keep an immaculate camp. Despite what you have been taught in the rest of the United States, do clean your fish into the stream or river in Alaska, being sure the offal gets into the current and is carried away. (Decomposing fish contribute important nutrients to Alaska's fast-running streams.) Burn or bury any garbage or leftover food, and wash your dishes well. The Forest Service says improper waste disposal is a big cause of "problem bears."

Never keep food inside your tent, and never leave food lying around. If there are trees around, wrap your supplies in double plastic bags (if you have a heavy cloth or burlap bag, use that too for added strength). Tie the bundle on a rope and sling it over a branch out of the reach of bears. If there are no trees, wrap your food as described and stash it as far away from your tent as is practical. Well-packaged, dehydrated or freeze-dried food and canned goods are less attractive to bears than fresh food and meat. The National Park Service advises campers to cook and eat 200 feet or farther from their tents.

If you happen to camp in a frequently visited area where the bears have become relatively tame and accustomed to being fed, your problems may be more acute than when you are in the more undisturbed wilderness. Keep in mind that it is illegal in Alaska to feed bears or other wild animals. It

is also dangerous—both to yourself and to the bear. Expecting food and being unintentionally provoked, a bear may injure you and end up being shot for the offense. (Bears that have become nuisances have been moved away from heavily populated camps only to return, sometimes from distances greater than 150 miles.) If you care about your own safety and the animal's right to survival, don't treat a bear as a pet.

It is particularly important to avoid close encounters with female bears (sows) that have cubs with them. These charming animal families are safely viewed only from a long way off, through your field glasses or the telephoto lens of your camera. Never make the mistake—which has cost more than one eager photographer serious injury, or even a life—of trying to get a closeup of bear cubs. If you're interested in wildlife photography, keep in mind that a good telephoto lens is a lot cheaper than a stay in the hospital.

If, despite all precautions, you do surprise a bear at close range, try not to panic. A startled bear will frequently simply let out a "woof" (the equivalent of a dog's growl) and run. It may, however, stand its ground, rear up on its hind legs and swing its head from side to side; this is an effort to see what or who you are. This is the time to yell and wave your arms. Although bears have generally poor eyesight, they can distinguish motion easily. Sometimes a bear will turn sideways and pose, as though showing off its muscles. This is supposed to intimidate you (it undoubtedly will), and it means that you should leave. Another signal is when a bear starts to bellow—a series of loud "woofs"—or to clack or "pop" its teeth. Never "woof" or bellow back at a bear or imitate its actions, which may well be body language indicating hostility.

Do not run. Bears have a critical range of up to 50 yards and, if you possibly can, back slowly out of it, always facing the bear. (Or, if it is a grizzly or brown bear, climb a tree if one is handy and you have time.) If there's no place to go and the bear comes toward you, drop your hat or jacket for it to smell. Should all your cool-headed efforts fail to deter the bear, and it decides to attack you, drop to the side of the trail onto your stomach or curl up into a ball, clasp your hands behind your neck to protect your head, and stay as still as possible. Play dead. Bears that attack when they feel threatened usually won't bother someone they think they have killed.

If you are familiar with guns, you may wonder about packing one with you to protect yourself against bears when you travel in Alaska's wilderness. There are two schools of thought among Alaskans about carrying

weapons in the bush. One argues that a gun is not only heavy and dangerous but also unnecessary. Our Alaskan friend who fended off the bear on West Chichagof Island shares this opinion. He believes that by the time you can get ready to shoot a charging bear, it will probably be too late. If you succeed only in wounding the animal, you will be in an even more serious situation with a wounded, infuriated bear for an adversary.

Those who do not tote guns also point out that too many bears are killed needlessly by trigger-happy people unfamiliar with the animals. There is the further chance that people not used to high-powered weapons will kill or injure themselves or another person instead of the bear.

In the opposite camp, there are many Alaskans who would not think of going into the bush—or at least into known bear country—without a gun. These people feel that a firearm not only gives them control over many variables of risk in potentially dangerous situations, but it adds greatly to their confidence—an important factor, since body language may influence whether or not a bear will attack. They feel, too, that in camp situations when a bear chooses to invade human space in search of food, a gun is essential. On long cross-country treks, they point out, losing your food supply could be disastrous. They grant that guns are cumbersome and potentially dangerous but argue that knowing how and when to use a gun can effectively remove the hazards. They recommend a twelve-gauge shotgun loaded with either 00 buckshot or rifled slugs; rifles larger than 30-06; or pistols chambered for .375 magnum cartridges or larger. They emphasize being familiar with the firearm and understanding how to use it.

All public-land agencies in Alaska are anxious to help you avoid a human-bear encounter. Consult them when you travel Alaska's wilderness. The pamphlet *The bears and you*, published by the Alaska Department of Fish and Game (ADF&G) is also recommended reading; it is available at many federal as well as state information centers in Alaska, or you can write for it to ADF&G, Subport Building, Juneau, Alaska 99811.

With all these warnings about bears, it is important to remember that you are far less likely to be injured or killed by a bear in Alaska's wilderness than you are driving on an Alaskan highway. Be cautious in Alaska's wilderness, but do not be afraid. □

Peggy Wayburn has contributed to Sierra *for many years, has written several books published by the Sierra Club and has been traveling to Alaska since 1967. This is an excerpt from her book on exploring Alaska's wild country,* Adventuring in Alaska, *to be published by Sierra Club Books in spring 1982.*

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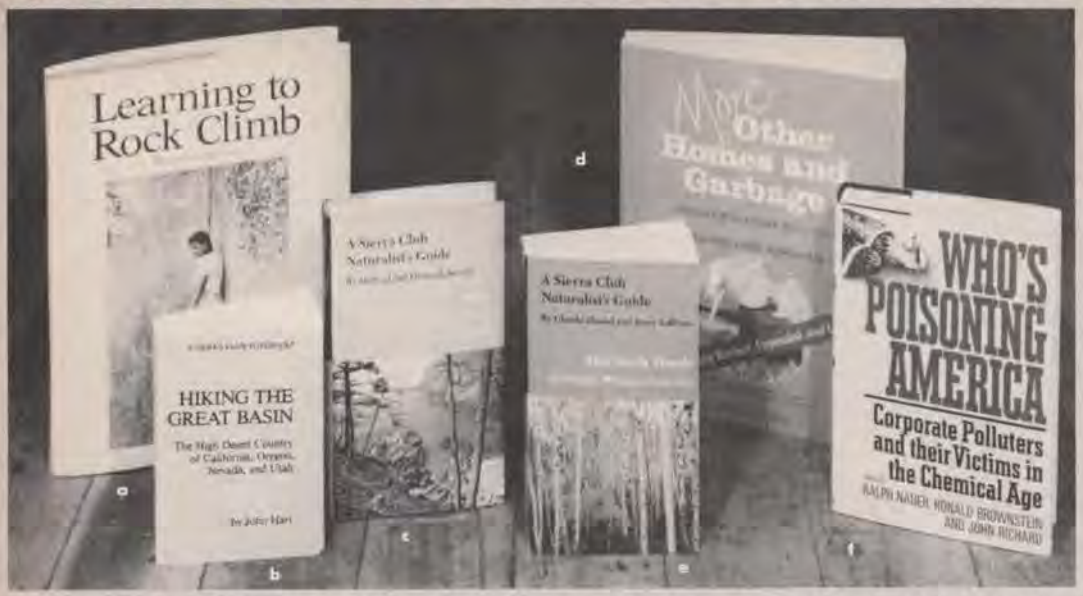

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'82 CALENDARS

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Birds of Prey

Continued from page 47

Prey boundaries under the Carey Act and the Desert Land Act. These are two laws passed in the late 1800s that sell 320 acres for a token fee of $1.25 per acre, provided the claimant irrigates the land for agriculture. These claims were suspended as part of Andrus' decree.

Three million acres had been set aside for these acts, but until recently only one million had been dispensed, largely because of arid conditions and the difficulty in obtaining water. Then in the 1960s the Carey Act and Desert Land Act were resurrected with the advent of high-lift pumps that could bring water from the Snake River 500 feet up the sheer canyon walls to irrigate desert land.

Because of the cost of pumping water up to irrigate the fields—one estimate puts the price at $200 per acre each year for energy alone for new projects—the only type of farming that is economical is what is called "clean farming," which means that the land is plowed from road to road, leaving no windbreaks, no vegetation for much of the year and no habitat for rodents, which do not burrow well in plowed ground.

People opposed to protecting the area ignore two facts: that there is more available land outside the area proposed for expansion than the Snake River could irrigate, and that the Idaho Power Company says it will not allow any more high-lift pumps because of the shortage of electricity. Developers' hopes remain high nevertheless.

In 1979, when Kochert's raptor study and other studies on prey base and vegetation had been completed, Secretary Andrus permitted most uses of the area—boating, hunting, fishing, use of off-road vehicles, National Guard gunnery practice, sheep and cattle grazing, oil and gas leasing and geothermal exploration—claiming they were compatible with raptor nesting. One use was not reinstated, however: Carey Act and Desert Land Entry land dispensations. Andrus and the BLM, using Kochert's findings, ruled that "clean farming" is not compatible with preserving the birds because of its effect on their prey base.

People with claims under the acts, together with other agricultural groups and individuals, were pulled into the political fray hopping mad. Sailing under the flag of "Sagebrush Rebellion, Inc.," they claimed the BLM's environmental impact statement on the national conservation area did not adequately consider agriculture within the area. It filed suit, requesting the Interior Department to withdraw legislation that would establish the enlarged area and seeking a preliminary injunction against setting aside land until a new impact statement is written.

If the suit was intended as a delaying tactic, it succeeded. Ronald Reagan was elected in November and played out environmentalists' "worst case" scenario by appointing James Watt the Secretary of the Interior. Reagan himself has gone on record supporting the Sagebrush Rebellion.

The two bills introduced into the 1980 Congress, S. 2683 by Senator Henry Jackson and H. R. 7359 by Representative Morris Udall, which proposed to establish the Snake River Birds of Prey National Conservation Area, died of neglect and have not been reintroduced. But on a more hopeful note, no one has moved to abolish a modified Birds of Prey withdrawal managed by Cecil Andrus after the November election. Under provisions of the Organic Act, Andrus protected 482,000 acres and barred agricultural development. Oil, gas and geothermal leasing is still allowed. (The other 110,000 acres of the Birds of Prey proposal is state and private land and was not subject to Andrus' administrative action.)

The withdrawal from development will be in effect for 20 years, or until Congress acts in some way. With arch-conservative Steve Symms in Washington representing the area, environmentalists are not optimistic about chances to set aside all 600,000 acres permanently for the raptors.

Senator James McClure of Idaho, not known for his concern over environmental matters, is planning to schedule hearings on the Birds of Prey Area this summer in several Idaho cities. He said he will then introduce some type of legislation based on a consensus.

Friends of the Birds of Prey, a group in Boise, is asking for a minimum of 480,000 acres to be protected. But environmentalists are not hopeful. "There's an implication that we'll have to stack the hearings three to one to get half the acreage we want," said Pat Ford of the Idaho Conservation League.

Through it all the raptors sit placidly on the cliffs, ride the currents and updrafts watching for prey, raise their young under the blistering desert sun. Mike Kochert, reflecting on the controversy, muses: "We've got to take stock of what we have here. This is a priceless biological gem, worldwide, and it is in danger. Here is an area where people can view these majestic birds in their natural state; it's educationally and scientifically irreplaceable. That's the real beauty of this area. Preservation of the Birds of Prey Area is not needed for the birds as much as it's needed for humans." □

Jim Robbins is an editor and environmental columnist for the Montana Eagle, *a weekly statewide newspaper in Montana.*

Energy Projections: The Future Revised

JIM HARDING

Energy Future: Report of the Energy Project at the Harvard Business School, Robert Stobaugh and Daniel Yergin, Ballantine revised edition, 1980. $2.95.

THE REVISED EDITION of the Harvard Business School's classic, *Energy Future*, hit the stands in late 1980 with a different cover, some significant updating, and two excellent new chapters. Its central message is that conservation is the only existing reliable energy "source" for the coming two decades. Based on four pages of critical acclaim from such disparate types as Shell Oil, Amory Lovins and social critic William Tucker, it is surprising to think any unbelievers remain.

Energy Future deserves the accolades it has received, in large part because it rejects tidy, doctrinaire solutions in favor of common sense. It says natural gas is due for dramatic price increases, and new "unconventional" gas sources will be hard pressed to keep production at its current level. Domestic oil production is headed sharply downward despite record drilling and the "more, more, more" rhetoric of the current administration. Coal faces difficult barriers, related to transport, technology, cost and environmental acceptability, that will slow its substitution for oil. Nuclear energy production could conceivably increase but may well decline as plants under construction are completed, because it may happen that no new plants are ordered and many are cancelled. The "fundamental reforms" required for nuclear growth "may simply not be possible." Solar energy deserves substantial, continuing support and could supply as much as 20% of U.S. energy in 2000, but this will come slowly.

In the midst of this rather depressing good sense is the shining example of energy conservation, which the authors point to with superb examples. AT&T has set itself a goal of reduced energy consumption in 1985 with a doubling in business. Gillette has already trebled its energy-saving goal. IBM has cut its per-square-foot energy consumption by 45% since 1973.

Big business has got the word, but the country still has a long way to go. Stobaugh and Yergin point out that America is 10% more energy-efficient (per constant dollar) today than in 1973. (A best-ever 3.2% was added to this in 1980, and energy imports fell an astounding 29%.) The Harvard Business School believes that more than 40% of current energy consumption is uneconomical waste that can be eliminated over the next 20 years, so energy consumption could remain constant if the GNP's annual growth rate were 3%. We now know how to increase the efficiency of industrial electric motors by a factor of two, air travel by three, household appliances by four, automobiles by five, and new homes and offices by ten—at less cost than buying or producing oil, synthetic fuel or nuclear power. Economic dogma will not bring efficient new technologies into the marketplace; some markets are rusted solid from disuse and will probably require something between generous lubrication and electroshock therapy to get them to work the way they should. But the bottom line is that a "least cost" energy future is an environmental protection future, and this is an important weapon in activists' arsenal.

This is not a message the Reagan administration has received, and if *Energy Future* has a weakness, it is giving advice to activists. David Stockman and Milton Friedman, both favorites of the administration, are caught writing some very unusual things considering funds for nuclear energy research are up 40% and the solar and conservation budgets have been slashed by factors of four or five. The challenge *Energy Future* presents to the public is to take this book's good sense and build national consensus on the direction energy policy should go, based on economic efficiency and environmental protection rather than economic dogma. □

Jim Harding is the energy projects director of Friends of the Earth and is director of the International Project for Soft Energy Paths.

A Talk with Daniel Yergin

FRANCES GENDLIN

Fran Gendlin: *At the very beginning of* Energy Future, *you say that in 1968 the State Department sent word to foreign governments that American oil production would soon reach the limit of its capacity. In 1970 domestic output peaked and began to decline; yet demand continued to surge. Why weren't the American people told? Why did the crisis of 1973 happen, when the government knew both in 1968 and in 1970 that we were obviously headed for real trouble?*

Daniel Yergin: When you say "the government," you're talking as though it's a cohesive whole. Some people in the government were very aware of the trend. King Hubbard, who had been head of the U.S. Geological Survey, was aware of the dangers a decade earlier. But for the most part people couldn't believe that this very comfortable oil system that had developed would come crashing down. The tradition of abundance is very strong in this country, and it's hard to believe we may have outrun our geological base.

FG: *Yet that was in 1973. Then we had the same kind of crisis in 1979, with a cold winter, long gas lines and rising prices, and demand was still going up.*

DY: I think we are beginning, in the aftermath of 1979, to see a real change in energy consumption. Indeed, one of the changes that we point out in the new edition of *Energy Future* is that we can really see conservation taking hold. Our society is 9% more energy-efficient today than it was in 1973. But it's not happening fast enough.

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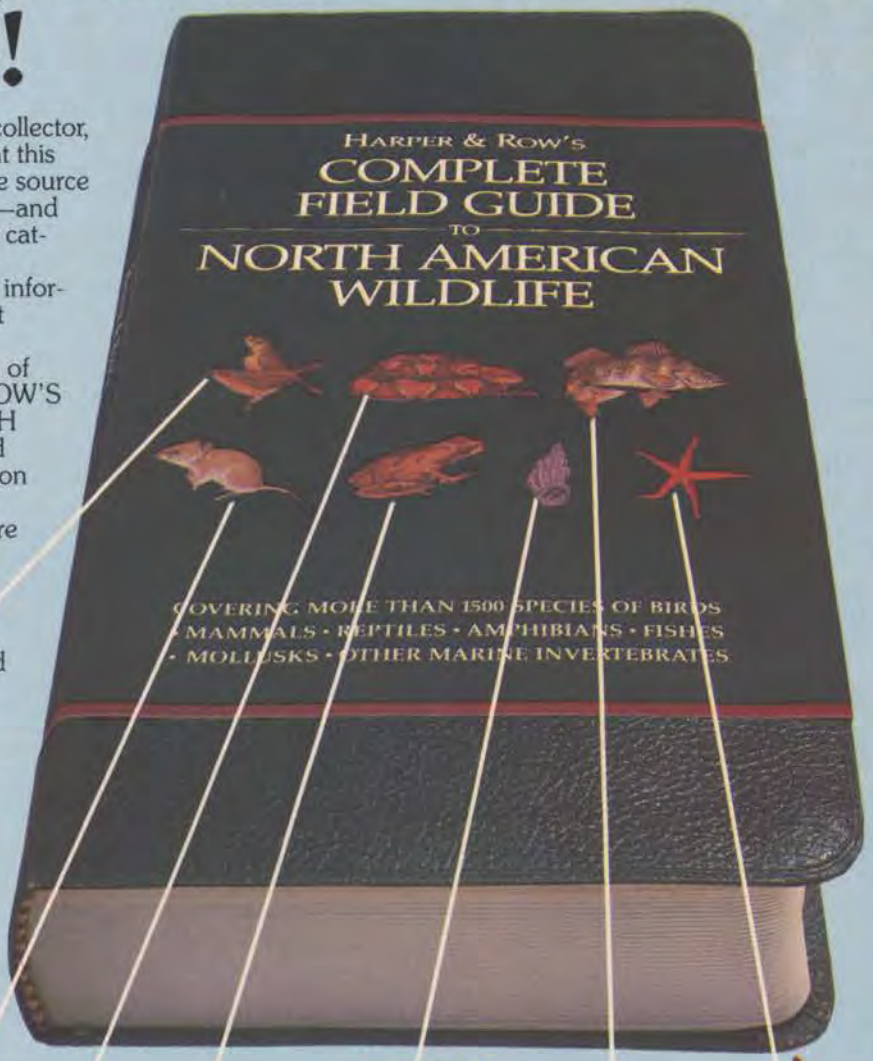

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That's the danger.

FG: *But isn't it true that crude oil imports are down not necessarily because of legislation, but because we have a recession and there's less output?*

DY: Exactly. When you see this type of trend, then the debate begins: how much is conservation, how much is recession? I would say it's about half and half. Conservation's taken hold in the fact that there are a lot more small, fuel-efficient cars on the road than Detroit figured there would be when they looked ahead five years ago.

FG: *People are turning in their big cars for small cars?*

DY: Right. And that's a form of conservation. Also, we have a fair amount of conservation in the industrial sector, and people are more energy-efficient in their homes. This would be fine if we didn't have such great dangers looking down upon us.

FG: *You predicted at one time that the demand for foreign oil could increase more than 50% by 1990. Do you still stand by that?*

DY: Yes. We're more pessimistic now about domestic oil prospects than we were in the first edition; even with decontrol of oil prices, we can see a 30% to 40% decline in domestic oil production. Even with conservation, that could well force the country into the oil market to import several million barrels a day more than we're importing now. The only problem is that we won't be able to pay for it.

In one sense I'm more optimistic, because I think there's a lot of flexibility and innovative ability in our society, a lot of creative thinking. On the other hand, events and our problems keep outrunning us. We have an energy supply system operating today that as late as 1978 people said we wouldn't have until the year 2000. In 1976 and 1977, people used to wonder what would happen when the Shah passed from the scene in the 1990s. Well, he passed from the scene a lot more quickly, and we've had to deal with that.

FG: *In the war between Iraq and Iran, there's been bombing of refineries, which is going to decrease the amount of oil pumped. There seems already to be a relationship between the war and oil imports from the Persian Gulf. How can we expect to satisfy increased demand for imported oil when there's going to be less of it?*

DY: Exactly. That's why it is not prudent to assume we're going to be able to buy any larger allotments of oil in the world market than we are now. Indeed, in our own self-interest we want to buy less, because the less we buy the more it takes the pressure off the

market and off the price. We also may be facing a significant decline in domestic production, even with decontrol. Therefore, the real choice that we have is to accept chronic recessions or to become a lot more efficient in how we use energy.

FG: *But I want to go back to the question about the energy crises. Can we expect to see more of them periodically?*
DY: Yes, I think the crises of 1973–74 and 1979–80 were previews of coming attractions. We are deeply tied into a crisis-prone and accident-prone international energy system. This runs against our whole idea of ourselves as a country, because we're used to thinking of ourselves as self-sufficient. Even many people who recognize the absolute numbers, the millions of barrels a day of imports, don't really understand the implications of our being the largest buyer of oil in the world. We take a quarter of OPEC's entire production. We are the Saudi Arabia of consumption, and we have an enormous impact on that market. One third of all the oil used in the world every day is used in the United States. What we do here at home has enormous impact on everybody.

FG: *Few energy experts have the opportunity to go around the country to find out what people are thinking, and it's during such travels that you have been able to assess the general knowledge and the level of sophistication of the media. How knowledgeable are the people who have interviewed you? Do they know enough about energy to ask you the right questions?*
DY: In the last eighteen months that I've been traveling, I've definitely noticed that the questions from people on call-in radio shows and from audiences indicates a higher level of sophistication. As to the media, I think we've seen the development of a cadre of well-informed energy writers on newspapers, which makes coverage much better. But I understand why the public's confused; so many different voices are saying so many things to them. I think that energy writers often have a lot of trouble dealing with their editors, who are interested in energy only when there are gas lines and want a hundred stories interviewing people at the gas pump, when that's not the real story. The real story is about a process of change and adaptation, and I think it's a story that doesn't easily fit into our traditional mode of newspaper journalism.

FG: *What do you find are the most common worries about energy among the general public? And would you agree that they're the most important concerns?*
DY: That's a very interesting question. A lot of people have had trouble believing there is a real problem. Some of the strongest critics of oil companies and some of the people in the oil companies themselves actually think the same thing, that there's a superabundance of oil in the country, and that there's a conspiracy to prevent it from being produced. The oil companies think it's the government and the environmentalists who are preventing it, and other people think the oil companies are deliberately holding back. Our basic tradition of abundance is at the bottom of many people's difficulties.

There's also a tendency to believe that there will be a miraculous solution, whether it be Mexican oil or nuclear power or enhanced recovery or opening up public lands. You push a button and suddenly the problem is solved. Obviously, people are very concerned about energy prices and the impacts on their daily lives. And some people are very interested in and concerned about what type of energy future we're going to have, and what that's going to mean for the nature of American life and for the way people's children and grandchildren will live.


Daniel Yergin.

FG: *What do you think we can expect now, with President Reagan and his energy policies? What do you think of his statements that the United States is energy-rich?*
DY: I think Mr. Reagan's statements during the campaign didn't reveal much about energy policy. I think they harked back to a nostalgic day when we really were energy self-sufficient and didn't directly address the problem at hand. Maybe the market will work in a way he suggests. I tend to doubt it, and I don't think it's prudent as policy to count on it. I think there is a general recognition among many people—and an unstated agreement between energy producers and environmentalists—that it's important to have prices that tell the truth. The producers want them because they want the incentive; environmentalists and others believe it's not wise to subsidize energy consumption because the costs to society in the long run are too great. It is a healthy situation to move toward decontrol; in fact, consumers were not well served by price controls in the first place. But I think—I hope the Reagan administration will move to the center and to the kind of new consensus that has developed on energy.

FG: *What do you think are the most critical energy-policy decisions that are going to have to be made in the next few years?*
DY: The most critical one involves the question of energy-efficiency, because I think conservation is by far the biggest source of energy we have. In the 1970s it contributed twice as much to our energy mix as the incremental contribution of all conventional energy sources combined. The question is, how do we accelerate changes that improve energy efficiency? If we could do that, we could buy ourselves time to deal with energy/environment tradeoffs and to select from what, by the middle 1980s, will be a very large and rich menu of energy alternatives—rather than making premature and expensive commitments now.

FG: *What kind of recommendations, then, might you make to a new administration that's conservative and anti-regulation?*
DY: One thing they're very interested in is speeding up the process of investment in this country. In a certain way, energy efficiency and conservation are just questions of investment. Actually, there are a lot of things you can do before investment, just in terms of minor changes, that realize large energy savings. But beyond that, efficiency is embodied in new capital stock, whether it be refrigerators that use only a quarter as much energy or industrial processes that reduce energy consumption by 50% or 70%.

So accelerated depreciation, larger tax credits for energy-efficiency investments—these are things a conservative administration can do. Indeed, let's say we'll let the market work. I do think these high, decontrolled energy prices will convince many people that the best energy investment you

can make is in efficiency.

FG: *Polls show that the public still supports environmental protection, yet in the last elections many friends of the environment lost their bids for reelection. How do you see the political future of energy policy, energy conservation? What advice do you have for environmental activists on how to proceed?*
DY: This is a point that's not original with me. I have to give credit to people who emphasize making the appeal in terms of letting the market work. If you let the market work, the best return on any energy investment is in conservation, which can take a lot of pressure off the environment. So there's a lot of sense in that view. But I don't think environment or energy were issues in the election.

But I keep thinking, when I hear how onerous regulations are, that if it were not for the mileage-efficiency standards, we might not have a Detroit today. Those standards saved the automobile industry by getting it going earlier on fuel efficiency than it would have by responding to the market. To give the industry its due, the market was partly skewed by a crazy pricing system, but the rules also really ran against Detroit's own very deeply embedded traditions and way of looking at the world. Without them, the car companies wouldn't have gotten going until the Ayatollah Khomeini came to power, and by then either Detroit would have been put out of business or we would have had a very bitter trade war with Japan.

FG: *I'd like to talk a minute about your recommendations for energy conservation, including what you see as a timetable for reducing oil imports. What can be done, how soon, and what kind of effect will it have?*
DY: What we argue in the new edition of *Energy Future* is that basically we should pursue a policy of zero energy growth as the best way to promote economic growth. Until a couple of years ago, there was an unexamined assumption that energy consumption and economic growth went together like a horse and carriage. And that's not true. The historical correlations are very uneven. The lesson of 1973–74 and of 1979–1980 is that the real threat to economic growth in this country is not conservation; the real threat is in *not* conserving. To import more oil, that's what's going to destroy our economy. That's what's going to make it impossible to deal with inflation.

FG: *The rising price of oil.*
DY: Exactly. And the uncertainty in the whole system. So we call for zero energy growth. Another way to put it is, let's become 3% more productive in the way we use energy, so that we could have 3% economic growth and no growth in energy demand. That's do-able. Since 1973 we've improved our productivity and energy use by 1½% each year, so 3% is not an unreasonable goal. And that ought to be a national goal.

FG: *How do you see conservation? Jimmy Carter kept talking about it in terms of sacrifice. Would there be an effect on lifestyle?*
DY: I've been thinking about this a lot and have concluded that the real effect on lifestyle, the real dislocation, is going to come from *not* conserving. There are some opinion polls that show that most Americans are also beginning to think that way. About a year ago there was a survey done for the Alliance to Save Energy by Cambridge Survey Research (actually the Carter pollsters). It showed that for the first time a majority of Americans, 65 percent, felt the real threat to the standard of living is not conservation, but is *not conserving*. That was a real change in public thinking.

But I think it was a major strategic mistake in presentation to emphasize sacrifice. I don't see why having insulation in your attic is a sacrifice. I don't see why driving a more efficient car is a sacrifice. You know, a Papermate pen today is made with 40% less energy than it was in 1973. I don't think you can say the standard of living that Papermate pen represents has declined because the pen is made with 40% less energy. It's just being more efficient.

FG: *Some people complain, though, that environmental geniuses confuse their valid assessments of problems with their fantasy solutions. The question is, what is realistic? You say conservation does not mean austerity, just improved efficiency.*
DY: I think, in fact, that an energy-efficient society would not look so much different from our society today except that we'd drive around in cars that get 60 or 70 miles to the gallon and live in houses that use 14% as much energy as current houses. I think not to conserve could mean ultimately a crisis as severe as the Great Depression and change in our political system in a very authoritarian manner.

FG: *Do you think that's what's happening now, this getting the liberals out and the conservatives in?*
DY: We're not there yet. But I think that, if we fail to become more energy efficient, we're going to have a lot more intervention from our government, paradoxically, which is not what you hear from some people in power today.

FG: *Is it really true, as one reviewer of* Energy Future *claims, that industry has led the way in improving energy efficiency, while homeowners and private consumers are lagging far behind?*
DY: Yes. Not all industry, but many companies. IBM set out in 1973 to reduce its energy consumption in North America by 10%. It has actually reduced it by 45% per square foot. This is an extraordinary achievement done with relatively little investment, with good sound management, and I don't understand why they don't crow about it, why they don't run ads on the op-ed pages of newspapers. This is a major accomplishment that shows what's possible. Gillette set out to reduce its energy consumption by 10% and reduced it by 30% while sales went up 86%. It takes half as much jet fuel to move an express package across the country today as it did two years ago.

Industry is very sensitive to its bottom line. In industry, a chairman decides this is an important issue, appoints an energy manager, he or she creates a staff, they have clout—they find out what to do and they organize to do it. The individual homeowner who doesn't want to spend weekends being an energy engineer doesn't really know what to do—doesn't know how to do it, whom to ask, or whom to trust.

Frankly, not a whole lot of research has really been done until pretty recently on how you make a home more energy efficient and maintain good air quality. It's only in the last couple of years that people at Princeton and at the Lawrence Berkeley Lab have been looking at these questions very closely. Not a lot of money went into it; it wasn't considered significant.

FG: *On the West Coast two utilities, Southern California Edison and Pacific Gas and Electric, have begun to emphasize conserving energy, reducing demand and even shifting to renewable resources. Do you consider this a trend?*
DY: Absolutely. New England Electric System has moved in the same way. California is in the lead, but of course Portland and other places really took the early lead. Probably, utilities will owe some of their economic viability in the 1980s to the environmentalists, who were the first people to suggest looking at energy conservation as an alternative investment. Five years ago this seemed to be a far-out notion; today Wall Street says the same thing, that you should regard energy conservation as an alternative investment and that it's a very good strategy for utilities.

FG: *Your coauthor, Robert Stobaugh, says that in this decade coal must provide more*

relief from oil imports than solar power can, but after that solar energy should begin to play a larger role. Are you thinking solar technology is not ready yet?

DY: Solar power really means renewable energy sources and so many different things, and it takes time to get them into the system and to see what works. I do think we will increase coal use in the 1980s. It's the one conventional domestic source that will grow significantly. We shouldn't do it wholesale, all at once, because we have to find cleaner ways to burn coal. We will, I think. It's a manageable problem.

FG: *To alleviate the problem of acid rain?*

DY: Yes, to deal with the environmental questions. They should be dealt with at the same time that we're expanding coal production and not left for afterwards, because later it's going to be even more expensive.

FG: *Do you think we'll still have 20% solar use, or reliance, by the year 2000?*

DY: We offered that in *Energy Future* not as a prediction, but as a goal. People who offer certainty should be looked at with skepticism. The only thing that we know works well, because we have had practical experience in the last seven years and because it's on-the-shelf technology, is conservation. Solar energy and other renewables are part of a more unexplored terrain; we're still learning a lot about it.

FG: *In order to deploy solar technology to the most useful extent, we'll need to build the major equipment that will then be able to turn out the solar equipment itself. How can we amass the capital needed to build this solar infrastructure?*

DY: We're quite concerned that there may not be enough capital available for both conservation and solar energy. This question of capital has to be looked at very carefully, and I would like to have seen more of the windfall tax go into conservation and renewables.

FG: *There's always going to be a question over where money is going to be put in any administration—nuclear fusion or solar technology, for instance. I've heard it said that solar research has all the money it needs right now, that what is needed now is time to implement the technologies already in existence, and that just throwing more money into solar research and development won't help.*

DY: It depends on the research. I think we should probably be throwing more money into photovoltaics.

FG: *But you think there's enough technology, and that now what we need to do is to build the equipment?*

DY: We certainly need a lot of learning. It's research, development and demonstration—R, D and D. But I think the issue is critical, the obstacles are great and the time may be short. It's sometimes offered as one of the miracle solutions. It may work, it may not work. We should find out if it works. It would be very nice if it did. But it's not for tomorrow. We're talking about something that may have an impact in the year 2025, it appears now.

FG: *Do you think the election of Ronald Reagan and the Republican majority will give the nuclear industry a new lift?*

DY: It clearly has given the nuclear industry a psychological lift. The basic problems, the basic debate, the basic tensions remain. I continue to believe, as we say in this revised edition of *Energy Future*, that the real nuclear debate is not going to be about very large expansion, but about what happens to the 90 or so plants in various places in a pipeline. Will they be built or will they not; what will this do to utilities? That debate would probably be on a case-by-case basis. You're not going to see people in the nuclear industry gearing up for vast expansion. I don't think that's in the cards. It's a more modest question.

FG: *Ronald Reagan has expressed encouragement for synfuels, urging that the private sector develop production rather than having the government do it, which is what Jimmy Carter wanted. Do you think this is possible? What do you think the prospects are for synfuels? Will they prove too expensive in terms of land reclamation and water allocation? Do you think there's any sure way to protect the clean air? In other words, is there any "best available technology"?*

DY: There are many question marks over synthetic fuels. We know the Germans produced them during World War II. We know the South Africans produce them today. The questions are, at what cost, with what kind of technology and what type of environmental consequences? On grounds of security, we need to develop better knowledge about synthetic fuels, a know-how and capability. Whether we're going to have a large industry and how much is going to be produced, I think is highly uncertain. We don't know; any estimate of 2 million barrels a day by 1990—it's not in the cards. Maybe we'll have 500,000 barrels.

But we should go step by step. The notion that we know how to do this, that we're prepared to do it tomorrow on any large scale, just isn't true. If we try to do it that way we're going to end up with a highly

inflationary program, with uncertain environmental consequences and perhaps with a lot of white elephants. We should go more slowly through a demonstration phase. But we do need to know whether we will have synfuels to use.

You have to divide things. [Extracting petroleum from] the tar sands is clearly something that's nearer and is working in Canada. Using heavy oils may also happen sooner. You have to take a wait-and-see attitude on all aspects of shale oil, and that applies to coal liquefaction, too.

FG: *But there really isn't any way right now that one can deal with the land, the water and the air problems.*

DY: Well, the act is just beginning. I don't have a religious faith in progress; things get worse as well as better, and problems can stay unsolved as well as be solved. We can apply ingenuity and see what can be done. But building 40 full-scale synfuels plants in this decade would not only be impossible, it would be highly detrimental. We should build a series of smaller units step by step, and then in five years we'll start to have some sense as to how these problems can be dealt with. We just don't have the experience.

FG: *I have only one more question: energy problems, of course, are not limited to the United States. Part of what the United States needs to do is develop methods and persuasive tools to offer other countries—especially developing nations—alternatives to nuclear power. But we also need to have examples in place, and we don't seem to have them. What do you think we can do to persuade the developing countries not to go nuclear?*

DY: That's a very important question, because in many cases nuclear power just doesn't make sense for developing countries; it's a wasteful diversion of resources. They don't have the electricity demand or the grid system to support it, but it's become a kind of article of faith. One of the things that most concerns me about nuclear power is the question of proliferation. A world of 30 nuclear-weapons states is going to be a very uncomfortable world. Imagine if Iraq had nuclear weapons—would they use them? That's a fair question to ask, and it's very worrying.

It's very important that developing countries don't destroy their renewable infrastructures. Once I was speaking to a group of middle-management people from state-owned foreign companies, talking about one of the fuels of the future—wood. A geologist from Nigeria said, "This is very puzzling." She said, "In my country we think those people who use wood are the most backward people, and we're trying to bring them into the modern age. And you're saying that wood is a fuel of the future? Or agricultural production is a fuel of the future?" She said it's very hard to understand. But I think that message is getting across.

We sometimes get so wrapped up in our problems that we don't realize how much other people follow us and what a powerful impact and influence we have on the rest of the world. Making a commitment to renewable energy and showing that it's possible, whether it be wind or anything else, is very important to the developing countries. We should make that connection; we have to offer that alternative—as we also have to offer them the real possibility that we're going to take pressure off the world oil markets so they can have some room to live. You can understand why they want to look to nuclear energy. Take a country like Ghana: all of its exports go to pay its oil bill. The whole effort to promote economic growth is wiped out overnight by the 150% increase in oil prices.

Renewable sources are critically important for them, and they have relatively low energy demands—10-, 20-, 30,000 barrels a day or less. They could supplement a lot of that with renewable energy sources. They could grow their own energy. We can do a lot to show that it's practical, and it doesn't mean you're backward. It means, in fact, that you're on the wave of the future. □

Search And Rescue: The Techniques

RICHARD B. SMITH

Wilderness Search and Rescue: A Complete Handbook, by Timothy J. Setnicka, ed. by Kenneth Andrasko, Appalachian Mountain Club, 1980. $10.95.

Most "how to" books, particularly those about the outdoors, appeal to a very narrow audience. People who read the myriad books about Nordic skiing, backpacking, wilderness travel and the like usually engage in the activity or plan to do so. At irregular intervals, however, examples of the "how to" genre appear that transcend this narrow appeal. These three books have that quality.

Mountaineering: The Freedom of the Hills is the classic. The text is so sensible, the line drawings so well done, that the reader quickly picks up the message: climbing mountains is a sport through which a person can express exuberance and one that is fun when practiced safely.

Yvon Chouinard's *Climbing Ice*, although extremely technical, appealed to me not only because of its superb photography, but also because of the vignettes that close many chapters. They capture the drama that surrounds climbing at Chouinard's lofty technical level. Although most of us will never climb that well, the author has helped us share the emotions of people who do.

Another particularly good book is Tim Setnicka's *Wilderness Search and Rescue*. Setnicka was for some time the search-and-rescue (SAR) officer in Yosemite National Park. He has organized and participated in hundreds of emergency expeditions, from short, simple searches to complicated, big-wall rescues on the valley's major climbing routes. This book is the product of his experience.

There is something in this book for almost everyone. For people who search for and rescue other people, either professionally as Setnicka did or as volunteer members of one of the many fine SAR groups, the book contains a step-by-step approach to resolving complex wilderness problems. The illustrations are exceptionally clear, especially those that provide detail about the equipment placement and rope management involved in an operation that requires extensive raising or lowering.

Separate chapters deal with the problems in various other environments such as white water, caves, snow and ice. The sections on searching techniques include state-of-the-art information developed through analysis of search records and computer modeling based on the results.

For people not involved in SAR but who love the outdoors, the book shows the life-and-death choices SAR managers face. The prologue, "A Night on Mt. Watkins," made my hands sweat as Setnicka described the circumstances surrounding one of the most complex, dangerous rescues ever attempted in Yosemite. He also illustrates his highly technical sections with sketches of other SAR operations. They all remind even the most casual reader that what Setnicka is talking about here is not an abstract subject, but a skill that can mean survival for someone who has an accident out in the wilderness. □

Richard Smith is assistant superintendent of Everglades National Park.

Search And Rescue: The Drama

MARY LOU VAN DEVENTER

High Drama: Mountain Rescue Stories from Four Continents, by Hamish MacInnes, The Mountaineers, 1981. $12.95, cloth.

THE BOOKS MENTIONED by Richard Smith are how-to manuals on climbing and rescuing. Hamish MacInnes' book is different; it's a collection of tales told "by rescuers, the rescued and by rescuers who themselves became the rescued." It truly is high drama. MacInnes has climbed on five continents and has acquired a reputation as an authority on rescues. He has collected these stories over 30 years, and what he considers thrilling is certainly hair-raising to people more protective of their mortality. Not everyone makes it back alive in this book of true stories that ought to keep any reader, mountaineer or simple adventure-lover, on the edge of the seat. A sample:

"Everything went quiet for a bit. The rope stopped, then paid out again. Suddenly, from high above I heard him yell 'Stones!' Instinctively, I dodged and kept close to the rock and at the same time I heard my name sharp and clear and I looked up and Barry was falling backwards through the air. He went hurtling past me, the two top pitons pulled out. He crashed onto the ice about a hundred feet below. For a moment I just stood there staring at the ring piton, not believing that it could have held, and then I looked down at him. He was upside down on the ice. He wasn't moving. I stayed there for a minute, and then I put a piton in and tied the rope to it and unroped, climbed up to the ring piton and hit it back in. Then I climbed down to Barry; he was very badly injured and unconscious. From the position of his body I came to the conclusion that his back was broken.

"I formed a harness in the rope, took all the weight off his chest and hung him in the sling. . . . Then I took my crash helmet off and put it on him . . . and then tried to form a barrier between him and the upward slope. It was late in the afternoon by then and everything looked . . . everything was lost. It wasn't a question of just one of us being injured. This was the Eiger and it was both of us, you see." □

Sierra Club's 200,000th Member

PHOTOGRAPHS BY MUSH EMMONS

On April 10, 1981, the Sierra Club celebrated a milestone—our 200,000th member had joined a week before, the computer told us. Her name is Cathy Beardsley, and since she lives in northern California, she was able to join local volunteers, staff and friends for a party.

Why the rapid growth in membership? It's the result of a combination of politics and professionalism. The current administration's attack on environmental values has rallied the public around conservationist groups. But even more important is a carefully prepared and coordinated program of membership development. By the end of May, the Sierra Club had 220,000 members, and the pace was staying strong.

Top: *Sierra Club President Joe Fontaine presents Cathy Beardsley with an inscribed Sierra Club cup. With her are her daughters, Jenny and Debby, and her husband, Duncan.*

Above: *Hal Gilliam (left), a Bay Area environmental journalist, discusses the occasion with California Resources Secretary Huey Johnson, Sierra Club board member Edgar Wayburn, and Sierra Club writer Peggy Wayburn.*

Right: *Cathy Beardsley is a volunteer at an environmental museum near San Francisco. Here she talks environmental shop with Peggy Hynd, the Club's Membership Director.*

Community Energy—The Volunteer Approach

ROBERT IRWIN

THREE YEARS AGO a seminal, thought-provoking article by Bill Zoellick appeared in the *Oklahoma Sierran*. Picked up and reproduced in many other chapter newsletters, it got Sierra Club members to think about broadening the base of the environmental movement.

Mr. Zoellick (the "Zoel" rhymes with "sell") replied to an ill-tempered, anti-environmentalist article in the December 1977 *Harper's*. In his article, "Environmentalism and the Working Class," Bill said that the root concerns of the environmental movement involve society's values, which lie in the realm of politics, not science and technology. "It is time," he concluded, "we learn to begin dealing seriously with the social as well as ecological effects of our environmental proposals and learn how to talk with the man in the street." Now, three years later, Bill and a growing network of volunteer Sierra Club activists are beginning to do just that—talk to the man and woman in the street.

On March 17 the Sierra Club launched its Community Energy Campaign. Volunteers are going out to do something in their communities about the bread-and-butter issue of ever-rising energy costs. They will organize groups of local people to set up community-wide studies that will take a hard look at just where an area's energy is coming from and where the money goes that pays for it. If they find that most of the dollars leak out of the area, they will suggest using more conservation measures and local, decentralized energy sources. The resulting community energy plan will be tailored to the place, so it will be the community's own plan, not one imposed cookie-cutter-style by a panel of "experts." The Club's board of directors has made the campaign a national priority and assigned Winky Miller of the conservation department to work on it. Bill heads the campaign's steering committee, whose other members are: Ruth Caplan, chair of the Club's national energy committee; Stuart Phillips of the Delta Chapter; Scott Gutting of the Utah Chapter; Mike Paparian of the California legislative office; and Michelle Tingling.

Bill Zoellick, who has made such a big impression in three years, received an A. B. in English education and a master's degree in reading instruction from the University of Illinois. He also completed most of his work toward a Ph.D. in research design there. In the early '70s, he taught computer courses and worked as a truck mechanic. At the university, his only involvement with environmentalism was with the recycling center.

In 1976 Bill and his wife, Ruthann, a resource librarian, moved to the small town of Ada in southeastern Oklahoma, where he first became active in the Club. He now chairs the Oklahoma chapter.

At first Bill tried to get people interested in working on one of Oklahoma's major problems, a safe and adequate water supply. Response was underwhelming. Virtually no one showed up for meetings or workshops.

But the rising cost of energy was a different matter; it touched people's pocketbooks—now, today. If it kept up, it would soon empty them. The people in southeastern Oklahoma are poor; their annual income is often less than $4,000. Energy was becoming a major budget expense, forcing the public schools and local state universities to cut back spending on education. Consequently, the energy issue affected all sectors of the region, from poor farmers to members of the Chamber of Commerce. Hundreds of people have turned out for Bill's meetings.

A subsequent survey of energy use showed that in 1977 the people in Pontotoc County spent $8 million on electricity, and that 80% of the money, $6.4 million, left the county. A good portion of it could have remained at home if there had been a county-wide energy-conservation program and local alternative-energy sources had been developed. Such an effort would have created jobs and had enough money left over to bolster essential community services. Other, larger areas have made similar studies after having been prodded into action by citizens. In Cambridge, Massachusetts, for

instance, of the $130 million the citizens and the city were paying yearly for energy, 87% had left the city. The figure was 85% in Washington, D. C.

These and similar studies have been the work of many people, not least Jim Benson of the Institute for Ecological Policies. About the time he moved to Oklahoma, Bill Zoellick became acquainted with Benson's work. Benson had previously worked as a branch director of the Energy Research and Development Administration. At ERDA,

Bill Zoellick standing in front of his solar greenhouse, a home addition he built himself.

Jim had tried to focus the agency's attention on environmentally benign energy technologies. Then the Carter administration opted to push energy production instead. Benson quit his job and established his institute and proceeded to publish "how to" energy "cookbooks" for the use of community groups. He also conducts free training workshops on local energy planning. He ran a series of them during the spring in New York, Dallas, Denver and Portland. For information on upcoming workshops, write to Jim Benson at the Institute for Ecological Policies, 9208 Christopher Street, Fairfax, Virginia 22031.

Zoellick is quick to talk about his indebtedness to Benson's ideas and experience. The two men have developed a close working relationship. In his newsletter, Benson publicized the first workshop of the Club's Community Energy Campaign, held in St. Louis May 29 and 30, 1981, at the Midwest Regional Conservation Committee meeting. Zoellick reciprocates by publishing notices of Benson's workshops. More campaign workshops are planned in conjunction with future RCC meetings in other parts of the country. For information on upcoming meetings, contact Winky Miller at Club headquarters.

The campaign is a new direction for the Sierra Club. Unlike other conservation campaigns the Club has run, this one has no specific legislative target or deadline. Instead, it is a continuing volunteer effort at the grassroots level being carried out in all sections of the country.

It takes someone with time, experience, energy and sustained interest in energy conservation to direct such an effort. The Club is fortunate to have Zoellick taking a leading role; he fills the bill perfectly. His work as a computer consultant allows him flexibility of time. A cooperative and supportive wife frees more time for him. He earns about half of his income by conducting solar-energy training workshops, certainly a bonus in experience.

As the campaign progresses, Zoellick will also be alert to its potential for broadening the constituency of the environmental movement in general and of the Sierra Club in particular. When all kinds of people in a community work together on one environmental issue—energy conservation—the experience could prepare them to repeat the performance on other issues that affect them, such as acid rain, water quality, land use or parks.

If you would like to hurry the day when your own and your community's energy budgets are back under control, and when people will not be so anxious to rip up and foul the environment in a frantic rush for fuel, write to Winky Miller, Community Energy Campaign, Sierra Club, 530 Bush Street, San Francisco, California 94108. She will add your name to the campaign's mailing list and tell you how you can get the energy planning process going in your community at the grassroots level.

The Sierra Club In Yosemite

The Sierra Club has been operating a conservation-education program for park visitors every summer since 1904. This year, for the

first time in its 76 years, the program will be expanded to run for six months, from April 11 to September 27. Members of the Tehipite Chapter, in whose territory the park lies, have agreed to volunteer their services to develop and conduct an eleven-weekend spring program of films and slide-show lectures—all concerning the "Natural History and Environmental Issues of the Sierra Nevada." The fall program will run from September 2 to September 27. As she has been for the past eight years, Mary Hallesy, of the Palo Alto-based Loma Prieta Chapter, is in charge of the summer program, which opened June 22. It consists mainly of displays, environmental puppet shows, and family hikes on Saturdays. Mary is also chair of the Club's LeConte Memorial committee.

There are several reasons for the ex-

Sierra Club's Annual Dinner

Denny Shaffer (left) presented the Club's highest honor, the John Muir Award, to departing Associate Executive Director Brock Evans.

After his speech at the Sierra Club's annual dinner, Nat Reed is congratulated by Joe Fontaine before an enthusiastic audience.

panded season, according to Doug Harwell, Tehipite Chapter chairman and coordinator of the overall program. The principal one is that expansion gives the Sierra Club and its viewpoint excellent public exposure in the jewel of our national parks, Yosemite. In addition, public presentations that lead to an appreciation and understanding of the natural world are a good antidote to some of today's anti-environmentalist venom. Finally, it's a bargain; the entire six-month budget comes to less than $11,000.

But bargain or not, the money must come entirely from donations. Donations are tax-deductible because all of the presentations in the LeConte Memorial Program are strictly educational, and because they are conducted in a national park. (The memorial is owned by the Park Service and operated by the Sierra Club.)

If you would like to help support the program, make your check payable to the Sierra Club Foundation/LeConte Memorial Fund and mail it to Tehipite Chapter, Sierra Club, P.O. Box 5396, Fresno, California 93755.

Nominating Committee For Board of Directors

The committee that will nominate candidates for election to the board of directors for the 1982–1985 term is inviting recommendations of prospective candidates. Members of the nominating committee are Walter Wells, chairman, Washington, D.C.; Robin Brooks, Capitola, California; Steve Colome, Irvine, California; Joe Jacob, Jackson, Michigan; Jerry Lieberman, Charlotte, North Carolina; Liz Meyer, San

Photographs by Mush Emmons

Diego, California; and Dave Raney, Honolulu, Hawaii. The board of directors is the top policy-making and managing unit of the Club, which now has more than 200,000 members, a staff of 150 and an annual budget of more than $10 million. Candidates must be Club members, have demonstrated exceptional commitment to the Club's objectives and have experience managing a volunteer organization. Send your suggestions to Walter Wells, Nominating Committee Chairman, 3606 Veazey Street, N.W., Washington, D.C. 20006 before September 1.

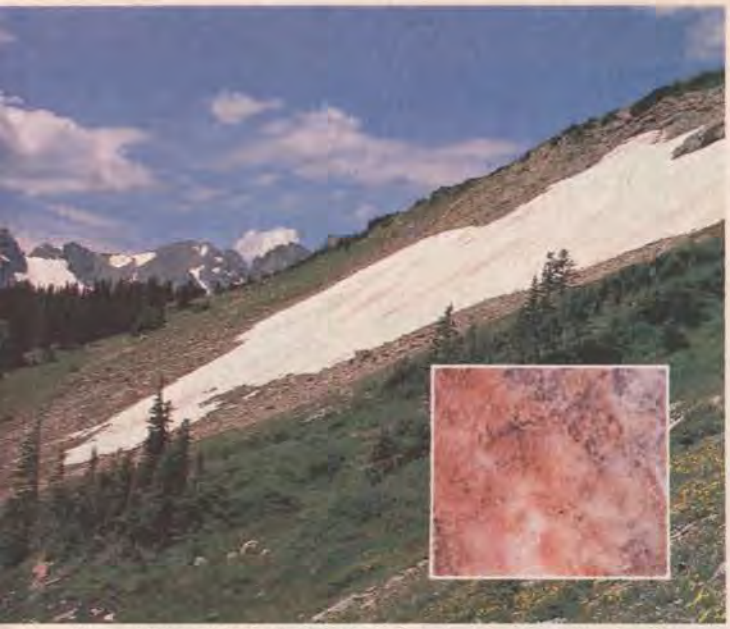
Richard C. Sill

Intense, energetic, outspoken, sincere, self-confident (some might have said cocky) and, perhaps, impatient. Those adjectives describe Dick Sill, who was killed in an accident in March. In more than 30 years as a member, he left his mark on the Sierra Club. While a physicist at the University of Nevada, Dick joined the Club in the late 1940s and became active in the Reno area. From 1962 to 1967 he represented the Toiyabe Chapter on the Sierra Club Council, which he chaired in 1965 and 1966.

His council years came at the beginning of a period of rapid growth for the Club, and he advocated strengthening the role of the volunteer. As the increase in staff kept pace with rising membership, he warned against letting control of the Club slip into the hands of a bureaucracy unaccountable to the members. In 1966 he won a special achievement award and in 1967 was elected to the board of directors. Reelected in 1970, he resigned the following year for personal reasons.

In January 1971, the council published a "Sill testament," a pamphlet titled *The Future of the Sierra Club.* A long-time friend who had worked with Dick on the council, Francis Wolcott, reports that the pamphlet's main theme was an appeal for the Sierra Club to broaden its concerns beyond establishing enclaves of wilderness and parks.

In a final tribute to Dick Sill at the Club's annual dinner in San Francisco in May, Director Ed Wayburn referred to him as "a restless soul, eager to clean up all of our problems at once," adding that when Dick failed to see all of his aspirations fulfilled, "his flame burned out." For eight years Dick Sill remained on the sidelines of national Sierra Club affairs. Then, Wayburn continued, when plans were announced last year to locate MX missile sites in Nevada, Dick Sill found a new cause and became active again—until his death on March 24, 1981, when his small plane crashed on a flight home from an MX committee meeting. □



Watermelon snow is darker after your boot has compacted the algae in it.

FOR YOUNGER READERS

Watermelon Snow

ROBERT POLLOCK and
JEAN SNYDER POLLOCK

IMAGINE that it is a hot summer day, and you and your family are hiking in the mountains of the West. You have climbed above timberline into a meadow filled with colorful wildflowers. Bubbling through the meadow are several small streams that come from large snowbanks on the surrounding mountainsides. The snow is so deep and the nights so cold that these snowbanks never melt completely

Suddenly you notice the most amazing thing—where you have walked on the snow, there are bright red footprints. In the places your boots have packed down, the snow is the color of watermelon. If you pick up a handful of this snow and sniff it, you will find that it smells like watermelon, too. But stop! Before you eat any of the red snow, you should know that even though it looks, smells and tastes like watermelon, it might make you sick by acting as a laxative. Some people have gotten sick on this kind of snow, so even though scientists have no studies to indicate that this will happen in all cases, and even though they don't know why it happens to some people, you should be quite cautious about eating the snow. But, still, why is "watermelon snow" red?

A snowbank is a miniature world, with plants and animals living together much as they do in the world you can see. On the surface of the snow, you may see many little black insects hopping around. These insects are called springtails. They are very tiny, but most of the plants and animals that inhabit a snowbank are even smaller. You would need a microscope to see them.

A group of tiny plants living in the snowbank cause the red color. These plants are called algae and are similar to the ones that form green scum on a pond. They are so small that 2.5 million of them—that's about the same as the number of people who live in Kansas—would fit in one teaspoon of melted snow. The reason you saw the color in your footprints was that compressing the snow concentrates the tiny plants. They are also concentrated in low areas in snowbanks, where they form patches or streaks of red snow. If you dig, you will discover that the red color may extend ten centimeters (about four inches) or more down into the snowbank.

You may wonder how these algae can live in such a cold place. They are special plants that actually thrive in the cold. Scientists call them cryophiles; "cryo-" means cold, and "-phile" means loving. Unlike other kinds of algae, they can grow at 0° Celsius (32° Fahrenheit), the freezing temperature of water. When the sun shines on a snowbank, it causes the snow to melt, but it does not make the temperature of the already melted snow go up. So the water in the snowbank is always at 0° Celsius. The snow algae live in this water. As other plants do, the algae change energy from the sun, carbon dioxide from the air, and water—in this case from the melting snow—into the energy they need to live. To do this, they use a special substance that only plants have, chlorophyll. In most plants, chlorophyll looks green; in these algae, the green color is masked by a red substance, but the chlorophyll is still there. The algae also need minerals, which come from the soil under the snowbank or from soil particles the wind blows onto the snow.

Summer snowbanks contain many other tiny, cold-loving plants and animals including bacteria, fungi, protozoa and segmented worms called snow worms. Although many people believe that a snowbank contains nothing but snow, you have learned that it is the home of a special group of organisms adapted to live in a cold, harsh environment. □

Jean and Robert Pollock are freelance photographers and writers who live in the small mountain community of Allenspark, Colorado. Both are biologists.

Photographs by Robert Pollock

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GUEST OPINION

Building Coalitions

HERMAN SMITH

THE MEMBERS of the National Association of Home Builders welcome this opportunity to address the 220,000 members of the Sierra Club. Too often in the past our encounters have been limited to confrontations at public hearings. We welcome, therefore, this chance to lay down our cudgels and search for a common ground on which to build a working relationship.

Over the past ten years most other Americans have gradually come to realize what the Sierra Club has maintained all along: that the resources we've always taken for granted are indeed finite, that if we are to preserve a high standard of living for our children and our children's children we will have to husband our natural heritage carefully.

Unfortunately, this new age of scarcer resources and higher prices has coincided with unprecedented demand for housing. Some 41 million Americans will be reaching the prime home-buying age of 30 during the 1980s, compared with 30 million during the 1970s.

Providing energy-efficient, affordable housing for these young people will be the challenge of the 1980s. We will have to convince them to think small, to squeeze more living into less space. At the same time, we will have to find ways to cut land-development and energy costs.

Land development provides perhaps the most fertile ground for cooperation between builders and the Sierra Club. Take the concept of "infill"—that is, building on urban and suburban lands that have been passed over.

Infill makes sense for many reasons. Roads, sewers, waterlines and transportation systems are already in place, eliminating the need to install these very expensive services. Infill also minimizes urban sprawl.

On the other side of the balance sheet, higher densities are usually required to offset both the premium price of urban land and the more sophisticated planning and design needed to fit new development into an existing community.

But local zoning ordinances and community resistance often doom infill projects before they can get under way.

Unlike developers, the Sierra Club would not appear to be acting from self-interest in advocating this type of development. We hope you can be prevailed upon to expand efforts begun in some cities to overcome this prejudice against high-density housing.

NAHB is also exploring other land-development techniques that will allow more efficient use of the land we do build on. Townhouses, cluster arrangements, duplexes and zero-lot-line homes (those with a large yard on one side rather than two small yards, one on either side) generally cost less and preserve more open space.

We are working with local governments to modify subdivision requirements that add to the cost of a home without contributing to the comfort or safety of the residents. Simple things such as minimizing impervious ground surfaces can reduce pollution as well as lower costs. (Storm water can more easily be filtered through soil instead of running off into our rivers and streams carrying oil, grease and sand along with it.) Reducing street widths and constructing sidewalks on only one side of quiet residential streets can shave a couple of thousand dollars off the price of a home.

Storm-water runoff, from both construction sites and established communities, contributes to soil erosion and the pollution of our streams and rivers. Storm-water control is, however, a very site-specific problem. The best solution depends very much upon the configuration of the terrain, the site's vegetation and the type of soil. Regulations that require a certain number of bales of hay or a certain type of ditch can be counter-productive and expensive.

We hope Sierra Club members will work with us on local and state levels to develop flexible guidelines for storm-water management.

Energy conservation in new homes has become a top priority for NAHB. We've already made enormous strides; today's new home uses energy 30% more efficiently than its counterpart of the pre-OPEC embargo days of 1973.

Annual surveys of homebuilders conducted by the NAHB Research Foundation showed, for instance, that roofs on two thirds of the homes built in 1973 were insulated to a value of R-13 or less. By 1979, R-25 was the norm.

But we recognize that this is only the beginning. The NAHB Research Foundation, with the assistance of HUD, is carrying the quest for energy conservation one step further with the construction of an energy-efficient residence designed to test innovative techniques to be used in building passively heated solar homes.

A two-level solarium and a rock storage bin will provide passive solar heat for the Maryland home. The home also features passive solar water heating, summer ventilation through a roof shaft and an earth-source heat pump.

Other ideas are being tested through an energy-saver house program sponsored by NAHB and the National Council of the Housing Industry, an organization within NAHB of leading suppliers of building products and services. Ten participating builders have constructed homes that provide the best energy-saving formulas for their particular climates, be it the warm, humid South or the cold, dry North. Most of the homes were completed in the past few months and will be monitored for one or two years.

There is no question that conservation is the quickest and the cheapest way to save energy. Its impact has already been felt. Oil imports dropped a dramatic 20% during 1980 to their lowest level since 1975. We hope this is a trend that will continue.

In conclusion, let me say that you know and I know that we will not always agree. But as Sierra Club President Joe Fontaine pointed out to our members in the February issue of *Builder* magazine, Sierra Club people have to have shelter, as does anyone else, and homebuilders and their families want to enjoy parks and outdoor recreation, the same as anyone else. It's time we recognized we have a common purpose: to provide decent homes in a decent environment for ourselves and for those who come after us. □

Herman Smith is president of the National Association of Home Builders.

Attack Launched on Clean Air Act

Representative James Broyhill, the ranking Republican on the House Energy and Commerce Committee, has introduced legislation that would drastically weaken the Clean Air Act. His bill would eliminate the margin of safety that protects the elderly, the young and the infirm from levels of air pollution that would be dangerous to them; it would let the Environmental Protection Agency abandon efforts to meet some air-quality standards; it would allow air quality in most of the country to deteriorate to levels characteristic of cities; it would delay the achievement of health standards; and it would eliminate some important federal standards for improving urban air quality.

As this issue goes to press, the Reagan administration is expected to announce its positions on the Clean Air Act soon. Its views are expected to parallel the ones embodied in the Broyhill bill. (For information about the Clean Air Act see the "Clean Air Primer" in the May/June *Sierra*.) You can help protect public health and the quality of our air. Write to your representative (House Office Building, Washington, D.C. 20515) and to your senators (Senate Office Building, Washington, D.C. 20510.) Tell them you oppose the Broyhill bill and think public health and our clear skies should be protected.

House Interior Committee Bars Leasing In the Bob Marshall Wilderness

In an unusual move with potentially far-reaching implications, the House of Representatives' Interior Committee voted 23 to 18 to close Montana's Bob Marshall Wilderness to energy leasing until 1984. The area was threatened by 343 pending gas-leasing applications as well as proposals for immediate seismic testing, which critics have referred to as the "Bombing of the Bob" (see "Wildcatting in the Wilderness," May/June *Sierra*).

The committee, responding to a motion from Representative Pat Williams of Montana, invoked a little-used section of the Federal Land Policy and Management Act, which enables the House Interior Committee or the Senate Energy Committee to declare an emergency, requiring the Secretary of the Interior to withdraw the area from mining or leasing for up to three years. Interior Committee Chairman Morris Udall and Public Lands Subcommittee Chairman John Seiberling argued that the current administration threatened the area by easing regulations on mining and energy development.

Interior Secretary James Watt reluctantly issued the emergency order closing the Bob Marshall Wilderness complex to energy leasing. At the same time, he questioned the constitutionality of the law for allowing a single congressional committee to force the action. Almost immediately the Mountain States Legal Foundation, Watt's old law firm, filed suit on similar grounds.

More Anti-Environmental Legislation

Nevada's Representative James Santini has been busy lining up cosponsors for two pieces of anti-environmental legislation. His H.R. 3364 is exactly the sort of thing Interior Secretary Watt has stated he would like to see in legislation, and it makes provisions the mining industry has wanted for some time. For the purpose of "solving the minerals crisis," the bill would allow Watt (and all future Interior secretaries) to grant miners and oil developers virtually unlimited access to any federal lands, including areas that have previously been protected.

In collaboration with Utah's Senator Orrin Hatch, Santini has also introduced a "sagebrush rebellion" bill, H.R. 3655, to expedite the transfer of federal lands to the states. (Another bill by Hatch, S. 1245, would also place national forests and land under the jurisdiction of the Bureau of Land Management.)

Conservation groups, including the Sierra Club, strongly oppose both bills. Concerned Club members should write to their senators (Senate Office Building, Washington, D.C. 20510) and to their representative (House Office Building, Washington, D.C. 21515), urging them not to sponsor the Santini mining bill or the "sagebrush rebellion" bill. It would also be good to mention opposition to the Hayakawa-Helms bill ("News," May/June *Sierra*).

Justice Department Defends Wild Rivers

The Justice Department filed a brief in court on June 2 that defended former Secretary of the Interior Andrus' protection of five rivers in northern California. Although the Interior Department has not responded to inquiries about the matter, well-informed sources in Washington believe that Secretary Watt tried very hard to convince the Justice Department not to defend Andrus' action, but instead to say an error had been made. But the Justice Department elected to defend the action.

Water Project Funding—A Chance for Reform

When the Reagan administration took office, environmentalists felt there was a significant chance for reform in the key area of water project funding. Their reasoning: most economic conservatives would see little reason to spend scarce federal funds on uneconomical water projects. But so far the new administration has a mixed record.

Construction budgets for the Army Corps of Engineers and the Department of the Interior's Bureau of Reclamation are higher in Fiscal Year 1982 than in FY 1981. This spending, much of it for big-ticket, wasteful projects such as the Columbia Dam, the Central Arizona Project, the Central Utah Project, the Tennessee-Tombigbee Waterway and the O'Neill Unit, comes at a time when other projects and environmental programs have been cut or eliminated.

On the other hand, the administration has endorsed the concept of collecting fees from users to pay the full cost of construction for inland waterways and ports. This idea is called "full-cost recovery." It would take away users' incentive to support building navigational projects that are uneconomical.

AMERICA, THE BEAUTIFUL

The national parks, wilderness areas and wildlife refuges of this country speak to visitors of the great beauty of America. They speak too of wise political leadership—a leadership responsive to the will of the majority of Americans.

Members of Congress and Presidents of the United States, expressing their love of this country and their desire to preserve its beauty for future generations, have set aside these special places. They responded to the public's will.

But now, officials of the new administration are threatening to roll back the gains made by the modern conservation movement. They want to open up existing conservation reserves to commercial exploitation; and, they want to cut back on further effort to protect such places, at a time when visitors are being turned away from our national parks.

Since 1892, Sierra Club members have effectively encouraged protection of this country's national heritage. More than ever before, we now need the increased impact on public policy that comes from a strong grassroots membership.

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Photograph: Crater Lake National Park, Oregon, by Ansel Adams

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Senior	☐ 12	☐ 16
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Junior	☐ 12	—

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DEFEND OUR RESOURCES

Replace Interior Secretary Watt

A Petition to the Congress of the United States

We petition you under the First Amendment of the Constitution to protect our nation's environment by seeking the dismissal of Secretary of the Interior James G. Watt. As a public official, Secretary Watt is representing private economic interests rather than following the laws that define his responsibilities. He is sabotaging conservation goals supported by a vast majority of the American people. He is seeking to defy decades of legislation designed to protect our natural resources. Our heritage of national parks, wilderness areas, refuges, rivers, wildlife, and desert lands is coming under systematic attack, and Secretary Watt is the Administration's principal advocate of these destructive policies.

We firmly support the policies this country has developed over the years for managing and protecting our natural resources. We risk losing this heritage unless Secretary Watt is dismissed. Please make his removal from office your highest priority and resist legislation embodying his policies.

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Return petitions to: **"Replace Watt," Sierra Club, 530 Bush Street, San Francisco, CA 94108** — (415) 981-8634. Signers do not have to be registered voters or of a certain age for the petition to be valid. It would help if you could photocopy the petition form yourself; this would be much faster. Alternatively, fill out this coupon and we will send you additional copies.

☐ Please send me _____ additional petitions and _____ Watt Campaign Fact Sheets.

FINAL FOCUS

Snowy egret lands at Mrazek Pond, Everglades National Park, Florida.

Photograph by Connie Toops

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